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Investigation of the Wisdom of Older Adults to Live in Harmony With Nature

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Abstract

Environmental destruction is progressing rapidly around the world, including in Japan. What familiar social groups should we refer to when we aim for a symbiosis between nature and humans? We believe that one of the appropriate social groups is older adults. They have developed a wide range of wisdom for living through the utilization of nature's benefits and countermeasures against nature's threats. Examples are agriculture that does not harvest more than necessary and traditional wooden houses with good ventilation. These pearls of wisdom have contributed greatly to the development of Japan's agriculture, forestry, and fisheries industries. In this study, a wide range of wisdom for living in harmony with nature (how to utilize nature's benefits and countermeasures against nature's threats) was investigated among older Japanese participants ($N = 218$, mean age = 73.04 years). An online survey was conducted, and participants responded in an open-ended format. A qualitative analysis was conducted to examine in detail which responses were frequent. As a result, specific examples of utilizing nature's benefits included the management of fields by pest-eating animals. Specific examples of countermeasures against nature's threats included wrapping towels around water pipes to withstand the winter cold. Meanwhile, older participants had a very favorable view of passing on the wisdom of living in harmony with nature to generations younger than themselves. The data from the open-ended survey of many older adults is of high material value and will be useful for improving the policies for supporting older adults.

Keywords: Older Adults, Nature, Wisdom, Qualitative Research

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Introduction

Environmental destruction is progressing rapidly around the world, including in Japan. With the rapid progression of global warming, the threat posed by natural disasters is very great for all humans. Japanese people, in particular, have frequently suffered from natural disasters such as earthquakes, tsunamis, typhoons, and floods. In light of the above, it is extremely important to take advantage of the benefits of nature and to take adequate measures against nature's threats (Hasegawa, 2012).

What kind of people are the social groups to which we should refer when we aim for a symbiosis between nature and humans? One of the social groups is older adults who have many opportunities to live in harmony with nature. Older people have long developed a wide range of life wisdom through the utilization of nature's benefits and countermeasures against nature's threats. Agriculture that does not harvest more than necessary, traditional wooden houses with good ventilation, and local cuisine that makes the most of edible parts are just a few examples. These pearls of wisdom have contributed greatly to the development of Japan's agriculture, forestry, and fisheries industries.

In recent years, efforts have been made to link the wisdom of such older people to the revitalization of the rural community. For example, in Higashi-Shirakawa Village, Gifu Prefecture, Japan, farmers have implemented activities such as providing vegetables that cannot be shipped to market for school lunches (The Japan Foundation for Aging and Health, 2019). Such activities are also very meaningful in terms of promoting social participation among older adults (Turcotte, Carrier, Roy, & Levasseur, 2018).

In light of the above, this study will survey and organize a wide range of wisdom developed through the utilization of nature's benefits and countermeasures against nature's threats, with Japanese older adults as the target population. Currently, depopulation in many rural and fishing villages in Japan is rapidly progressing, and the lack of bearers in the agriculture, forestry, and fishery industries has become a serious social problem (Miyata & Wakamatsu, 2019; Yoshida, Katsuki, & Yoshikawa, 2014). The discontinuation of the transmission of the wisdom of older adults, which has been passed down from generation to generation in the rural community, would be a great loss to society as a whole. Therefore, this research, which will document a wide range of the above-mentioned wisdom, is of great academic significance to fields such as cultural anthropology and sociology.

Older adults who participate in this study also have the advantage of being able to pass on their own wisdom to younger people. This could have a secondary effect of increasing the self-efficacy of older adults (Ardelt & Jeste, 2018), which is desirable from a gerontological perspective. Thus, the study will also examine how older participants feel about passing on the wisdom of living in harmony with nature to young people.

Methods

Participants

A total of 218 Japanese older adults (aged 65-85) participated in this survey. The mean age of the participants was 73.04 ($SD = 5.07$); 104 males and 114 females. Participants were recruited through Intage Inc., Japan's leading research firm. The contents of the study were explained at the beginning of the survey and it was clearly stated that non-participation in the

survey would not result in any disadvantage. Informed consent was obtained as described above.

Measurements

Participants were asked about the two questions: (1) “Please feel free to answer the ways to take advantage of nature’s benefits that you know or practice (e.g., farming without harvesting more than necessary). Any description is acceptable,” and (2) “Please feel free to answer the ways to cope with nature’s threats that you know or practice (e.g., countermeasures against snow accumulation in areas with heavy snowfall). Any description is acceptable.” No time limit or word limit was set for responses.

We also asked about the participants’ perception of passing on their knowledge and experience of co-existence with nature to the younger generation. Questionnaire items were “feeling good,” “important,” “meaningful,” “useless (reversed item),” “feeling a sense of self-affirmation,” “enjoyable,” and “comfortable.” Participants responded to these items using a six-point Likert scale ranging from “1. not at all agree” to “6. very much agree.” Mean scores were calculated ($\alpha = .79$), and higher scores indicated a more positive perception of passing on their knowledge and experience.

Demographic items included participants’ age, gender, current residence (prefecture), longest residence in life (prefecture), cohabitation, work status, and subjective wealth. Cohabitation was measured by the single item (answer: yes or no), “Do you currently live alone?” Work status was measured by the single item (answer: yes or no), “Do you currently have a job?” Subjective wealth was measured by the single item (seven-point Likert scale), “How do you feel about the current economic aspects of your life?”

Procedure and Analysis

All procedures were conducted online in September 2022. Participants agreed to participate in the study after being briefed on its content. Participants were asked two questions about the utilization of nature’s benefits and countermeasures against nature’s threats. The order of these questions was counterbalanced. Then, participants were asked about the perception of passing on their knowledge and experience of co-existence with nature to the younger generation. Finally, participants answered the items on the demographics.

The statistical software R (ver. 4.2.0) was used for the analysis. Regarding the two questions of the utilization of nature’s benefits and countermeasures against nature’s threats, we used the R package of RMeCab (Ishida & Kudo, 2022). Text mining was conducted to capture overall trends in open-ended data (Higuchi, 2017). The R codes and data used in the analysis were posted on the Open Science Framework (OSF) repository (https://osf.io/3h9dy/?view_only=446dc1ae8ef440fb9944b5572e54af75).

Results

Table 1 shows where the participants lived and where they resided the longest in their lives (prefectures). The total number of words used in the answer to the utilization of nature’s benefits was $N = 3590$, and in the answer of the countermeasures against nature’s threats was $N = 3663$. In this study, we calculated and referred to the term frequency-inverse document frequency (TF-IDF). The details of TF-IDF can be seen in Aizawa (2003). If the TF-IDF

value is higher, the word is more characteristic in the text (Ogiso, Komachi, & Matsumoto, 2013). A list of TF-IDFs (top seven each) is provided in Table 2 (see OSF for each participant's responses).

Table 1. Each number of participants' current residence and longest residence in life.

prefecture	current	in life	prefecture	current	in life
Hokkaido	10	10	Shiga	0	0
Aomori	2	2	Kyoto	3	5
Iwate	2	2	Osaka	23	24
Miyagi	4	4	Hyogo	12	12
Akita	1	1	Nara	4	4
Yamagata	2	2	Wakayama	1	1
Fukushima	4	4	Tottori	0	0
Ibaraki	4	5	Shimane	0	0
Tochigi	0	0	Okayama	1	1
Gunma	2	1	Hiroshima	7	7
Saitama	6	6	Yamaguchi	2	2
Chiba	11	9	Tokushima	6	5
Tokyo	26	29	Kagawa	6	6
Kanagawa	21	21	Ehime	3	3
Niigata	2	2	Kochi	0	0
Toyama	2	2	Fukuoka	5	5
Ishikawa	1	1	Saga	0	0
Fukui	1	1	Nagasaki	1	1
Yamanashi	1	0	Kumamoto	3	3
Nagano	5	5	Oita	1	0
Gifu	4	3	Miyazaki	4	4
Shizuoka	7	8	Kagoshima	2	2
Aichi	11	11	Okinawa	2	1
Mie	3	3	Total (N)	218	218

Table 2. TF-IDFs for each item.

order	utilization of nature's benefits		countermeasures against nature's threats	
	words	TF-IDF	words	TF-IDF
1	power generation	80	typhoon	90
2	sunlight	54	countermeasure	71
3	plantation	34	earthquake	62
4	vegetable	34	disaster	44
5	family	32	nature	20
6	nature	32	house	13
7	utilization	22	time	13

As for the item of the utilization of nature's benefits, many of the descriptions were related to solar power generation and home gardens. Specifically, we found some answers such that "incorporating solar power into homes," and "becoming self-sufficient through a vegetable garden." Some participants also stated that they would reduce the use of pesticides, and release car ducks and ducklings in the rice paddies, which eat pests.

As for the item of the countermeasures against nature's threats, many of the descriptions were related to typhoons and earthquakes. Specifically, we found some answers such that

“weeding and cleaning of drainage ditches in front of their homes in response to typhoons and heavy rains,” and “preparing emergency food against earthquakes.” Some participants also stated that they would wrap a towel around the water pipe before it gets cold in preparation for winter.

Regarding the participants’ perception of passing on their knowledge and experience of co-existence with nature to the younger generation, the mean scores of the seven items were $M = 4.29$ ($SD = 0.76$). A one-group t -test was conducted comparing this value to the midpoint of the six-point Likert scale (i.e., 3.5). As a result, participants’ perceptions were significantly more positive than the midpoint ($t(217) = 15.32, p < .001, d = 1.04$).

Discussion

In this study, we investigated a wide range of wisdom developed through the utilization of nature’s benefits and countermeasures against nature’s threats, with Japanese older participants. We found that the participants had a very wide variety of “ways of living with nature.” It was also clear that older adults viewed favorably informing the younger generation of the methods to live in harmony with nature.

Older adults may be superior to other generations in terms of having the wisdom to live in harmony with nature. Informing other generations about this characteristic would help to affirm their negative attitudes toward older adults. Prejudice and discrimination against older adults are important social issues, along with prejudice and discrimination based on race and gender (Ayalon et al., 2019; Shimizu, Hashimoto, & Karasawa, 2022), and negative attitudes such as older adults being “stubborn” are widespread and common (North & Fiske, 2013). Such negative attitudes have undesirable impacts on the well-being of older adults and should be improved (Kornadt, Albert, Hoffmann, Murdock, & Nell, 2021; Shimizu, 2021). Strategies to translate our findings into improvements in ageism will need to be explored in more detail.

We found such findings described above, but there are two major limitations of this study. First, the qualitative analysis was inadequate. Additional analysis would be needed to determine if responses differ based on the age and gender of the participants. It will also be necessary to look at some other values than TF-IDF to get a broader picture of the trends in the data. Second, the participants are disproportionately located in large cities (e.g., Tokyo, Osaka, and Kanagawa; see Table 1). Older people who have particular wisdom to live in harmony with nature are thought to reside in rural areas. Therefore, it would be necessary to conduct a similar survey with a larger sample of older adults living in the suburbs.

Conclusion

As described in the Introduction, it is important to take advantage of nature’s benefits and to take measures against nature’s threats. In doing so, there is a great deal to be learned from the extensive wisdom of older adults. In this study, the wisdom of older adults regarding living in harmony with nature was organized and made public as a data set. We consider this to be of high material value in gerontological and psychological research. We hope that the findings of this study will be applied to create a world in which older adults can live actively.

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The Interaction Between Biological and Sociocultural Factors Increases Risk of Cancer in East Asian Alcohol Flushers

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Abstract

One of the most common causes of human cancer is alcohol consumption. There has been evidence that shows drinking increases the risk of cancer in the mouth and throat, larynx, colon, liver, female breast, and especially the esophagus. However, much of the existing data is collected from Western countries. This literature review aims to evaluate the interaction between genetic influences, behaviors, and environments for the development of cancer through the consumption of alcohol in East Asian individuals. The targeted population was selected specifically for their unique facial flushing reaction after consuming alcohol. Alcohol flushing is an allergic response triggered mainly by the inactive aldehyde dehydrogenase-2 (ALDH2) genotype. Study participants range from adults in East Asian countries (China, Japan, and Korea) to college students with East Asian ethnicities in the United States. While previous research has suggested the association between ALDH2 inactive gene flushing response and alcohol-associated cancers, Asian flushers are more at risk due to social, psychological, and cultural influences on drinking behavior.

Keywords: Alcohol Consumption, Sociocultural Context, Inactive Aldehyde Dehydrogenase-2, Asian Flush, Cancer Risk

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Introduction - Biopsychosocial Factors in Alcohol Associated Cancers: A Literature Review

While alcohol could be consumed recreationally and considered a social lubricant when consumed at a moderate level, it is also a well-established risk factor for carcinogenesis (Choi et al., 2017). Many epidemiological studies have pointed out that the mass proportion of cancer cases is alcohol-related. However, few studies have investigated the role of sociocultural factors that may moderate the amount consumed, and thus cancer risk. Furthermore, there has been limited literature about the risk among the East Asian population. Notably, the difference in genetic makeup and sociocultural factors between Asian and Western countries must be considered.

Most East Asian populations inherited the deficient alcohol-metabolizing enzyme ALDH2, resulting in a unique physical reaction called Asian flush in response to alcohol consumption. Individuals with the inactive enzyme have been shown to have an increased risk of alcohol-related cancer, in which drinking is responsible for an extra 58%-69% chance of esophageal cancer (Brooks et al., 2009). Despite having a lower tolerance for alcohol compared with other ethnic groups, binge drinking behavior in Asian flushers is mostly characterized by social purposes (Grant et al., 2004; Ko & Sohn., 2018). Multiple social factors like social settings, social context, and the presence of peers could contribute greatly to mass alcohol consumption. Additionally, Asian cultures' belief in the importance of maintaining social harmony should also be taken into account. This demonstrates how ethnic differences in genetic makeup, reactions to alcohol, and beliefs in Asian descent individuals interact and contribute to their alcohol-related cancer development. A better understanding of this relationship will help primary intervention for alcohol-related cancer (Hendershot et al., 2010).

The purpose of this review is to examine the interconnections between genetic predisposition and sociocultural factors to the development of cancers in persons of Asian ancestry. Filling the gap of understanding the facial flushing reaction and an individual's perception, motivation, and behaviors related to alcohol drinking will aid risk prevention. Many studies were conducted qualitatively with questionnaires and self-reports to gain insight into individuals' alcohol consumption habits. The facial flushing reaction was based on the results of self-reports and genetic screening for the ALDH2 gene. Participants represent East Asian populations and Asian Americans of the same national origins. From the literature, it was found that the strong gene-environment interaction between the ALDH2 inactive genotype and the socio-cultural context of drinking can impact the risk of cancer development in Asian populations.

The Flushing Response

Wolff was the first to identify flushing as an ethnic difference in alcohol reaction between Caucasian and Asian individuals in 1972 (as cited in Johnson & Nagoshi, 1990). Through photometric measures of the skin after administering a small amount of alcohol to participants, adults of Asian ancestry flushed (facial redness) while Caucasians did not. The same result was observed in children who were not previously exposed to alcohol. The study demonstrated that flushing reactions did not mitigate due to constant exposure to alcohol. Wolff's findings asserted the phenomenon of the 'Asian flush' and laid the foundation for future research on the underlying mechanisms of this difference. Approximately 40% of the

East Asian population experience facial flushing after consuming alcohol, which demonstrates the possession of the inactive alcohol metabolizing gene (Lee et al., 2014).

Facial redness is only one of many reactions to alcohol intoxication; Erikson (2006) summarized the available acetaldehyde research and some other notable effects were found to be increased skin temperature, subjective hotness, increased heart and respiration rates, reduced blood pressure, dry mouth or throat, nausea and headache, and even euphoria. Alcohol dehydrogenase (ADH) and acetaldehyde dehydrogenase 2 (ALDH2) are the two key enzymes responsible for the metabolism of alcohol in the liver. However, ALDH2 is often assessed in the association between genetic polymorphism and flushing, due to its role in converting the toxic intermediate acetaldehyde found in alcohol to nontoxic acetate Matsumura et al. (2019). The study mimicked human ALDH2 deficiency in mice through molecular and clinical phenotype modifications. Both the genetic correction and the control group underwent acute alcohol treatment. Results of the study showed an increased level of blood acetaldehyde levels, indicating the incompetence of alcohol metabolism in the liver of ALDH2 deficient mice. These findings support the genetic basis of differences in alcohol reaction, which is consistent with Wolff's original study (1972).

Additionally, the mice who were genetically treated for ALDH2 deficiency performed better in behavioral tests in comparison to the untreated ALDH2 control group (Matsumura et al., 2019). The result indicated that alcohol-induced maladaptive behavior could be associated with ALDH2 deficiency. While translating results from mice to humans has proved challenging, the result suggested a review of alcohol-related behavior in humans with the ALDH2 flushing gene is necessary to further understand the role that the Asian flush symptom plays in an individual's decision to consume alcohol.

Alcohol Drinking Behavior in East Asian Individuals

Given the prevalence of Matsumura and colleagues' (2019) findings of the association between maladaptive behaviors and genetic variations of the ALDH2 gene, a review of studies involving drinking behavior in individuals with ALDH2 deficiency. These include the cultural and social context in which the behavior of alcohol consumption took place (K. Kim et al., 2019; Ko & Sohn, 2018; Nie et al., 2018; O'Shea et al., 2017; Parrish et al., 1990).

Sociocultural Context of Alcohol Consumption

The consumption of alcoholic drinks has been widely accepted as social behavior. Alcohol could be consumed either ceremoniously, religiously, or dismissively. The contexts of consumption might be universal, but underlying factors like motivations and attitudes towards drinking, or manner of consumption vary between countries (Ko & Sohn, 2018). Especially in East Asian countries where social harmony (members of a community maintain its peace collectively) is prioritized over individual needs, alcohol consumption is characterized more by adherence to group norms. As cited by Lincoln (2016), Craig (2002) found that the behavior of collective alcohol consumption in Vietnam was often accompanied by a chant. Not only does the chant inflict peer pressure on members of the party, but the sharing of alcohol between members after hearing the chants has also become customary. Within the same review, the author used MacAndrew and Edgerton's (1969) findings to suggest that alcohol temporarily relieved hierarchies between members. This result suggests that an extended function of alcohol within social-professional contexts exists. Employees could conform to the drinking behavior of their supervisors to benefit their professional

development. Ko and Sohn (2018) recognized the lack of literature regarding drinking culture and drinking as social behavior outside of Western countries. They studied data collected from 1,185 subjects in Korea with a drinking frequency of at least once a month. Drinking behavior was measured by examining the amount and frequency of drinking across different situations. Results from the study demonstrated that drinking in Korea is most prominent in social situations as shown by the large proportion of social drinking compared to drinking alone. For example, going out with friends made up 44.2% of drinking occasions, while drinking with meals at home was only 27.5% ($P < .001$). Results were even consistent across different age groups, with only a notable increase in social professional contexts in individuals older than 50. The results confirmed the importance of the presence of others in compliance with alcohol consumption. Based on the findings of the study, the primary source of drinking in Korea was to promote interpersonal connections or develop professional relationships (Ko & Sohn., 2018).

As the belief in social harmony is consistent across East Asian countries, this is not limited to Koreans. A cross-sectional study conducted in China utilized self-reported ratings to assess the relationship between harmful drinking behavior and social capital (Nie et al., 2018). Since there is no universal measurement for social capital, researchers (2018) used participants' self-ratings of social cohesion, membership in social organizations, and frequency of participation to operationally define social contexts ($N = 13,610$). Participants across 3 different cities in China reported a higher prevalence of drinking behavior with their membership in social organizations, which was also noted by Ko and Sohn (2018). In their study, drinking was found most prominent in social settings. Nie and colleagues (2018) also demonstrated the gender difference in social contexts in which harmful drinking behavior occurred. They found that men engaged in harmful drinking behaviors more often with a frequency of social participation, while harmful drinking behaviors ascended with high social cohesion among women. This suggests that different social contexts could elicit different drinking behaviors.

The role of culture as a determinant of drinking behavior was investigated by the correlation between consumption level and the embarrassment affect related to the flushing reaction among Japanese ($N = 846$) and Japanese-Americans ($N = 737$) (Parrish et al., 1990). Drinkers with identified flushing status were interviewed regarding their estimated alcohol intake in the past 2 weeks, their flushing tendency, and their frequency of subjective drunkenness. Each participant was then asked whether they felt embarrassed about flushing. While flushers reported consuming less alcohol, the difference between the frequency of drunkenness between those who were embarrassed by flushing and those that did not flush was insignificant. Furthermore, Japanese participants reported that they were less embarrassed by their flushing reactions than their Japanese-American counterparts (Parrish et al., 1990). Cultural differences in the emotional appraisal of alcohol-induced flushing between Japanese and Japanese Americans highlight the social nature of drinking in East Asia. Taken together, these observations demonstrate that drinking behavior in East Asian individuals is strongly influenced by both cultural customs and social engagement. While turning red signals individuals to stop drinking, the protective role of flushing may be canceled out by the pro-drinking social cultures of East Asian populations.

Drinking Behavior in Flushers

The sub-population of overseas East Asian individuals, especially at Western universities, is of special concern due to the social nature of their environment (Brooks et al., 2009). O'Shea

and colleagues (2017) were the first to investigate the relationship between drinking behavior in East Asian college students who possess the inactive ALDH2 gene and the drinking behavior of peers around them ($N = 318$). Researchers looked at students' reports of the amount of alcohol consumed and the number of intoxicated friends within a social setting. Overall, the amount of alcohol consumed by East Asian college students was positively correlated with peer drunkenness. While non-flushing students consumed more alcohol overall, flushing students conformed to peer drunkenness (drunken behavior by peers) more. The result showed alcohol consumption at the highest level when peer drunkenness was also at the highest. This is important because it demonstrates how peer drunkenness establishes a temporary social norm that influences the perceived permissiveness of alcohol consumption in flushers. The risk effects of exposure to peer pressure were also reported in K. Kim and colleagues' (2019) mixed-method study of drinking behavior among flushers college students in Singapore. Findings from these studies also demonstrated the impact of membership in a highly social group, such as college or university, on the tendency to consume alcohol, as also found by Nie and colleagues (2018).

While the survey did not report a heightened amount of alcohol consumed by flushers compared to non-flushers, flushers reported feeling unspoken pressures in drinking sessions (K. Kim et al., 2019). During the group discussion, flushers demonstrated the need for intoxication to conform to non-flusher peers. They refrained from discussing alcohol-associated health risks with flushers within the drinking environment to maintain social harmony. Still, they reported supportive intentions to their flusher friends outside of pro-alcohol social settings (K. Kim et al., 2019). This is important because it demonstrated the bidirectional ambivalence of peer pressure within an alcohol session. First, flushers overestimate expectations from their peers and drink more than what their peers expect of them. Their peers then feel pressured to not disrupt the subjective norm for drinking created by flushers'. This suggests that the permissive drinking norms within a social context are cultivated by both flushers and non-flusher peers, leading to pressure-driven drinking among flushers.

Lack of Knowledge of Asian Flush-Related Risk

The poor knowledge about the flushing reaction, the moderate drinking guideline, and the long-term consequences of drinking put East Asian college students who flush at greater risk (K. Kim et al., 2019). Both flushers and non-flushers participants generally reported poor management of their drinking behavior due to a lack of understanding of what constituted a standard alcoholic drink. Thus, participants reported subjective measures of drinking to quantify excessive consumption rather than keeping counts. For example, drunkenness was reported to be measured with physiological reactions and mental or emotional states. Also apparent was the lack of knowledge about Asian flush, with more than half of the participants reported not knowing about both the explanation and the symptoms. Furthermore, K. Kim and colleagues found that only 42% of flushers reported knowing about alcohol-related long-term health effects. The results highlighted the need for education about alcohol-related risks and moderate drinking guidelines for Asian flushers. Psychoeducation can also illuminate the roles of beliefs, behavior, and motivations to advocate for better impulse control within social drinking circumstances.

Risk of Alcohol-Related Cancer Among Flushers

Given the prevalence of alcohol-related cancer risk and mortality, individuals with the inactive alcohol metabolizing gene may be at an elevated risk.

Alcohol Consumption Increases Risk of Cancer

While the development of cancer is a result of both genetic makeup and maladaptive behaviors, Lichtenstein and colleagues (2000) found that behavioral factors (72%) are more dominant than genetic factors (28%) (as cited in H. Kim et al., 2019). Among those behavioral factors, the consumption of alcohol is of particular interest. H. Kim et al., (2019) conducted a case-control study including 440 cases of newly diagnosed gastric cancer to examine the associated risk and alcohol consumption in Korea. Gastric cancer patients were asked about their drinking status, frequency, and amount. Results showed no statistically significant connection between alcohol consumption status or frequency to gastric cancer risk, the same was observed in alcohol consumption frequency. However, higher alcohol amounts were significantly correlated with a higher risk for gastric cancer. When stratified by sex, the positive association between alcohol consumption of $\geq 40\text{g/day}$ for men was not found to be significant by H. Kim and colleagues. Meanwhile, women who consumed half the amount (20g/day) still have significantly increased risk.

Although large consumption of alcohol is often found to be associated with an increased risk for gastric cancer (H. Kim et al., 2019), few studies have considered light and moderate amounts, which are the more prevalent levels of alcohol consumed within social contexts (Choi et al., 2017). Results from Choi and colleagues were inconsistent with H. Kim's findings due to a much larger sample size ($N = 23,323,730$) with various types of cancers (esophageal, gastric, colorectal). Researchers conducted a nationwide survey all over Korea using questionnaires regarding the amount and frequency of alcohol consumed. Individuals who consumed more than 30g/day were defined as heavy drinkers and less than 30g/day were classified as mild to moderate. After a median 5.4 years follow-up, even individuals who reported consuming less than 10g/day were found to have one of the three types of cancer. Moreover, the risk continuously increased until the daily amount was 20g . However, only the risk of esophageal cancer was found to be dose-dependent by H. Kim's team (2019). Choi and colleagues' findings contradict H. Kim et al. showing a stronger effect of alcohol consumption, suggesting that consumption of alcohol in any amount elevates the risk of developing various cancers, especially esophageal.

Additionally, given the higher risk of alcohol-related cancer risk in women due to a lower alcohol metabolic rate (H. Kim et al., 2019), individuals with an inherently lower amount of aldehyde dehydrogenase due to the inactive alcohol metabolic gene may be at even more at risk.

While Asian flushers were not found to consume more alcohol (K. Kim et al., 2019), East Asian individuals who flush because of the inactive ALDH2 gene are of particular interest in the study of genetic and environmental interaction in the development of cancer because even light drinking is found to be associated with increased cancer risk (Choi et al., 2017).

Elevated Cancer Risk in ALDH2 Inactive Flushers

Studies consistently demonstrated the association between the presence of inactive ALDH2 and alcohol-related cancer risk (Matsuo et al., 2013; T. Yokoyama et al., 1999; 2013). To test the effect of the inactive ALDH2 genotype on alcohol-related cancer susceptibility, researchers took DNA samples from 668 Japanese alcoholic men (91 with esophageal cancer) (T. Yokoyama et al., 1999). They also investigated the relationship between flushing and cancer by asking 82 alcoholic cancer patients about current or former flushing responses after alcohol consumption. Cancer risk was found to be significantly higher for alcoholics, however, alcoholics with the inactive ALDH2 gene ($OR = 12.76$) were found to be six times more likely to develop cancer than those without ($OR = 2.03$). Furthermore, alcoholic esophageal cancer patients were more likely to have the inactive allele compared to alcoholics without ($OR = 0.560$ vs. $OR = 0.099$, respectively). Knowing that any amount of drinking is associated with an elevated risk of cancer (Choi et al., 2017), the study's findings suggest that cancer susceptibility among heavy drinkers can vary based on their ALDH2 genotypes. This is important because it highlights how impaired alcohol metabolism caused by the inactive ALDH2 gene could exacerbate the consequences of heavy drinking.

Based on the finding that drinking is strongly associated with, but not limited to, esophageal cancer (Choi et al., 2017), Matsuo et al., (2013) studied the relationship between polymorphed ALDH2 and alcohol drinking in the risk of stomach cancer. Researchers compared 697 cancer cases and 1372 non-cancer control subjects in Japan between 2001 and 2005. Similar to the study of T. Yokoyama and colleagues in 1999, the inactive ALDH2 genotype was examined using a DNA test, and information on alcohol consumption was gathered using a self-administered questionnaire. The results were unsurprising, heavy drinkers showed a higher risk of stomach cancer ($OR = 1.72$) compared to non-drinkers. Moreover, cancer risk was found to be significantly higher for heavy drinkers with the inactive gene ($OR = 3.93$) than for those with the regular ALDH2 ($OR = 1.28$) relative to non-drinkers ($P = 0.0054$). Since the researchers did not find any significant connection between cancer and individuals with the regular ALDH2 gene, the result further confirmed the genetic-environmental interaction in the risk of carcinogenesis. Additionally, the statistical significance ($P = 0.007$) in the interaction between the presence of inactive ALDH2 and atrophic gastritis suggests the role of ALDH2 as a risk factor in the precancerous stage of stomach cancer. This is important because it suggests that screening for ALDH2 could be a preventive measure against cancer, especially within East Asian populations where the inactive gene is most prominent.

Acknowledging the interaction between inactive ALDH2 gene and heavy drinking in the risk of esophageal cancer in East Asian populations, T. Yokoyama and colleagues (2013) invented the health-risk appraisal (HRA) model that takes into account the alcohol flushing response, drinking behavior, smoking, and diet to identify esophageal cancer risk in Japanese men who drink. A higher score indicated heavier and more frequent consumption of alcoholic beverages, thus, the higher the subject's cancer risk. The HRA questionnaire then was administered to 2221 Japanese men aged 50 and older, before getting screened for upper gastrointestinal cancer. Researchers found a higher cancer detection rate among those with HRA scores higher than 11 (4.27%) than the rate of 0.67% in the group who scored lower. The findings proposed the adaptation of HRA in alcohol-related cancer risk public education campaigns to encourage individuals who engage in maladaptive drinking behavior to undergo endoscopic screening. A future HRA model incorporating ALDH2 genetic screening may be better at identifying cancer risk than just flushing tendency. With that, the ALDH2

incorporated HRA questionnaire would have better implications for screening in larger East Asian populations.

Conclusion

The studies reviewed demonstrate a genetic-environment interaction for alcohol-related cancer risk in East Asian populations. Through a biopsychosocial approach, those of East Asian descent are at particular risk because of their inherited lower alcohol metabolic rate and the normalization of alcohol consumption in social contexts. The most common reasons for alcohol consumption are social group involvement, maintaining social harmony, peer pressure, and promoting interpersonal connections.

Genetic feedback and flushing questionnaire have been identified as feasible preventive methods not only for cancer but also for changing heavy drinking behaviors. This suggests that individuals who engage in heavy social drinking are more motivated to reduce their drinking, knowing the long-term effects of alcohol on their physiological response. Furthermore, individuals are also at a higher risk due to a lack of knowledge about the Asian flush response and the ALDH2 inactive gene (Hendershot et al., 2010).

The studies reviewed do have some limitations. Except for Hendershot et al., (2010), these studies did not consider participants' prior knowledge of the interaction between alcohol and cancer, or of cancer and inactive ALDH2 gene. Notably, only two of the 10 studies included women. The lack of gender validity has overlooked the possible effect of alcohol on the naturally low level of ALDH2 in women. Also, specific populations were represented more often than others. Of all studies discussed, subjects were limited to individuals of Korean, Japanese, or Chinese descent. However, despite the limited diversity in the represented populations, the overlaps in the presence of flushing, deficient ALDH2, social drinking behaviors, and increased cancer risk suggest common genetic-environmental interaction among East Asian individuals. Methodological issues and limitations needed to be discussed. A central limitation of research on the social nature of drinking was the inconsistencies across studies on the conceptual definitions of social drinking. For example, social drinking was defined as drinking to promote both social and professional relationships by Ko & Sohn (2018), while O'Shea and colleagues (2017) suggested it to be conforming to peer drunkenness. If studies vary in the definition of social drinking, the degree to which it affects the development of cancer may also vary. Furthermore, how participants' drinking behavior is assessed was mainly self-reports. That is, subjects' biases when reporting their drinking behaviors should be taken into account when viewing the correlation between social drinking and cancer risk. Moreover, other variables like diet, sleep schedule, exercise, stress, and substance use were excluded from many of the studies. Maladaptive behaviors within the context of these variables could be proposed in the same vein in the development of cancer.

As mentioned above, further inquiry is needed to examine the possible role of health-related behaviors in the risk of cancer among East Asian individuals. Direct observational and diary methods could provide a more accurate insight into an individual's drinking compared to self-report. Future research should consider the use of genetic feedback to detect the presence of the inactive gene as preventative measures for alcohol-related health risks. In combination with psychological approaches, knowing the risks from genetic detection could benefit the rehabilitation process for alcohol use disorder. Taking into account the social role of alcohol, widespread efforts should be made to promote moderate consumption within social contexts rather than just abstinence.

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Research on Self-Esteem of Adolescents of Mongolia

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Abstract

Since Mongolia's transformation from a socialist to a democratic society in 1990, the country's population has experienced significant changes in regard to both ways of life and personal values. This political shift has had both positive and negative effects on individuals' mental health but has especially affected adolescents. Adolescence is a period of intense physical and psychological change, and self-esteem, or the evaluation of one's own worth, plays an integral role in individual development. It can be particularly difficult for adolescents, who account for 18.5 percent of Mongolia's population, to balance external societal and political changes alongside their own already tumultuous inner worlds. In the interest of exploring how adolescents define and interpret their "ideal self", we used the Dembo-Rubinstein Scale of Self-Esteem Measurement to assess 50 university students and their evaluations of their own self-worth in light of recent cultural transformations in the country. According to Hewitt, John P. (2009), self-esteem is the level of confidence one has in their own worth or talents. This valuation is influenced by beliefs about oneself as well as feelings and emotional states, such as triumph, sadness, pride, and guilt. The ideal self is a component of a person's self-concept that includes their desires, hopes, and wants (Higgins 1987; Rogers 1959). Adolescents' self-esteem only begins to stabilize as they synthesize the values of their socio-political environment with their own sense of self-identity. By gaining a deeper understanding of what they personally expect from themselves in order to achieve an ideal self adolescent will have greater means and opportunities to grow psychologically, socially, and intellectually mature.

Keywords: Adolescents, Self-Esteem, Ideal Self, Self-Identity

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Introduction

The direction of a person's self-worth is directly related to the social environment, and the notion of "I," including his beliefs, values, ambitions, and self-confidence, and generated in the process of connecting with the people around him. According to scientists, self-esteem not only affects an individual's intellect and soul, but it also plays an important role in socializing. Children aged 0 to 18 make up 38.3 percent of Mongolia's population, with adolescents accounting for 18.5 percent. Researching and acknowledging the self-esteem of adolescents will increase their probabilities of mental and intellectual development, as well as have a beneficial impact on their socialization. Theoretical understanding of self-esteem dates back to the nineteenth century. Psychologist and philosopher W. James defined self-esteem for the first time in 1890. He considered "self-esteem" and "self-development" as psychological concepts, and defined self-esteem as a sense of superiority, self-respect, and life satisfaction. (James, 1890). Regarding self-esteem, academics such as Maurice Rosenberg, Kompersmith, Nathaniel Branden, A.L. Storey, V. Tafarodi, Milne, Jordan, Spencer, Dembo-Rubenstein, A. Prihozhan, P.V. Yanshin, and V.G. Kovalev proposed the theory. Rosenberg and Coppersmith then introduced the idea of self-esteem level in 1965 and 1967, respectively, and it has since been researched theoretically. Rosenberg (1969) described self-esteem as "focusing on oneself", while Coppersmith said that "self-esteem is the assessment of one's character and personal value". Coppersmith developed a 50-item scale of self-esteem and classified it into four areas: family, peers, school, and general social activities. In 1969, N. Branden described the element of self-esteem as a sense of self-efficacy. S. L. Rubinstein, a psychologist, believed that adolescent self-esteem begins with an assessment of self-determination and control over their activities. By accepting and reflecting on their surroundings, adolescents begin to shape their behavior and develop self-esteem. In this regard, "realizing and appreciating one's own distinct features is a prerequisite for spiritually experiencing one's 'I'."

Research Section

A. *Research Methodology*

One of the methods of psycho-diagnosis of self-esteem is the Dembo-Rubinstein test. This method is regarded to be capable of determining adolescents' present levels of self-esteem and ideal self. A. M. Prihozhan, a well-known Russian psychologist, extended the method with alternatives for youngsters, allowing them to assess their self-esteem while simultaneously viewing it as an indicator of individual behavior.

Research Objective:

Identifying adolescents' self-esteem and ideal self in the context of social environment changes.

Research Objectives:

1. To observe the behavior patterns of adolescents and determine the level of an ideal self
2. To determine the self-esteem of the students who participated in the study
3. To develop recommendations based on research results

B. Research Methods and Methodology

A total of 50 first-year students, 25 males, and 25 females, from the University of Finance and Economics and the University of Science and Technology in Darkhan Province of Mongolia, were chosen using a sampling approach, and the Dembo-Rubinstein method was used for the study. A.M. Prihozhan's model was used to assess students' self-esteem. The research employed interview and observation methods, with some results being analyzed using mathematical statistics.

Result of the Research

We examined the self-evaluation and sociability of 50 first-year students from two different universities.

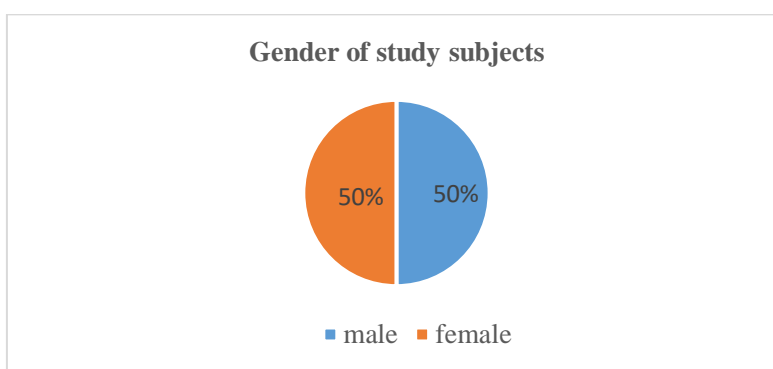


Figure 1: Gender of the students who participated in the research study

Finger 1. The gender ratio of the study subjects was equal.

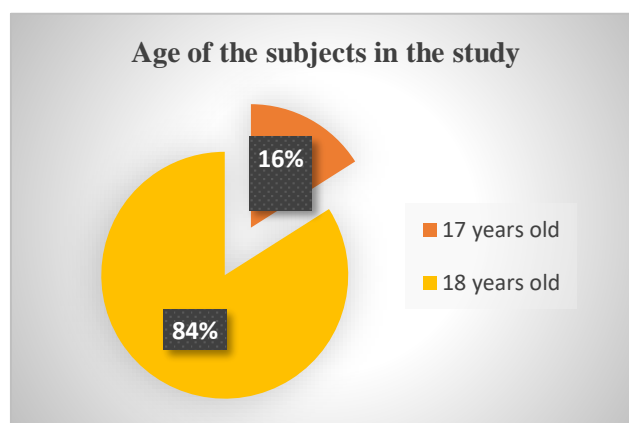


Figure 2: Age of the subjects in the study

Figure 2. In terms of age, 8 students were 17 years old and 42 students were 18 years old.

Development of Self-Assessment Research

The level of self-assessment was studied by indicators such as health, behavior, intelligence, talent, dexterity, popularity among peers, appearance, and self-confidence.

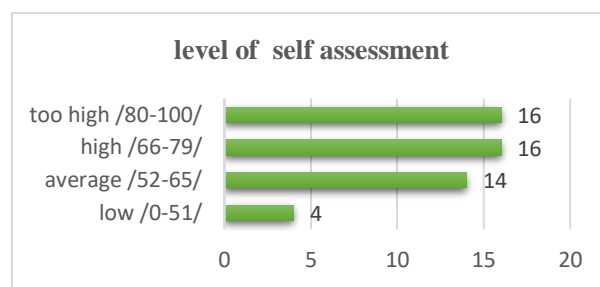


Figure 3: Level of self-assessment

Figure 3. As a result of the research, 4 students evaluated themselves at the low /0-51/ level, 14 students at the normal average /52-65/ level, 16 students at the normal high /66-79/ level, and 16 students at the extremely high level.

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Behavior	50	75.00	25.00	100.00	76.8800	14.20928
Intelligence and talent	50	90.00	10.00	100.00	73.6800	15.29231
dexterity	50	88.00	12.00	100.00	69.4200	21.51515
popularity / Respectability among peers	50	100.00	.00	100.00	64.6600	24.39690
Appearance	50	100.00	.00	100.00	65.4400	22.52904
self-confidence	50	90.00	10.00	100.00	67.8600	21.56434
Valid N (listwise)	50					

Table 1: self-assessment statistics

From Table No. 1 students' behavior, intelligence, talent, dexterity, appearance, and self-confidence are high, while their reputation among peers is average. In terms of age and gender, the value of self-evaluation level was close and no significant differences were found.

		Behavior	Intelligence and talent	Dexterity	Respectability/ popularity among peers	Appearance	Self-confidence
Behavior	Pearson Correlation	1	.298(*)	.406(**)	.389(**)	.400(**)	.271
	Sig. (2-tailed)		.035	.003	.005	.004	.057
	N	50	50	50	50	50	50

Intelligence and talent	Pearson Correlation	.298(*)	1	.535(**)	.655(**)	.738(**)	.680(**)
	Sig. (2-tailed)	.035		.000	.000	.000	.000
	N	50	50	50	50	50	50
Dexterity	Pearson Correlation	.406(**)	.535(**)	1	.489(**)	.444(**)	.383(**)
	Sig. (2-tailed)	.003	.000		.000	.001	.006
	N	50	50	50	50	50	50
Respectability/popularity among peers	Pearson Correlation	.389(**)	.655(**)	.489(**)	1	.832(**)	.809(**)
	Sig. (2-tailed)	.005	.000	.000		.000	.000
	N	50	50	50	50	50	50
Appearance	Pearson Correlation	.400(**)	.738(**)	.444(**)	.832(**)	1	.799(**)
	Sig. (2-tailed)	.004	.000	.001	.000		.000
	N	50	50	50	50	50	50
Self-confidence	Pearson Correlation	.271	.680(**)	.383(**)	.809(**)	.799(**)	1
	Sig. (2-tailed)	.057	.000	.006	.000	.000	
	N	50	50	50	50	50	50

Table 2: Correlations of self-assessment

From Table No. 2, From Table No. 2, it can be seen from the correlation of the level of students' self-evaluation by the group that students' intelligence and talent are positively related to appearance, dexterity, and popularity among peers, and they influence each other. On the other hand, popularity among peers has a significant positive correlation with appearance and self-confidence, which indicates that the external environment has an important effect on students' self-esteem.

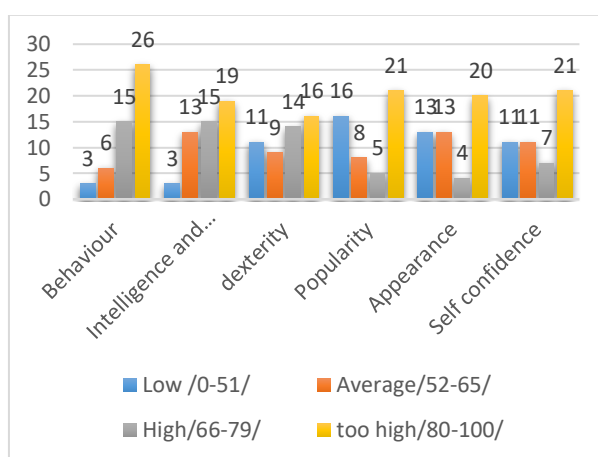


Figure 4: Level of self-esteem

Figure 4. Students assessed their behavior as exceptional, their knowledge and talent as excellent, and their appearance, reputation among peers, and self-confidence as above average.

Ideal Self-Assessment

The students' level of ideal self was studied by indicators such as health, behavior, intelligence, talent, dexterity, reputation among peers, appearance, and self-confidence.

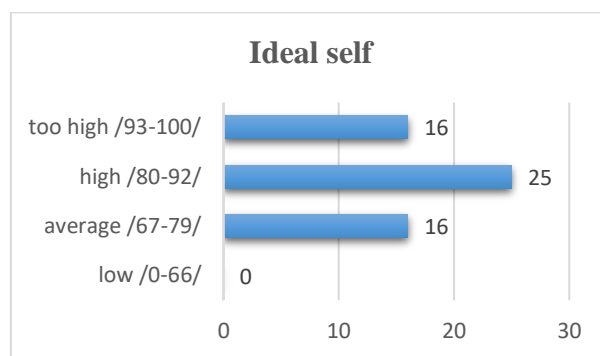


Figure 5: Ideal self

Figure 5. According to the level of students' ideal self, there are 9 students at an average level, 25 students at a high level, and 16 students at an extremely high level.

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Behavior	50	25.00	75.00	100.00	91.2800	8.06362
Intelligence and talent	50	20.00	80.00	100.00	93.8400	6.60661
dexterity	50	50.00	50.00	100.00	85.7600	13.21496
Respectability/ popularity among peers	50	70.00	30.00	100.00	81.6200	18.97677
appearance	50	49.00	51.00	100.00	85.8000	12.41132
Self-confidence	50	65.00	35.00	100.00	93.2200	10.60668

Table 3: Statistical performance of ideal self assessment

Table #3 demonstrates that no students underestimated their ideal self, which is an essential indicator of beneficial effects on personal growth. According to the level of ideal self, intelligence, talent, and self-confidence are overestimated, however, behavior, dexterity, peer popularity, and appearance are high.

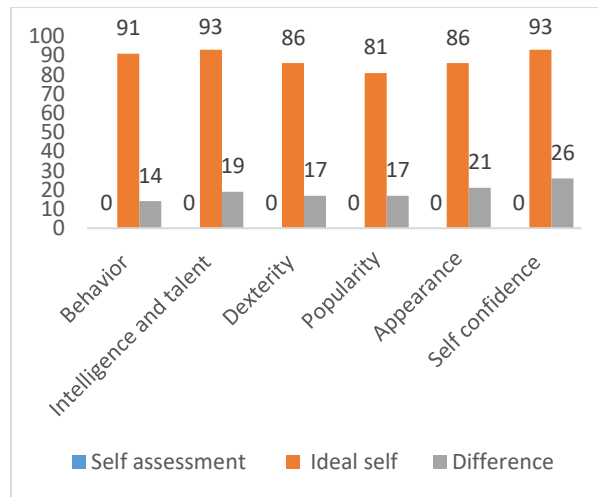


Figure 6: Self-assessment and level of ideal self-difference

Figure 6 shows the average level of self-esteem and the level of the ideal self of adolescents.

According to self-assessment, behavior is 77 percent, intellectual capacity is 74 percent, dexterity is 69 percent, popularity among peers is 64 percent, appearance is 65 percent, and self-confidence is 67 percent, which demonstrates that behavior, intelligence, dexterity, and self-confidence are scored highly, whereas reputation among peers and appearance are ranked average. In terms of the ideal self, behavior is 91 percent, intellectual capability is 93 percent, dexterity is 86 percent, reputation among peers is 81 percent, attractiveness is 86 percent, and self-confidence is 93 percent. Dexterity, peer reputation, and attractiveness are all assessed on a factual basis. Indicators of intelligence, talent, and self-confidence suggest that teenagers overestimate their potential. High self-esteem may be related to the fact that adolescents are not completely developed as people and are unable to appropriately analyze the outcomes of their actions and compare themselves to others. The graph shows that the difference between students' ideal self and self-assessment of self-esteem is 14 for behavior, 19 for intelligence and talent, 17 for dexterity, 17 for reputation among peers, 21 for appearance, and 26 for self-confidence. The mean of their self-assessment of their self-esteem and level of the ideal self is normal or higher, and the gap between the level of ideal self and level of self-assessment of their self-esteem is average. These findings demonstrate that the students who took part in the study were serious, and the results also demonstrate that they stick to true principles when handling any challenge. Self-esteem levels are similar and do not differ considerably when Dembo Rubinstein's indicators are compared by gender.

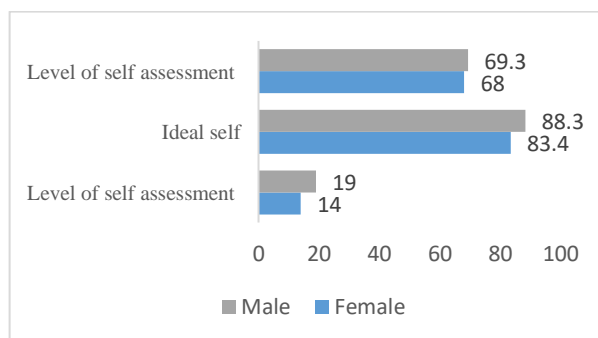


Figure 7: Self-assessment by gender

Figure 7. When comparing Dembo-Rubinstein's self-esteem indicators by gender, self-esteem levels are similar and do not differ significantly.

The Results of Observation of Behavioral Patterns in the Research Process

Because the students participated in the Dembo-Rubinstein self-esteem study on their own initiative, it was observed that they listened very well to the explanation of the research instructions given by the researcher and responded sincerely. Some students who completed the task quickly (5 minutes) had too high a self-assessment level. On the other hand, for the students who took too long to complete it, it was observed that since it was a new task they placed a lot of importance on it. Hiding, concealing/covering up, and fearing others were commonly observed when students responded to their self-assessment and level of the ideal self. This may be due to a manifestation of increased anxiety caused by the conflict between the strong desire for self-esteem and the fear of showing one's own failures.

Interview Results

In order to gain a deeper understanding of the characteristics of students' motivation and self-esteem, the method of individual interviews with students was additionally used. After processing the results of independent work performance, in order to clarify the problems and difficulties faced by 4 (equal gender) students with low self-esteem, we conducted an interview within the framework of the following questions in order to identify their maximum value, needs, and feelings. The interview is summarized as follows:

Analysis of Collected Interview Data

Interview research question	Answering the interview	Results of the interview /conclusion/
What characteristics do you like about the main character of the movies (cartoons) you like to watch or the stories or novels you like to read?	KS-005: KIM, the main character of Find Me in Memories. He is kind, gentle, and respectful. KS-006: Kakegurui anime protagonist Yumeko Jabami. He is very intelligent, and fearless and works hard to achieve his goals. KS-028: Queen Sorkhugtan, the main character of the novel Sorkhugtani. She is a very intelligent, trustworthy, and kind woman. KS-040: GRU, the main character of the cartoon "Plan to Steal the Moon", the idea of doing things is very intelligent, and he can create a warm and peaceful environment.	During the interview, it was observed that the positive meaning of their self-esteem is kindness, intelligence, high courage, the spirit to do anything, the ability to be diligent, and the ability to trust people. In the questions aimed at identifying their own desires and needs, for boys, their physical growth and strength are emphasized, while for girls, they prefer to be sweet, small, and gentle, but strong, and respectful people. The main force for self-confidence and motivation is the
Let's try to imagine any animal that does	KS-005: big body, messy hair, smart KS-006: A small, sweet creature, who is only gentle with me, and has a lot of power	

<p>not exist in the world. (describe it by speaking or drawing picturing) Describe what abilities this unique animal has to have in order to protect you.</p>	<p>KS-028: A big, warm animal with warm eyes, intelligent, and has the ability to love and respect people. KS-040: It has a large body and the eyes are in a unique shape and the color green, and with a black body. Stronger than others read everyone's mind.</p>	<p>warmth of family and close people. From the interview of the students, it was observed during the interview that the demands coming from society are too high, and the signs of running away from the problem and turning away.</p>
<p>Where (with whom) are you more relaxed?</p>	<p>KS-005: with my family and by myself. KS-006: by myself and with my friends KS-028: Being alone in a quiet place and talking to myself makes me calmer. KS-040: Being with my grandmother used to give me the most relaxed and warm feeling. No one can give me that feeling.</p>	

Conclusion

1. A total of 50 students took part in the self-esteem survey. As a result of the study, 4 students evaluated themselves at the low /0-51/ level, 14 students at the normal average /52-65/ level, 16 students at the normal high /66-79/ level, and 16 students at the extremely high level. When Dembo-self-evaluation Rubinstein's scale is compared to the average indicators of class, age, and gender, the level of self-evaluation is similar, with no significant difference noted. As a result of the research, the group's assessments are above average. When the study's findings are compared to standard values, students' self-esteem is high or typical. This is regarded as a constructive characteristic since it implies that students are realistically comparing themselves, taking responsibility for themselves, and improving their ability to grow as individuals. Inadequate self-assessment in a minority of students suggests the necessity to organize self-development strategies focused on them at specific phases.

2. As a result of the self-assessment statistics, students' behavior, intelligence, talent, dexterity, appearance, and self-confidence are high, while their reputation among peers is average. Peer reputation has a high positive correlation with appearance and self-confidence, implying that pupils' self-concept is closely related to their environment. The positive meaning of their self-esteem emphasizes kindness, intelligence, courage, can-do spirit, diligence, and trustworthiness. For boys, their desires and needs emphasize their own physical growth and strength, while girls, prefer to be sweet, small, and gentle, but strong, and respectful of people. It was observed that the demands of society are too high for the students who rated their self-evaluation low. Therefore, the main force for self-confidence and motivation is the warmth of family and close people.

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Risk Analysis of Newspaper Articles Based on the First and Second Language of an Individual

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Abstract

Newspapers are a medium that spreads awareness about current day events, based on which individuals make decisions. In order to better understand decision making under conditions of risk, this study focused on decisions made by individuals – in regard to the Foreign Language Effect (FLE) - in their day-to-day life. Literature around FLE makes note of an emotional rational response among participants and we wanted to cross check those predictions in real life situations with the use of newspaper articles. Bilinguals were used to examine the participants' response to risk analysis in the event of motor vehicle accidents. This was done with the help of 3 articles in English on the aforementioned theme. The study also analysed if decisions made by an individual after reading the article in English differed based on their first language. The Independent Variable was the Language of the participant and the Dependent Variable was the Response Provided. We predicted that individuals whose foreign/second language was English would respond in a risk aversive manner. As there were comparatively fewer research papers on FLE and motor accidents, this paper aimed to add on to pre-existing research so as to be a base from which future researchers could build on.

Keywords: FLE, Risk Analysis, Newspaper Articles, Bilinguals, Motor Vehicle Accidents

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Introduction

Newspapers have been a staple in the homes of people for the past few decades and as such it can be assumed to play a hand in making decisions. In 1997, researchers found that individuals who read newspaper articles that have negative outlooks or information, tend to present an increase in catastrophizing, worry and anxiety (Johnston & Davey, 1997). In addition to this, De Hoog and Verboon (2020) noted that there was a positive correlation between news severity and personal relevance. This may allude to how individuals may make more decisions based on personal choices in case the news is severe as compared to when it is not severe. This study therefore seeks to better understand risk analysis of news articles pertaining to motor vehicle accidents based on the language used by the individual. As such, this study analyses the research question of whether risk analysis in areas of motor vehicle accident, differs based on the language used by bilingual individuals.

Based on the research problem mentioned above, this study hypothesises that individuals who respond in their second language will do so in a risk-taking manner as compared to those who use their first language. In terms of decision making, research has found that individuals tend to use emotional reasoning in situations where sentiment comes into play and analytical reasoning in non-sentimental situations (Savioni et al., 2022). Though Larrick et al. (1990) mentioned that the decisions an individual makes undergoes a cross-benefit analysis, current research noted that financial situations leading to a “sustained elevation of cortisol” led to higher rates of risk aversive behaviour and decisions (Kandasamy et al., 2014). Though research mentions such reasons for decision making in general, language as a component has been found to present varying responses.

Based on a meta-analysis conducted by Del Maschio et al. (2022), it was found that decision making differed based on the first/native language and the second/foreign language of an individual. The researchers were able to note that problems presented in the second language led to more unbiased decision making when compared to the first language; this was put to heuristics affecting individuals using one language over the other (Del Maschio et al., 2022). Another reason why decisions differ based on the language being used, is due to the effect of *word processing* (Caldwell-Harris, 2014). Costa et al. (2017) furthers this research by mentioning that the foreign language of an individual tends to have a lower *processing fluency* which is what leads to more analytical decision making.

Neurobiological data also notes that use of a foreign language in regard to emotionally challenged passages presents a lack of amygdala activation (Costa et al., 2017). In terms of language acquisition, it was found that if bilinguals acquired their languages at a close time period, they would be closer to each other in terms of location in the frontal lobe; and if they were acquired separately, i.e., one after the other, then the locations would likely be spatially separate (Kim et al., 1997). Researchers such as Circi et al. (2021) and García-Palacios et al. (2018) add to this, as they make note of how, the use of foreign language reduces the effects of fear conditioning in individuals due to its ability to induce psychological distance thereby making them less risk aversive. Another component of decision making that needs to be addressed is the effect of perception.

As one of the oldest studies on memory and language, the paper by Loftus and Palmer (1974) plays a key role in understanding the effect of perception changes on the basis of language used and the decisions made. With Del Maschio et al. (2022) stating that those who use their native language tend to have more emotional responses as compared to those who use their

second language, especially in cases of decisions being made “under conditions of risk and moral conflict” it brings to light the importance of understanding decision making and risk analysis in regard to the languages used by the individuals. Moreover, with Li’s (2017) mention of decision making in regard to native language being affected by cultural frames, studies focusing on second language effect becomes more valuable due to a potential lack of cultural biases.

Additional data on decision making include research conducted by De Martino et al. (2008) mentioning the effects of *framing manipulation* when testing for gambling behaviour presenting as significantly lower in those who were diagnosed with autism spectrum disorder (ASD). In regard to research conducted around bilingualism and motor vehicle accidents, there has been no explicit mention of risk analysis playing a role. The research that does allude to such a concept is that by Jamson et al. (2005) in regard to message reading speed and attention reduction. Apart from this, research by Cunningham and Regan (2018) notes that in situations wherein individuals are “Out of the Loop” or OOTL due to the individual being removed from the cognitive (engagement in secondary task) or physical control loop (due to automated vehicular movement), their responses toward critical events when managing the vehicle deteriorates.

The research by Cunningham and Regan (2018) when combined with the results from the study conducted by Jamson et al. (2005) brings to light the effect of inattention in cases of motor vehicle use, thereby presenting the data available on risk analysis in motor vehicle accidents being mainly based on, on-road perceptual abilities. With such research papers focusing on attention and reaction based research, there is little information surrounding topics such as “seriousness of consequence” (Fyhri & Backer-Grøndahl, 2012). The research study that had been conducted presents research conducted on a facet of seriousness of consequence by addressing frequency and harm in regard to risk analysis instead of focusing on fear alone.

Method

The study manipulated independent variable at two levels (first language English and second language English) as a between subject factor and measured dependent variable i.e., risk analysis using harm and frequency estimates. Based on a Power Analysis, conducted using G*Power, with an effect size of 0.7 and $\alpha = 0.05$, the participant requirement for the study was 90 (Faul et al., 2009). 100 bilingual participants (Mean Age = 21.51 SD = 1.56) participated in the study. Data of two participants was discarded due to lack of appropriate data provision.

Questions from the third edition of the Language History Questionnaire (LHQ) were used to understand the language dominance and proficiency of first and second language of the participants (Li et al., 2020). The questions used for the study, attached below, served as a self-report that allowed for gathering data on language proficiency of the participants (Li et al., 2020).

The LHQ questions used for this study include “*Q.11: Rate your current ability in terms of listening, speaking, reading and writing in each of the languages you have studied or learned.*”, “*Q.14: Estimate how many hours per day you spend engaged in the following activities in each of the languages you have studied or learned. (watching television, listening to radio, reading for fun, reading for school/work, using social media and internet, writing*

for school/work)", "Q.15: Estimate how many hours per day you spend speaking with the following groups of people in each of the languages you have studied or learned. (family members, friends, classmates, others)" (Li et al., 2020).

Experiment Procedure Table

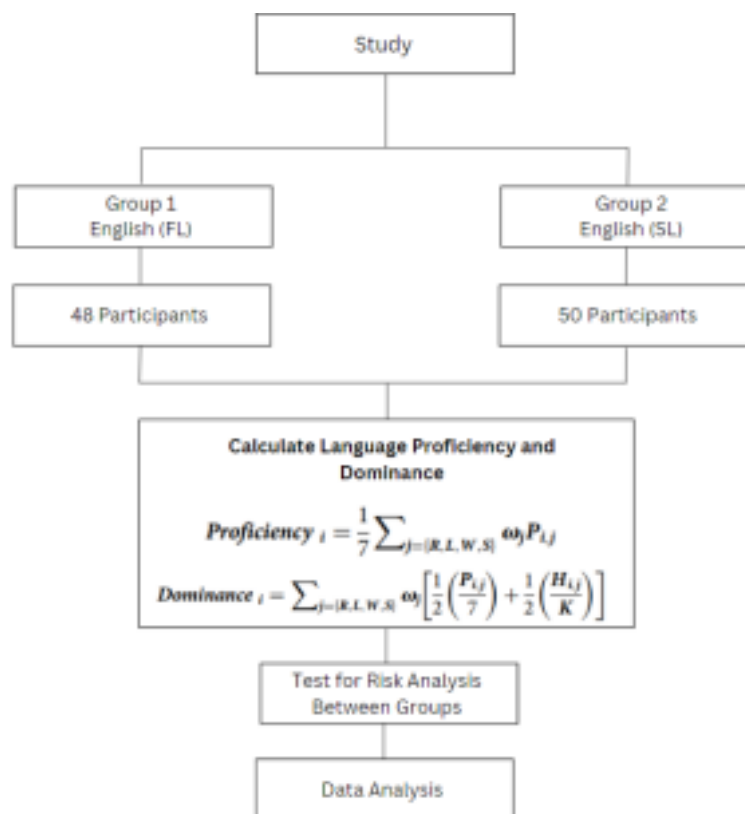


Figure 1: Experiment Procedure

Results

The aim of this study was to note if there would be a difference in risk analysis between individuals who acquired English as their first language and those who acquired English as their second language. To do this, the data was first tested for differences in the levels of English language proficiency between the two groups. The proficiency scores were calculated based on the results provided on a self-rating scale of the reading (R), Listening (L), writing (W) and Speaking (S) abilities. The equation used for the analysis can be found in the *Experiment Procedure Table* beside 'Proficiency i'. An Independent Samples T-Test was conducted on the proficiency scores. There was no significant difference found between the scores of individuals who had English as their First ($M = 0.92$, $SD = 0.08$) and individuals who had English as their Second Language ($M = 0.84$, $SD = 0.10$); ($t(96) = 4.74$, $p = 0.78$) (Figure. 2).

To test for *risk analysis* between the two groups, an Independent Sample T-Test was conducted to compare their means. This test provided no significant difference between the scores of individuals who has English as their First ($M = 5.04$, $SD = 0.92$) and individuals who had English as their Second Language ($M = 5.14$, $SD = 0.83$); ($t(96) = -0.55$, $p = 0.78$) (Figure. 3).

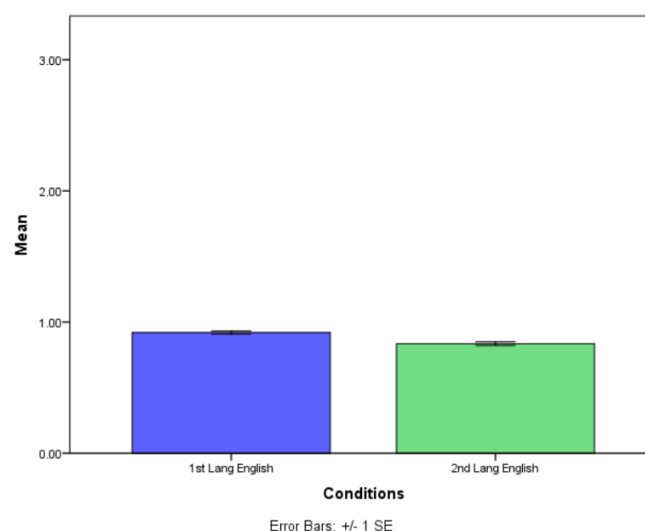


Figure 2: Language Proficiency scores for the two groups

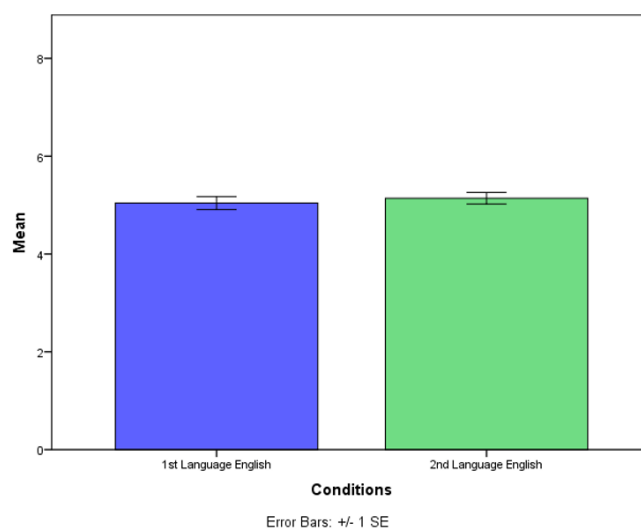


Figure 3: Risk Analysis scores for the two groups

Discussion and Conclusion

The study predicted that there would be a difference in terms of risk analysis between individuals who had English as their first language and those who had English as their second language. The basic assumptions required to test these predictions were not met by the sample group. We found no significant difference between the two groups for English proficiency. There was no significant difference in risk analysis between the two groups. These results can simply be explained by the lack of proficiency differences. We believe that with globalization, English is no longer a second language. It has become more of a necessity. And covid-19 has pressed this further.

A survey conducted by Education First on an English Proficiency Index found that nations that may not traditionally speak English are ranking high in English proficiency (*Education First, 2022*). The Harvard Business Review also talks about how English is becoming a global language, particularly in the field of business (Neely, 2014). This suggests that FLE research on English as a foreign language might soon become irrelevant. If we extrapolate this further it would mean that the English language would surpass the foreign language effect i.e., the effect of the English language on people all over the world would be the same.

Further research must be conducted to better understand the effect of bilingualism on decision making, if ever it does. Furthermore, with Li's (2017) mention of decision making in regard to native language being affected by cultural frames, it becomes important to also understand if cultural presentations of individuals affect the decision that they make or if they perceive it as a confounder in the same.

Apart from this, the limitations of the current study include the lack of control over non-English languages in both Group 1 and Group 2 along with the non-standardised environment. As the study was a survey that participants could take from their homes, there may be a possibility that the results could have some level of confounding. Moreover, with the researcher not being available in front of the participants in regard to participant queries, this may have caused lack of valid responses due to participant misconceptions.

Based on the limitations that have been found, future research must ensure that the above-mentioned weaknesses have been accounted for in order to better understand the impact/non-impact of language on risk analysis.

Acknowledgements

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Gaming Motivation: Developing a New Tool to Measure Psychological Motivations to Play Video Games

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Abstract

Video games are rapidly becoming a part of our daily life, both for entertainment and learning purposes and people of every age play them. The literature about gaming motivation has exponentially increased in recent years and researchers are thriving to understand what pushes people into playing video games by building scales that are able to do so. In this study, we have developed and validated a scale to investigate and assess the psychological gaming motivation that leads people to use video games to satisfy their basic needs without relying on a specific type of video game on the Italian gaming population. The proposed scale included 99 items that were administered to 543 players. Exploratory Factor Analysis partially confirmed the initial theoretical framework of 18 factors and lead to a new 16 model factor: 12 were already quite established in the literature (autonomy/creativity; boredom; competition; completionism; coping; diversion; entertainment; escapism; habit; nostalgia; self - esteem and social), 2 resulted as the integration of two already existing motivations (immersion and fantasy; challenge and mastery), 2 were completely new (aggressivity and freedom). Younger and less educated people have stronger motivation than adult players; gender comparisons showed that males play mainly for competition and mental challenge reasons, while females for escapism and completionism reasons. Regarding the type of games, PvP players play mostly for competition, challenge, self - esteem and social reasons, while PvE players play usually for coping, immersion/fantasy, and competition reasons.

Keywords: Gaming Motivation, Video Games, Psychological Needs

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Introduction

In the last decade, with easy access to the internet (Duradoni et al., 2023; Guazzini et al., 2022), video games have also been on the rise in popularity. With more than 2.96 billion active players as of 2021 (Statista, 2021), the majority of them being in Asia (Statista, 2022), it is no wonder that the scientific community is getting more curious by the day about the psychological reasons that lay behind video games usage. From simple single-player games to online massive multiplayer ones, while also taking into consideration the new VR experiences, gamers of all kinds have a wide variety of choices to pick how to spend their time (Martucci et al., 2023). But why should people play video games? What stands behind the simple act of using a controller to interact with virtual reality? Self - Determination Theory (Deci & Ryan, 1985) is one of the most cited theories explaining why people play video games, ascribing people acts to fulfillment of basic needs and dividing motivation into internal and external motivation (Deci & Ryan, 2000). Bartle's (Bartle, 1996) famous taxonomy of four types of players of Multi-User Dungeons (achievers, explorers, socializers, and killers), was a first attempt to categorize what people seek in playing that kind of games, and thus profiling players motivation. Yee's (Yee, 2006a) first identified five main motivations (relationship, manipulation, immersion, escapism , and achievement, and later focused on the three main reasons) to play these games: achievement, immersion, and socialization, leading to the very first questionnaire created to assess gaming motivation: the Motivations to Play in Online Games Questionnaire (Yee, 2006b). The Player Experience of Need Satisfaction (PENS;(Ryan et al., 2006)) is another scale that assesses three main psychological motivations and one related more to technical aspects of the game per se: competence, autonomy, presence, and intuitive control.

There is no doubt that gaming motivation studies have received particular attention from researchers who determined an increasing number of published works about this topic in recent years. It is possible to find in the literature either interesting tools that tried to assess gaming motivation towards all types of games, but that lacked some psychological aspects, and tools that are more specific for certain types of games (e.g Massively Multiplayer Online Role Playing Games, or MMORPGs). Furthermore, every 2 or 3 years new types of games come out and this leads to specific scales that were created to become old quite fast.

Considering the existent gap in the literature about the lack of an instrument that properly attempts to assess gaming motivation without depending on the type/genre of game, the main scope of this study was to develop and validate an Italian questionnaire regarding psychological gaming motivation not dependent on a specific type or genre of video game (e.g online, offline, multiplayer, single-player, etc...) on an Italian sample. Specifically, the main aim was to explore its multidimensionality through exploratory factor analysis.

Methods and Procedures

Scale development

The psychological gaming motivation scale was created through extensive literature research on the existent instruments. By following the PRISMA guidelines, the first step was to gather all the validated instruments that attempted to measure non-pathological gaming motivation (thus including studies with an addicted sample as well) with their items and the Cronbach's α of each dimension individuated respectively. Initially, 57 questionnaires were examined and the subsequent information was collected: authors of the scale, year of the paper, name of

the scale, dimensions measured, items and their factor loadings, the Cronbach's alpha of each dimension, and, lastly, the number of citations of the paper. Consequently, those scales that: (i) mainly targeted pathological motivation for playing, (ii) were not validated properly or (iii) were qualitative surveys were removed. The final number of scales that were deemed eligible was 45.

The second step was to gather all the items and clusterize them into bigger common groups of motivation based on what that item wanted to measure. This operation was necessary due to the fact that authors from different fields gave different names to what could be considered the same, or at least similar, construct (e.g coping and diversion) (Demetrovics et al., 2011; López-Fernández et al., 2021; Sherry et al., 2006). Through some focus groups, the number of items was greatly reduced per each dimension identified and the remaining ones were deemed eligible for the Italian scale. The third step was to modify the items, if necessary, according to the main objectives of the scale and this step was also carried out through focus groups and an active discussion between the creators. The number of total items obtained was 99 and 18 dimensions were identified: (1) arousal, (2) autonomy, (3) boredom, (4) challenge, (5) competition, (6) completionism, (7) coping, (8) diversion, (9) entertainment, (10) escapism, (11) fantasy, (12) immersion, (13) habit, (14) mastery, (15) nostalgia, (16) relax, (17) self - esteem and (18) social. Finally, the items were translated into Italian and organized to be administered to the participants as part of the first initial data collection. This initial part was necessary to refine the instrument in terms of dimensions and items. Specifically, through the first data collection it was possible to: (i) verify which item could be kept, removed, or modified; (ii) which dimensions could be considered useful and informative; (iii) assess the overall distribution of the participants' answers.

Sample and sampling

The sample was recruited online through shared posts on specific Facebook, Whatsapp and Telegram groups dedicated to video games; word of mouth between players; on specific sections of Reddit; and video game forums. Data were collected by sharing the survey through the Google Forms platform. Account information was not collected to ensure anonymity. The survey was composed of 3 sections: in the first one participants had to certify that they could speak and understand Italian and that they were over 14 years old; in the second section they had to fill in some of their sociodemographic information such as age, gender, educational qualification, and marital status; lastly, the third one presented the survey composed of 99 questions on a 5-point Likert scale, two open questions about their favorite video game title and the title they played the most in the last month and one question about how much time they spend on playing. The final sample of this study consisted of 543 players (71.45% males; $M = 28.92$; $SD = 8.26$). Participation in this study was on a voluntary basis. Participants were informed about the data collection and their privacy rights according to the Italian law (Law Decree DL-101/2018), EU regulation (2016/699), and APA guidelines and were asked to fill out an informed consent. Participants could withdraw from the session at any moment, removing the corresponding data from collection and analysis. Anonymity was guaranteed by not collecting account information or other personal sensitive information.

Measures

Sociodemographic characteristics

Participants were asked to give information about their age, gender, educational qualification and marital status.

Gaming behaviors and preferences

Participants were asked to give information about the amount of time they spent on playing video games on a Likert scale (from 1 = never to 9 = plays more than 8 hours per day), their favorite video game and the game that they played the most during the last month. Each game written by the participants was then coded according to the following aspects: (1) their PEGI classification; (2) if they were a Player vs Player; (3) if they were a Player vs Environment; (4) if a co-operative mode between players was present; (5) if they had online multiplayer features; (6) if they were a graphic adventure game (i.e., a peculiar type of game where the player mainly reads the story and the interaction with the game is characterized by just a few choices) and, lastly, (7) if they were a game real life simulator.

Psychological gaming motivation questionnaire

Participants were asked to fill in the Italian version of the psychological gaming motivation questionnaire that was created for this study. The scale is made of 99 items on a 5 point Likert scale (from 1 = I totally disagree to 5 = I totally agree) and it is composed of 18 dimensions: (1) arousal (i.e playing for the perceived feeling of excitement) (4 items); (2) autonomy (i.e playing for the feeling of being able to be creative and free in terms of actions and choices) (8 items); (3) boredom (4 items); (4) challenge (i.e playing for the desire to find a cognitive stimulating activity through a series of obstacles) (6 items); (5) competition (i.e playing for the desire to compete and win against other players) (9 items); (6) completionism (i.e as playing for the desire to complete and obtain every single thing that the game has to offer) (3 items); (7) coping (i.e playing to feel relief from stress, reduce tension, get back in a good mood, not feeling alone and to deal with anger) (11 items); (8) diversion (i.e playing to procrastinate activities that should be done) (5 items); (9) entertainment (5 items); (10) escapism (i.e playing to avoid thinking about everyday problems and worries) (5 items); (11) fantasy (i.e playing to be able to try different roles and discover different worlds that cannot be found in real life) (5 items); (12) immersion (i.e playing for the feeling of being totally part of the gaming world) (4 item); (13) habit (i.e playing because it is a daily routine) (4 items); (14) mastery (i.e playing for the desire to master every single gameplay aspect) (6 items); (15) nostalgia (i.e playing to bring back good memories from the past) (3 items); (16) relax (3 items); (17) self-esteem (i.e playing because it contributes to the positive perception of oneself) (5 items); (18) social (i.e playing to interact and be with other players) (9 items).

Data analysis

An adequate sample size was recruited to make a first assessment of the scale's validity and its structure. Secondly, an exploratory factor analysis (EFA) was conducted to verify its dimensionality. A Promax with the principal axis factoring estimation method was used to obtain the structure matrix of the model. Factors were organized according to their dimensions and factor loadings under .35 were excluded. Furthermore, to explore the possible relationships between the individuated motivational factors and the sociodemographic ones

such as age, educational qualification and time spent playing, Pearson correlation tests were carried out.

Correlations were also done to assess possible relationships between age, educational qualification, and PEGI. This latter element was also correlated to time spent playing on average and motivational factors. To create gaming motivational profiles of the gamers connected to the type of game played, a t-test was carried out where the motivational factors were assessed with PvP games; PvE games; Co-Op games; games with online multiplayer aspects, graphic adventures, and game simulators. Differences between genders in relation to the motivational factors were done through a t-test for independent samples. A t-test was done to evaluate possible differences between gamers of a certain type of game (PvP/PvE, Co-Op, etc) in terms of motivational factors. Lastly, a Chi-square was carried out to see if there were possible gender differences in terms of preference about the type of game played.

Results

Descriptive statistics

The sample consisted of 543 players of age between 14 and 68 ($M = 28.92$; $SD = 8.26$). Among these 543 participants: 388 identified themselves as males (71.45%), 131 as females (24.12%), 4 as transgender males (0.73%), 1 as transgender female (0.18%), 9 as non-binary (1.66%) and 10 did not want to report their gender (1.84%). Participants were asked about their educational qualifications and marital status. As for what concerns their education in terms of years: 5 participants had an elementary school license (0.9%), 43 had a middle school license (7.9%), 286 had a high school diploma (52.7%), 111 had a bachelor's degree (20.4%), 76 had a master's degree (14%), 13 had a post lauream specialization (2.34%) and 9 (1.66%) had a Ph.D. Regarding marital status: 276 (50.8%) were bachelors, 131 were in a relationship (24.1%), 72 (13.3%) were living with their respective partners, 52 (9.6%) were married, 11 (2%) were divorced and 1 (0.2%) was a widow. Participants spent 4.9 hours per day ($SD = 1.68$) playing video games on average. Overall, more than 300 titles were suggested from the participants and they were representative of the video game panorama. Specific notes about this latter part can be found in the appendix.

Exploratory Factor Analysis

An exploratory factor analysis was carried out to assess the dimensionality of the scale through an oblique rotation of the factors (Promax) with a principal axis factoring estimation method. Through the Bartlett test ($p < .001$), the possibility of the correlation matrix is an identity matrix in the population was rejected. Thus, the 18 factors were computed and extracted to evaluate the factor loadings. Factor loadings below .35 were excluded, and items with salient cross-loadings on two factors were also excluded if both of these values were close to .50. By applying these criteria 79 items were left, thus 20 were removed. Specifically, all the items of the arousal factor and the relax factor had factor loadings below .35, thus these factors were removed entirely. Finally, of the 18 original factors: 12 were maintained and slightly modified in terms of items (autonomy (renamed creativity after the EFA), boredom, competition, completionism, coping, diversion, entertainment, escapism, habit, nostalgia, self-esteem and social), 2 were merged (immersion and fantasy; challenge and mastery) and 2 were completely new and were momentarily named freedom and rage/aggressivity. In more detail, the autonomy factor was split into two new factors: creativity, with items defining a desire to play to express themselves and to be imaginative,

and freedom, which defined the desire to play without having limits in terms of options. All the factors, despite exceeding the range, follow a normal distribution regarding skewness and kurtosis.

Correlations

Correlations between the 16 motivational factors and age, educational qualification, and average time spent on video games were done through a Pearson's r correlation test to assess possible relations between the variables. Age was negatively correlated with social motivations ($r = -.109$, $p < .01$), competition ($r = -.159$, $p < .001$), coping ($r = -.192$, $p < .001$), immersion/fantasy ($r = -.226$, $p < .001$), escapism ($r = -.243$, $p < .001$), entertainment ($r = -.136$, $p < .001$), self-esteem ($r = -.227$, $p < .001$), habit ($r = -.199$, $p < .001$), diversion ($r = -.216$, $p < .001$), challenge ($r = -.137$, $p < .001$), boredom ($r = -.241$, $p < .001$), freedom ($r = -.209$, $p < .001$), creativity ($r = -.269$, $p < .001$) and rage/aggressivity ($r = -.191$, $p < .001$).

Age did not correlate with completionism, motivation and nostalgia. The strongest correlation appears to be with creativity, following suit by escapism, boredom, self-esteem and immersion/fantasy. This suggests that younger players tend to have stronger gaming motivation and to play to be able to express themselves, relieve boredom, or escape from reality. Interestingly, nostalgia resulted in a non-significant correlation, this means that there is no difference between younger players and older players in playing for this reason. The educational qualification was negatively correlated with social motivation ($r = -.148$, $p < .001$), self-esteem ($r = -.127$, $p < .01$), habit ($r = -.220$, $p < .001$) and freedom ($r = -.193$, $p < .001$). Non-significant correlations were found between educational qualification and competition, coping, immersion/fantasy, escapism, entertainment, diversion, challenge, completionism, boredom, nostalgia, creativity, and rage/aggressivity. This result is coherent with the results obtained regarding age. Younger and less educated people have stronger gaming motivation than older players.

In general, it seems that the level of education does not have a particular impact in playing video games for a certain reason. Average time spent playing was positively correlated with habit ($r = .535$, $p < .001$), creativity ($r = .288$, $p < .001$), self-esteem ($r = .286$, $p < .001$), social motivation ($r = .282$, $p < .001$), diversion ($r = .261$, $p < .001$), entertainment ($r = .257$, $p < .001$), challenge ($r = .254$, $p < .001$), escapism ($r = .222$, $p < .001$), coping ($r = .212$, $p < .001$), boredom ($r = .209$, $p < .001$), competition ($r = .203$, $p < .001$), immersion/fantasy ($r = .203$, $p < .001$), freedom ($r = .180$, $p < .001$), and rage/aggressivity ($r = .116$, $p < .001$). It did not significantly correlate with completionism and nostalgia. Players seem to play mainly because of habit, creativity, self-esteem, social, diversion, entertainment, challenge, escapism, and coping. It seems that nostalgia is not affected by time spent on video games, age, and education received.

Correlations between PEGI, hours spent playing, educational qualifications and age showed that age had small negative correlations with time spent playing on average ($r = -.158$, $p < .001$) and PEGI ($r = -.115$, $p < .01$). This suggests that younger players prefer titles with higher PEGI and that older people seem to spend less time playing video games and tend to play titles that are less high in terms of violent content. Education had a negative correlation with time spent playing ($r = -.244$, $p < .001$) which is coherent with the results regarding age as well: younger people are also less educated and they are the ones more likely to spend many hours playing on average. Lastly, correlations between the motivational factors and the PEGI showed only small positive correlations with immersion/fantasy ($r = .171$, $p < .001$),

diversion ($r = .118, p < .01$) and freedom ($r = .126, p < .01$). It is interesting that there was no positive significant correlation between PEGI and aggression, considering that the higher the PEGI, the more aggressive the content of the game is.

Gender comparisons

To evaluate any difference in gender, a series of t-tests for independent samples was performed to compare males and females. Males are more competitive than females ($t = 3.964, p < .001$), they play more for habit reasons ($t = 4.536, p < .001$), to seek challenges in games ($t = 3.815, p < .001$) and because of nostalgia ($t = 2.564, p < .01$). Females tend to play more because of completionism motivation ($t = - 3.496, p < .011$), diversion ($t = - 2.364, p < .05$) and escapism ($t = - 2.082, p < .05$).

Gender comparisons related to game type

A chi-square was run to assess gender differences in terms of preference for a certain type of game (i.e PvE, PvP, etc). Males seem to prefer PvP games (60%) more than females. This is also true for PvE (87.5% males, 79.8% females), Co-Op games (54.6% males, 36.4% females), and Online multiplayer games (73.4% males, 62.8%). Females tend to prefer games more oriented to stories, like interactive graphic adventures (4.5% females, 0.5% males) and simulator games (20.2% females, 1% males).

Comparisons in terms of gaming motivation between gamers who play different types of video game

Two t-tests for the independent sample were carried on to compare the motivational factors to the type of the game and the participants' answers to deepen what gaming motivation might be behind players that play a specific type of game and those who do not play such games. Gamers that play PvP tend to play for competition ($t = - 5.053, p < .001$), freedom ($t = - 3.362, p < .001$), social reasons ($t = - 3.195, p < .001$), habit ($t = - 2.727, p < .01$), self-esteem ($t = - 2.331, p < .05$) and challenge ($t = - 2.176, p < .05$). People who play for completionism ($t = 2.023, p < .05$) and coping reasons ($t = 1.918, p = .056$) tend to avoid PvP games since they are highly competitive and may cause high levels of stress. In fact, people who play PvE are mainly interested to play for coping reasons ($t = - 3.974, p < .001$), immersion/fantasy motives ($t = - 3.934, p < .001$) and entertainment ($t = - 2.519, p < .05$).

Those who are not interested in playing PvE games tend to avoid them because they cannot satisfy their need for social aspects ($t = 4.848, p < .001$), competition ($t = 4.570, p < .001$), habit ($t = 2.519, p < .05$) and self-esteem ($t = 1.970, p = .052$). PvE games are usually stand-alone games that follow a story and they do not need to be played online so interaction with other people is not needed.

Co-Op gamers play for social ($t = - 4.293, p < .001$), competition ($t = - 4.252, p < .001$), freedom ($t = - 2.013, p < .05$) and self-esteem reasons ($t = - 1.970, p < .05$) since these games require two players to collaborate in either local or remote settings (through the Internet) and they may have PvP aspects or not. Since they require highly coordinated actions between the gamers, they are considered challenging games that can satisfy the need to stay with other people and, at the same time, to think out of the box to play the game itself. More like people who play Co-Op, people who generally play multiplayer games with online aspects tend to play for the same reasons: competition ($t = - 3.602, p < .001$), social ($t = -$

3.519, $p < .001$), freedom reasons ($t = -2.214$, $p < .05$), with the only difference being creativity ($t = -2.025$, $p < .05$). People who prefer interactive graphic games just for a nostalgia feeling ($t = -3.293$, $p < .01$). This result is interesting if we consider that interactive graphic games are mainly played by adult people on smartphones or by female gamers.

Gamers that play simulators are motivated to play to express their creativity ($t = -2.426$, $p < .05$) and they are games generally avoided by people who seek to play for challenge ($t = 3.914$, $p < .001$), habit ($t = 2.743$, $p < .01$), self-esteem ($t = 2.591$, $p < .05$) and competition ($t = 2.219$, $p < .05$). Even though the sample of this group was relatively small (just 31 people chose simulators games as their favorites), the fact that the creativity factor is the only actual need that seems to be satisfied through these games appears coherent with the fact that simulator games tend to represent reality in a very detailed manner, thus letting the players to be free in customizing them the way they want (e.g. The Sims).

Discussion

The current study had the main objective to assess a new tool to measure gaming motivation independently from the type of game or genre and gather data about Italian players. The exploratory factor analysis partially confirmed the structure hypothesized while exploring the literature, while also highlighting unexpected results. The theoretical framework of 18 psychological gaming motivations eventually led to a final framework of 16 motivations: 12 were confirmed (autonomy/creativity; boredom, competition, completionism, coping, diversion, entertainment, escapism, habit, nostalgia, self-esteem and social); one new factor was removed due to lack of items loading on it (i.e. anger), some items about freedom of actions and options in videogames originally belonging to the autonomy factor were found to load on a new factor (i.e. freedom); immersion and fantasy were merged together, as well as challenge and mastery.

Anger might be a motivation on its own, needing further study considering the current lack of items to actually assess this dimension. The difference between freedom and creativity should also be explored and deepened. The most important result regarding this scale is that nostalgia seems a totally novel motivation that was never assessed on gamers in general, but only in relation to a specific videogame (i.e. Pokémon Go) (Yang & Liu, 2017; Zsila et al., 2018). Interestingly, the strongest correlation obtained was between habit and hours spent playing on average, consequently by creativity, self-esteem, and social reasons.

The fact that social factors are a strong gaming motivation has already been confirmed numerous times (Dauriat et al., 2011; Frederik & Jan, 2015; Hilgard et al., 2013; López-Fernández et al., 2021; Myrseth et al., 2017; Sherry et al., 2006; Williams et al., 2008; Yang & Liu, 2017; Yee, 2006a, 2006b), but the same cannot be said for habit, creativity, and self-esteem. It appears that gamers play video games mostly because it is part of their daily routine and a pattern that they do not like to skip. Also, players that spend more time gaming feel that they can be as creative as they want and have self-esteem related to the performance in the games they play. Gaming motivation appears to be stronger in younger and less educated players and this is coherent with literature (Carlisle et al., 2019; Dauriat et al., 2011; Demetrovics et al., 2011; Fuster et al., 2013; Hilgard et al., 2013; López-Fernández et al., 2021; Scharkow et al., 2015; Tekofsky et al., 2017; Wu et al., 2010). Additionally, education had very few significant correlations with all gaming motivation.

It appears that playing different types of games actually satisfies different human and psychological needs. Players who play PvP games play to satisfy the need to compete (i.e. competition), to feel that their free to transform their mental plans into actual actions (i.e. freedom), of interacting with others (i.e. social), simply for routine (i.e. habit), and, lastly and interestingly, for self - esteem reasons (i.e. self - esteem). As already pointed out, several studies demonstrated that self-esteem is connected to gaming activity (Beard & Wickham, 2016), leading people to develop in some cases a gaming disorder (Cudo et al., 2019).

While PvP games are characterized by their competitive setting as well as the real-time interactions between the players, in which players are free to act in whatever strategies come to their mind to win against an opponent, PvE games are more focused on the story and on the interaction between the game's environments and the players itself. Indeed, results showed that PvE players tend to play for coping reasons, for the immersion/fantasy aspects, and because they want to enjoy themselves (i.e. entertainment). The social aspect is often limited and not much relevant and, more than competitiveness and mental challenge, the feeling of immersion in the story is most important. Similarly to PvP games, but more focused on a story, Co-Op games are mainly played to satisfy not only the need of being in a social environment (since it is necessary to cooperate with another player) and of competition (since it is possible to go against in other teams in some games), but also for freedom and self-esteem reasons.

Conclusions

The structure of the scale was partially confirmed and it can be considered one of the first attempts to put together all psychological gaming motivations that could lead people to play video games. It was also one of the first attempts to assess gaming motivation in an Italian sample without restricting the research to a specific type of game.

Gaming motivation seems to be stronger in younger and less educated players and boys and girls differ in terms of what gaming motivation pushes them to play and which need they satisfy through the gaming activity: boys mainly play to compete and to beat difficult challenges while girls play to momentarily forget about their daily life and to achieve trophies. PvP players play because of competition, freedom, social, self - esteem and challenge reasons. Players who play for coping and completionism reasons tend to avoid PvP games while preferring other types. In fact, PvE players are mainly interested in the immersion and entertainment aspect of the games and they play majorly for coping reasons. Co-Op and multiplayer gamers play for competition, freedom, and social reasons. In a few words, video games seem to contribute to satisfying very basic human needs (e.g. the social aspect, the need to improve and to seek challenges, to feel free) and the satisfied needs are different based on the type of game.

The present study was not exempted from some limits: firstly, the sample was recruited online and it might not be representative of the actual gaming population; the sample presented an unbalanced ratio in terms of gender and in terms of age; the scale was a self-report one, thus social desirability could have affected some of the answers; the study was a cross-sectional study thus no inference can be made on a long term basis; some dimensions have only three items which is the minimum number to create one and the scale needs further validation; certain groups of players were quite small and data may not be considered representative of the whole population who actually play this genre; lastly the scale needs further assessment with a bigger sample size to confirm the seen results.

Authors Contribution

Conceptualization: MCG, AM, MD, ADAM, AG; Methodology: MCG, MD, AG; Investigation: MCG, AM; Data curation: AM, MD, AG; Formal analysis: MCG, MD, AG; Software: MCG, AG Validation: AM, MD, ADAM; Visualization: MCG, AM, AG; Project administration: AG Supervision: ADAM, AG; Writing – original draft: MCG, AM; Writing – review & editing: All authors.

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Student Violence in Schools – An Emerging Challenge for Educators

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Abstract

Teacher well-being continues to gather increased attention in the contemporary educational scenario. School-based violence is a significant contributor to the detrimental experiences of educators, including various forms of violence perpetrated by students. Even though research in this area has received global attention over the past decade, the paucity of ample evidence-base for strategies for the well-being of teachers demands urgent research in this area. The current research evidence suggests that student violence adversely affects a wide range of areas, including mental and physical health, classroom management, job retention, self-efficacy, and overall personal and professional life. This research focuses on how student behaviours and school violence impact the well-being of teachers. Embracing a qualitative approach, the research aims to draw upon educators' lived experiences in the Northern Territory (NT) schools of Australia. This paper reviews data from a short online survey that includes the foundational demography of educators in the NT and some of the key emergent themes that inform a larger study. Statistics from the online survey indicate a considerable degree of victimisation experienced by these educators in the NT. The significance of the study is further highlighted as it covers a geographical location where there is a predominance of Australian First Nations people. This population still suffers from the distress and trauma of colonisation. Here we gain an initial snapshot of the prolific distress from student violence suffered by many teachers in the NT, alongside a backdrop of trauma experienced by children of colonised peoples.

Keywords: Student Behaviour, Teacher Well-Being, Student Violence, Teacher Victimization

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Introduction

Teachers serve as role models, and their mental health has a big impact on how well their students grow and develop. While bullying and victimisation among students have received a lot of attention, student violence against teachers (SVAT) is still a topic that needs more research (Espelage et al., 2013). SVAT has become a prevalent issue in the 21st-century global education scenario requiring a rapid response (Espelage et al., 2013; McMahon et al., 2014). Numerous publications demonstrate this global prevalence and have demonstrated its harmful effects on mental health, work environments, job performance, efficacy and staff turnover (Berlanda, Fraizzoli, de Cordova, & Pedrazza, 2019; Burns, Fogelgarn, & Billett, 2020; Chen & Astor, 2009; Curran, Viano, & Fisher, 2019; De Wet, 2010; Galand, Lecocq, & Philippot, 2007; Gerberich et al., 2014; E. Lowe, Picknoll, Chivers, Farrington, & Rycroft, 2020; McMahon et al., 2014; B. Moon & McCluskey, 2020; Reddy et al., 2013; Wilson, Douglas, & Lyon, 2010). Internationally, schools have prioritised student victimisations despite reports of increased teacher victimisation incidents and the failure of zero-tolerance measures to combat SVAT (McMahon et al., 2014). Therefore, it is necessary to pay serious attention to preventing this widespread issue.

Significance of research

It is impossible to disregard the importance of teachers in nation-building. In the current field of education, teachers are subject to unreal demands, particularly from parents, and increased responsibilities for students' welfare and external impacts on learning (Berlanda et al., 2019). There is not much research undertaken in the Australian context compared to studies in other areas of the world, notably in Western countries, hence further studies are warranted (E. Lowe et al., 2020, Burns et al., 2020). Having said that, SVAT is not just a concern in the West; it has spread to Asia and Africa as well (Chen & Astor, 2009; De Wet, 2010; Moon & McCluskey, 2016). This study was intended to generate an experiential knowledge base by delving deeper into the real-life experiences (lifeworld) of teachers who witnessed or experienced the phenomenon of student violence. This knowledge can help to improve further the current departmental policies and strategies for the wellbeing of the teachers. It is critical for educators to understand how teacher victimisation has impacted their efficacy and which strategies can produce a successful teaching-learning experience. It is expected that the study will assist in launching several further enquiries into SVAT and/or other pertinent topics in the Northern Territory context.

Types of SVAT, impact on educators and triggers

Diverse forms of teacher victimisation have been found throughout international SVAT research. In McMahon et al.'s (2014) study, SVAT was divided into three distinct groups, including harassment, property offences, and physical offences. In their study, the most frequent type of SVAT was identified to be harassment (including obscene remarks & gestures, verbal threats and intimidation), which accounted for 73% of respondents. Property offences, such as theft and damage to private property, accounted for 54%. In an Australian study in Western Australia also, more teachers reported experience of harassment from students (64.3%) with female teachers reporting more incidents of harassment (77.1%) compared to male teachers (42.9%) (E. Lowe et al., 2020). Another Australian study which included 560 respondents also revealed similar results showing that 80% of teachers experienced bullying and harassment from students and parents over 9-12 months prior to the survey (Fogelgarn, Burns, & Billett, 2019).

Although SVAT research is still emerging globally, there is evidence showing teachers' personal and professional lives are negatively impacted by episodes of teacher victimisation. According to research reports, affected teachers are more inclined to experience emotional and physical suffering, strained personal relations, difficulty remaining in the profession, and increased levels of anxiety all of which have a negative effect on their work performance and consequently, students' academic progress (Martinez et al., 2016; Moon & McCluskey, 2016). On an individual level, SVAT incidents are likely to have a detrimental impact on educators' sense of safety, emotional health, their capacity to do their job well, and they may even make them less motivated with their jobs (Montgomery, 2019). Montgomery, (2019) also highlights that from students' points of view, SVAT is vindicated as a result of the complex teacher-student relationship (sometimes explained as power imbalances due to educators' instructional and reprimanding authority). For example, "unreasonable requirements, teachers' unfair treatment, disagreements with the teachers, being punished by teachers or being provoked by teachers" (Montgomery, 2019, p. 126). The impact of SVAT is also seen at the organisational level in terms of the turnover rate of teachers, absenteeism, low motivation, and overall job outputs (Montgomery, 2019). McMahon et al. (2017) have explained these three levels of interactional dynamism within the socio-ecological model of analysis. It was also highlighted in McMahon et al.'s (2017) study on how educators can be burdened by inadequate administrative and leadership support, a flawed system, or weak organisational support.

Physical aggression can include minor behaviours of "pushing, shoving and throwing objects" or severe forms of actions such as "fighting, beating and use of weapons (McMahon et al., 2020, p. 116). McMahon et al. (2020) used the functional model of ABC (antecedent, behaviour, and consequences) to identify the contexts of aggression. They argue that this can help to understand the antecedents and consequences of particular student behaviour and pinpoint the causes and effects of violence so effective behaviour management strategies can be developed. The most common antecedent identified in the study was disciplining the students (25%). Another triggering event for SVAT was determined to be separating student fights (16%).

Current literature

a. Global scenario

Studies in this area, notably in America and the Western world, were stimulated by the formation of the American Psychological Association Task Force on Classroom Violence Directed Against Teachers, in 2008 (Espelage et al., 2013; McMahon et al., 2014). Unfavourable school environments, inadequate collegial and administrative support, and overpopulated residential areas are associated with a high incidence of violence in schools (Anderman et al., 2018). SVAT is not limited to physical or verbal abuse, as there are several covert forms of abuse which can include opposing, belittling, ignoring, insulting or constant disruptive behaviours in the class (Billett et al., 2020, Burns et al., 2020, Chen & Astor, 2009). Unfortunately, these covert forms of SVAT are largely unreported but still harm educators (Anderman, et al., 2018). Hence, plans for comprehensive school safety should consider teacher victimisation as a key element according to Espelage et al. (2013).

b. Australian Scenario

Even though it is acknowledged that there has not been much research on SVAT in Australia, there are alarming indicators in the available evidence from the research that has already been conducted. Indicators of workplace bullying on a broader scale were found in Australian schools, according to a quantitative study by D. Riley, Duncan, and Edwards (2011) that covered teaching and non-teaching personnel as respondents. However, the Australia-wide longitudinal study commenced in 2011 to monitor the school principals' and deputy/assistant principals' health and wellbeing demonstrated a consistent increase in indicators of physical violence, threats of violence and bullying against educators perpetrated by students. Although NT's participation in the survey was around 3 per cent only, I consider this study as a springboard for my research as it indicated such a high prevalence of student violence in Australian schools (P. Riley, 2013; P. Riley, 2014; P. Riley, 2015; P. Riley, 2017; P. Riley, 2018; P. Riley, 2019; P. Riley & See, 2020). As illustrated in the tables below, the Northern Territory recorded high prevalence (highlighted), particularly for indicators of 'threats of violence' and 'physical violence.'

Threats of Violence								
State	2011	2012	2013	2014	2015	2016	2017	2018
NT	48.8	54.3	48.3	48.6	50	55.1	57.9	54
NSW	28.9	34.5	31.1	36.1	44.9	44.3	41.8	42
VIC	37.6	36.8	36.1	33.7	39.8	42.3	49.7	41
QLD	37.4	33.8	36.3	30.9	34.6	38.3	49.7	49
SA	46.3	46.1	45.4	40	36.7	43.6	43.4	45
WA	41.4	38.7	41.8	40.8	43.1	47.6	44.4	45
TAS	31.1	40	42	51.7	62.1	47	42	49
ACT	34.1	32	25	30.4	42.1	51.8	55.1	65

Source: Riley, 2019 pg. 86

Table 1. Principal and deputy/assistant principals' health, safety and wellbeing Survey data 2018
State-wise percentage of school leaders experiencing threats of violence.

Physical Violence								
State	2011	2012	2013	2014	2015	2016	2017	2018
NT	41.9	45.7	37.9	51.4	50	53.3	47.7	50
NSW	21.9	25.1	22.6	27.1	35.5	32.8	35.4	33
VIC	25	25.1	26.6	24	28.1	29.3	34.3	34
QLD	27.9	25.9	28.1	22.8	26.2	29.8	36.2	36
SA	32.7	32.6	34.2	31.3	24.2	36.1	37.4	39
WA	32.1	35.1	32.7	31.8	36.7	38.2	41.3	43
TAS	26.7	34	42	41.4	43.1	39.4	34.4	46
ACT	29.3	32.1	32.1	27.5	38.6	48.2	40.8	51

Source: Riley, 2019 pg. 86

Table 2. Principal and deputy/assistant principals' health, safety and wellbeing Survey data 2018
State-wise percentage of school leaders experiencing physical violence.

Although Tronc (2010, p. 36) classified the violence in Australian schools as the level one category involving "minor assaults and bullying", the factors causing educator burnout was

the relatively high rate of repeated occurrences of these incidents (Sullivan, Johnson, Owens, & Conway, 2014). According to Fogelgarn et al. (2019) in an Australia-wide study with 560 participants, eighty-five per cent of teachers thought student and parent initiated bullying and harassment was a problem in schools. A similar finding of 70% of teachers suffering SVAT over a two-year period was found in a quantitative study conducted in Western Australia with 56 educators, with harassment being the most common type of violence (E. Lowe et al., 2020). In a national survey conducted by Monash University, Australia, which included 2444 teachers (including 41 from the Northern Territory), 19% of respondents reported feeling unsafe in their schools (Heffernan, Longmuir, & Bright, 2019).

Misconceptions

There are several misconceptions in the teaching profession which undermine the value of pedagogy. The belief that the students' behaviours are the result of teachers' ineffective instructional approaches is a misconception (Billett et al., 2020). Many times, the fact that the issue of student aggressiveness towards teachers has multiple causes is not acknowledged. When bullying is examined, the concept of power imbalance is also taken into account, but when violence against teachers is involved, its presence is unclear (Dzuka & Dalbert, 2007; Riley et al., 2011). Billett, Fogelgarn, and Burns (2020) clarify that the belief that students cannot bully teachers as teachers are more powerful, is a misconception. Billett et al. (2020) also negate the perception that teaching is an easy job. Teachers are supposedly arriving late and leaving early, and they receive 12 weeks of paid leave annually, all of which contribute to the false public perception that teachers have an easy job (Billett et al, 2020). Interestingly, Swetnam (1992) uses a few instances to demonstrate how popular culture through certain fictional television shows and other forms of entertainment media tends to portray teaching as a simple job.

Research in NT and the impact of colonisation

The research was conducted in the Northern Territory (NT) state of Australia. First Nations people make up a higher proportion of its population (26.3%) compared to 4.6 per cent or less in any other Australian states (Australian Bureau of Statistics [ABS], 2022). European colonisation had a devastating impact on the life of First Nations people. The health inequalities among Aboriginal and Torres Strait Islander people remain the highest of any population group in Australia, and their life expectancy is shorter than that of non-Indigenous people (Griffiths, Coleman, Lee, & Madden, 2016). It is evident from the literature that First Nations People continue to experience several forms of disadvantage including social discrimination, poor health, substance abuse, isolation, higher unemployment rate, poverty, violence and overrepresentation in the criminal justice system (ABS, 2017).

The paper emphasises the need of acknowledging the aforementioned aspects when doing research on SVAT in the NT. K. Lowe (2017) highlights the cultural divide that exists between the teaching community and the First Nations population as a contributing cause to their educational disadvantages especially in schools with 100% First Nations students. He argues that it is essential for teachers to acquire adequate cultural knowledge of and responsiveness to the impact on First Nations people's lives, and the strategies for accomplishing effective classroom experiences in schools with children of indigenous backgrounds. Stressing the significance of Indigenous Standpoint Theory, Lowe illustrates three interrelated factors which are crucial in recognising community level factors in First Nation people's educational participation. These included the "formation of localised

Aboriginal community standpoint positioning” and its influence on the relationship between First Nations people and schools, “development of community and school engagement” as well as its influence on educators and First Nations people and formation of “acquired professional knowledge of teachers” with its influence on community engagement (K. Lowe, 2017, p. 38). These factors are theorised as potentially having a confounding relationship with the experiences of SVAT in the NT.

Defining SVAT

Due to conceptual difficulties and a dearth of sufficient studies in this field, it may be challenging to come up with a clear definition for SVAT that is comprehensive. Australian Institute for Teaching and School Leadership (AITSL, 2020) emphasises the significance of using a definition on a national scale for the measurement of SVAT and tracking progress in combating this problem. However, they also acknowledge the challenge to obtain this uniform national picture without adequate research-based evidence. The definition promoted by De Wet (2010) was used for the current research since they totally address the characteristics of SVAT that the research sought to cover. Hence for the purpose of this research, SVAT is defined as a deliberate and repeated act or behaviour which affects the physical, social, and emotional wellbeing of teachers and causes disruption in the school environment. This includes acts of bullying through verbal, non-verbal, physical, sexual, racial and/or electronic means or social media.

Research Approach

The project consisted of two phases. This paper is presented based on the first phase of the research as the second phase is not yet complete. In phase I, following approval from Charles Darwin University Human Research Ethics Committee (HREC), an online short survey that was available to all teachers in NT was undertaken. Previous studies showed that due to teachers' concern about reporting teacher victimisation, anonymous online surveys could produce greater results (McMahon et al., 2014). This survey helped identify a participant pool for choosing interview respondents from those survey respondents who volunteered for an interview. The short survey was made available through a variety of sources including Facebook, email contact of education unions and the teachers' festival held in August 2021. The survey remained open on social media for about 80 days. In phase II, the lived experiences of 13 teachers who experienced SVAT were gathered using a semi-structured interview following guidelines from Smith, Flowers and Larkin (2009). Examples of open-ended questions used were:

- ‘What has been your experience with student violence?’
- ‘What do you think are the reasons for the student violence directed against the teachers?’
- ‘What is the influence of student violence on your professional and/or private life?’
- ‘What helped you deal with student violence experience?’ and
- ‘What would be for you a positive development for tackling student violence in schools?’

The analysis is being conducted through the Interpretative Phenomenological Analysis (IPA). The following research questions have guided analysis in each phase.

Phase I

- 1) Which teachers in primary and secondary schools in NT have experienced student violence? What has been the nature of the SVAT?

Phase II

- 2) What are the effects of student violence against primary and secondary school teachers in the Northern Territory?
- 3) What are the factors that enable teachers who have experienced student violence in primary and secondary schools in the NT, to remain in the profession?

This paper focuses on the Phase I question and partially responds to question 2 in Phase II based on currently available literature and two of the interview participants' reflective accounts.

Phase I response

The short survey received responses from 122 teachers in total. This is just over 2% of the total number of teachers in NT. As the aim of the short survey was to identify respondents for the interview, the survey was closed when the required number of volunteers for the interview was obtained. There were 73 primary school teachers, 26 middle school teachers, 18 high school teachers, and 5 special education teachers among them. There were 100 teachers working in urban schools, 4 in regional schools, and 17 in very remote schools. Thirteen teachers were interviewed after 28 teachers expressed their interest. The quantified demographic data revealed by the short survey was as follows.

Stage of teaching	Choice count	Locality of teaching	Choice Count
Primary school teachers	73	Urban schools	100
Middle school teachers	26	Regional schools	4
High school teachers	18	Remote schools	18
Special School teachers	5	-	
Total	122	Total	122

Table 3. Participation in the survey

Out of the total of 122 teachers responded, 119 teachers (97.54%) expressed they had encountered SVAT in their schools. This represents more than 2 % of all teachers that are currently registered in the NT. SVAT occurred within the preceding year for 76% of teachers and between 1-2 years for 17% of teachers. The most prominent forms of SVAT were disruptive behaviours and physical assaults.

Years of teaching	Choice count	Type of SVAT	Choice count
0-5 years	39	Physical	93
5-10 years	25	Social	54
10-15 years	18	Emotional	73
15-20 years	16	Disruptive behaviour	101
20 + years	24	Bullying	44
Total	122	Total	365

Table 4. Teaching experience and type of SVAT

Descriptive summary

A brief descriptive narrative of two participants is provided to put the findings of the phase I short survey into perspective. Although the purpose of the short survey was not to ascertain the prevalence of SVAT in the NT, the response rate (just over 2% of the total teacher population in the territory) suggested a tendency towards teacher victimisation in the territory that was consistent with the principals' and deputy/assistant principals' survey discussed above.

Participant 1:

Emma had over 20 years of teaching experience in urban schools in NT. Emma believed that because she was an experienced teacher, she would no longer be a target of SVAT, but this has continued. She was injured when breaking up student fights, she was scratched, spat across her face, and punched. A male student punched Emma and then told the principal she had punched him. She described how uncomfortable she felt being questioned after students made false allegations. She was left to prove her innocence as no one was there to defend her.

This participant's insights included that SVAT incidents are devastating. It is a prerequisite that teachers have ample time following an incident to recover and reflect. It's also critical to provide opportunities for adequate counselling. Instead of simply offering support for the sake of it, the support must be secure and efficient.

Participant 2:

Maddison was one of those teachers who experienced horrendous SVAT issues. She had over 16 years of teaching experience in a remote school. She experienced ongoing verbal and sexual harassment at school. Students from her school repeatedly broke into her remote residence when she was at school. On one occasion, one student ejaculated everywhere in her room and wrote sexual comments on the walls. She told the principal and told the Union, but there was no adequate support, and she was left in that house all weekend with her backdoor hinges ripped off. This was the kind of violence she was experiencing there, and she was not feeling safe at all. She left that school after she was diagnosed with PTSD.

This participant's insight included that she agreed that new teachers starting out in remote teaching need proper orientation. The importance of teaching from a trauma-informed perspective was emphasised.

Discussion and conclusion

The issue of teacher violence in schools is progressively gaining significant attention. The current study represents the first effort to exclusively examine teacher victimisation by students in the Northern Territory. The short survey used in the first phase of the study seemed to elicit a lot of reaction from the target audience. This survey was designed to find teachers in the Northern Territory schools who have dealt with SVAT and to answer my initial questions, "Which teachers in primary and secondary schools in NT have experienced student violence." and "the nature of SVAT they experience". The results of the short survey served to reaffirm the high rates of SVAT indicators reported by the NT schools in the principals' and deputy principals' longitudinal study. Teachers from across the state reported experiencing various forms of abuse including physical, social, emotional, disruptive behaviour and bullying. As the purpose of this short survey was to develop a participant pool

only, questions about the specific breakdown of the types of violence experienced and other detailed demographics were omitted.

Final conclusions based on the IPA analysis are still in the preliminary stages, however, the topics emerging during the initial analysis and connections with recent research data are in the context of two conditions. Firstly, it should be noted, based on recent literature, that teachers have a history of being targeted by other parties as well, including parents, co-workers, and administrative leadership (McMahon et al., 2014). Though the study's primary emphasis was on SVAT occurrences, several participants mentioned instances of bullying and harassment from parents during the experience-sharing interviews. Secondly, McMahon et al. (2014) highlight that schools that are in more violent neighbourhoods and/or have negative/violent school environments that do not adequately address behaviours may have higher rates of student or parent related violence. In congruence with this view, interview participants expressed opinions about how community and socio-cultural elements might affect student attitudes and how important they are in dealing with SVAT, even though socio-economic circumstances were not specifically focused on in interviews.

The findings of this research will serve as a crucial basis for further research and offer suggestions for school-based interventions, including protective and remedial measures for teachers. Gender disparities did not have a significant impact on this research because the study was qualitative and only focused on experience gathering with a small sample. Many educators shared the opinion that they feel obligated to step in to break up student disputes to protect the students. Unfortunately, it appears that teachers are often singled out for abuse in this context. Interestingly research evidence indicates that educators put themselves in hazardous situations at work, such as becoming involved in fights that could increase teacher victimisation rates (McMahon et al., 2014). When significant SVAT occurrences did not result in firm leadership action and students received no consequences for it, many participants typically felt frustrated and unsatisfied. This view was clearly supported by McMahon et al.'s (2020) ABC study which emphasises the importance of leadership's role in the effective management of SVAT and adequate support to teachers.

Teachers whose teaching career was at very remote schools in the Northern Territory recounted their disappointing experiences with inadequate cultural orientation to working in this context. K. Lowe (2017) corroborates this view that educators are hired into schools with inadequate social, political, or specialist knowledge of the distinctive needs and aspirations of the First Nations students, families and communities. This lack of knowledge may make it more difficult for them to establish effective relationships with First Nations pupils which may potentially minimise the opportunities or situations for SVAT. Correspondingly, it is encouraging to note that the benefits of embracing and integrating cultural aspects into education are equally shared by First Nations students, communities, and schools (Milgate, 2017). The discussion throughout this paper highlights the increasing prevalence of SVAT in Australia and across countries that have a negative effect on the professional and personal life of educators. In summary, any recommended strategies to combat the effects of SVAT particularly in the Northern Territory must be managed within a broader cultural context with specialised services catered to educators' needs and aspirations.

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Investigating the Impact of Interdisciplinary Experience on the Learning Performance of Industrial Design Students

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Abstract

This study explores the impact of three different interdisciplinary experience student groups on the learning outcomes of industrial design students (without interdisciplinary learning process, participating in interdisciplinary activity courses, and participating in complete interdisciplinary courses). To understand what kind of learning experience can effectively improve students' cross-disciplinary teamwork ability and the differences in the complete product development process. In the research, semi-structured interview questionnaires were used to collect, analyze, and summarize the interviewees' learning process, practical operation, and other issues. Quantitative evaluation is carried out through cross-disciplinary basic ability analysis (communication, reflection, practice) and product development learning effectiveness (Rubrics scale) formulated by professional teachers. Qualitative interviews are also conducted with students with different interdisciplinary learning experiences, recording the students' special presentations and digs into the situation of team interaction. The analysis was carried out with one-way analysis of variance, descriptive statistics, and interview coding. The results show that the teams of "participating in interdisciplinary activity courses" and "participating in complete interdisciplinary courses" are better than the teams with "no interdisciplinary learning process", in terms of interdisciplinary basic core competencies and product development. No significant difference was shown between "participating in an interdisciplinary activity course" and "participating in a complete interdisciplinary course". Therefore, students of the Department of Industrial Design can cooperate with different faculties and schools by participating in active cross-disciplinary courses and improve their participation in cross-disciplinary teamwork through learning experiences.

Keywords: Interdisciplinary Experience, Communication, Reflection, Practice, Rubrics Scale

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1. Introduction

1.1 Background

Industrial designers today are facing a more rapidly changing, diverse, and complex industrial environment. The fields of innovation include big data, artificial intelligence, machine automation, service design and user experience design, etc. Designers today often establish diverse collaborative teams to research and solve novel and difficult problems through interdisciplinary approaches (Ledford, 2015). Shandas, V. (2016) and they believe that people from different disciplines can solve complex issues through different thinking and knowledge. Designers use interdisciplinary capabilities to adapt to the needs of different professional fields, thus avoiding incomplete thinking caused by the solidification of ideas in a single field. In other words, interdisciplinary designers of design thinking must have the ability to solve complex interdisciplinary problems.

1.2 Motivation

Eagan, Cook, and Joeres (2002) mentioned that by teaching interdisciplinary communication skills between various disciplines, tolerance of perspectives from other professional fields, self-examination, evaluation, reflection, and teamwork can help students to overcome barriers in interdisciplinary research and cooperation. The current knowledge cycle is getting shorter and shorter and requires the integration of different knowledge backgrounds. Personnel training tends to be more conceptual skills, communication skills, teamwork, and creativity. At present, in the university education system, we are still faced with academic majors discussing too deeply a single subject and ignoring the complex issues of training students to face different fields. Cha Jianzhong (2008) pointed out that there are three major problems in the teaching plan of today's university education:

1. Too much emphasis on theory and practice, the teaching content is updated slowly and cannot keep up with the development of the industry.
2. The lack of diversity and simplification of teaching methods limit the creativity of teachers and students.
3. Too much emphasis is placed on teachers' lectures in the classroom and the link of students' active learning and practice is ignored.

Furthermore, teachers can try to change different teaching methods to meet the actual teaching situation and the learning needs of students to pursue the best learning effect as the goal. Therefore, to provide students with reflectional educational models and related learning activities are important to develop their skills and competencies. It can be said that interdisciplinary education is an important source for students to acquire interdisciplinary ability.

1.3 Purpose

This research takes the senior students majoring in industrial design as the research subject. The study explores how interdisciplinary teaching methods can effectively cultivate students' ability to solve complex problems through different interdisciplinary learning experiences when facing complex problems. The students in the team have professional knowledge in diverse fields and are observed what problems they will encounter during the product

development process. Through this research, the purpose of improving future interdisciplinary curriculum planning can be achieved.

Therefore, the purpose of this study is to explore the three following aims:

- (1) To discuss which learning experience (no interdisciplinary learning process, participation in interdisciplinary activity courses, and participation in complete interdisciplinary courses) can improve the learning efficiency of students in the Department of Industrial Design under different interdisciplinary learning experiences.
- (2) To understand the differences in interdisciplinary abilities of industrial design students with different interdisciplinary learning experiences.
- (3) To discuss the differences in the product development process of students in the industrial design department and verify the impact of different interdisciplinary learning experiences.

The importance of interdisciplinary education has gradually become recognizable by the academia and professionals. Related theoretical research is maturing. In this way, students' creative contribution skills and abilities can be cultivated, and students' competitiveness can be effectively improved.

2. Literature review

2.1 Interdisciplinary definitions

Stember (1991) stated that interdisciplinary consists at least two collaborators, as well as the basic elements of two disciplines and problem-solving in a certain collaborative way of a certain field. The goal of a single discipline is narrow, and its main purpose is to explain within the confines of its own field thus limiting broad thinking on issues as knowledge is updated (Moran, 2002). Multidisciplinary occurs when the solution to a problem requires information from two or more fields of science or knowledge rather than changing or enriching the original disciplines (Piaget, 1972). Interdisciplinary cooperation refers to the integration of knowledge owned by a single individual or group, through theories, concepts, viewpoints, tools, technologies, data, integration, etc., to solve complex problems outside the scope and respond to rapidly changing society needs. Interdisciplinary technology is not only important for students to study any single subject or solve problems in an integrated manner, it also enriches students' lifelong learning habits, academic skills, and personal growth. From the above literature, it can be concluded that these common points all emphasize the integration of individual or group knowledge and technology to solve problems and enhance each other's multiple capabilities to cope with rapidly changing needs.

2.2 Diverse interdisciplinary curriculum

Interdisciplinarity has become part of the contemporary university's approach to research and course knowledge. Interdisciplinary collaborations are beneficial for the creative development of teams because they can pool more resources and expertise in the group (Baker, Day & Salas, 2006). Stanford breaks down institutional distances and brings together researchers with diverse expertise to encourage students to conduct research that crosses traditional boundaries. Diverse capabilities lead to innovative ideas and combine industrial designers, scientists, and engineers in various ways for a wide range of research. Millar

(2016) restructured their curriculum in various ways to incorporate interdisciplinarity, develop skills across disciplinary boundaries and address major world issues.

2.3 Interdisciplinary Design

The life cycle of a product can be divided into three stages: design, engineering, and sales, but this means that the three operate independently. On the contrary, design, business, or engineering technology should be integrated among the three (Buxton, 2010). Designers should have cognitive abilities, that is, the ability to reflect, communicate, discover, and solve problems. The ability to innovate and practice means that designers could propose new concepts and bridge interdisciplinary concepts. Weil and Mayfield (2020) propose that ID's MDes program considers the range of topics in the design curriculum and the various skill levels that students develop. The main claims that the curriculum should develop student understanding in:

(1) Covering the breadth and depth:

Designers' Learning is focused on understanding production as the field of design matures and expands and the practicality of specialization is called into question while creatively finding opportunities to produce new things.

(2) Integrating application and theory:

Designers should not be limited to personal experience because design solves problems far beyond personal experience and intuition and focusing on the bridge between theory and practice helps students learn to construct their own ideas.

(3) Managing diverse talents and perspectives:

Designers can broaden everyone's dialogue, vision, and can mediate collaboration between different fields.

3. Methodology

3.1 Extracting basic interdisciplinary capabilities from literature.

Self, Evans, Jun, & Southee (2019) et al. provided seven criteria for evaluating interdisciplinary learning and organized them into Table 1 for the criteria for the nature of interdisciplinary competence. Wilhelmsson et al. (2012) also emphasized the importance of communication, reflection, and practice for interdisciplinary learning. Mahy, I., & Zahedi, M. (2010) et al. use an interdisciplinary approach to integrate artists and managers to complete the artistic creation process and transform the collaboration into practice and reflection. This survey refers to the questionnaire of Lattuca et al. (2012) and based on the conceptual framework of seven standards provided by Self, Evans, Jun Southee et al. (2019) (Table 1) to edit the questionnaire of this study. This research adopts the method of in-depth interview and literature to extract the basic interdisciplinary ability including communication, reflection, and practice (Table 2). This study further designed the research process through the principle of "island of knowledge" proposed by Fruchter & Emery, (1999) (Figure 1).

Interdisciplinary Course Interview Questionnaire is a semi-structured questionnaire edited through expert interviews. The purpose is to understand the differences in the teamwork styles of industrial design students with different interdisciplinary learning experiences in the product development process. Teachers use the Rubrics scale to evaluate students' Grading of Graduation Project Works. The scoring principle of the five-level Likert scale is "5 points for excellent, 4 points for ability, 3 points for general, 2 points for improvement, and 1 point for

incompleteness". The higher the student's score, the better the student's ability in this area. Finally, the evaluation data was analyzed by SPSS statistical software released by IBM, and statistical methods such as correlation and one-way analysis of variance (ANOVA) were used to analyze whether there were significant differences between different groups.

Table 1: Seven criteria for evaluating interdisciplinary learning.
(Self, Evans, Jun, & Southee (2019) et al.)

Criteria to Assess Interdisciplinarity	Description
C01. Awareness of Disciplinarity	Work being well grounded in disciplines which it draws. The idea that certain level of disciplinary knowledge required to effectively integrate perspectives, methods & practices of two or more disciplines to achieve specific goal.
C02. Appreciation of Disciplinary Perspectives	Process of fostering disciplinary knowledge & appreciation of disciplinary perspectives. Moving from general knowledge of discipline to more specific knowledge of how each of its elements informs insights into the problem.
C03. Recognition of Disciplinary Limitations	Means through which interdisciplinary competences may be measured. Critical reflection upon and awareness of one's own field of study.
C04. Appropriateness of Interdisciplinarity	Means to solve different problems in various situations. Students able to develop ability to effectively evaluate effectiveness of interdisciplinary work.
C05. Finding Common Ground	Ability to dynamically modify one's own perspectives, world view & expectations to accommodate those of others.
C06. Reflexivity	Ability to reflect upon one's own choices for defining a given problem; how these choices may influence framing & solution development.
C07. Integrative Skill	Ability to synthesize & integrate knowledge in order to provide more comprehensive understanding of problem and/or possible solutions.

Table 2: Three interdisciplinary core competencies.

Interdisciplinary Core Competencies	Description
Ability to communicate	The ability to coordinate and synthesize information, views or insights from different areas of knowledge to effectively exchange knowledge and ideas with other professionals.
Ability to reflect	The ability to reflect in the process of cooperation with different professional teams and experts to generate new ideas and proactively search for possible solutions.
Ability to practice	Practical ability to collaborate using expertise from different disciplines and work with teams to solve complex problems.

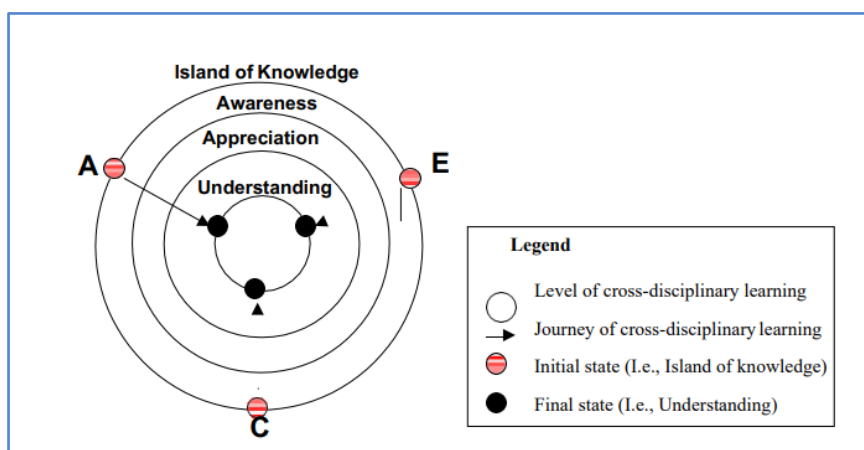


Figure 1: Four-Tiered Classification for Cross-Disciplinary Learning Assessment (Fruchter et al. 1999).

3.2 Participants

This study is divided into three groups of students with different interdisciplinary learning experience:

- (1) Group **a** without interdisciplinary experience:
The senior industry design students have no interdisciplinary learning experience to roughly understand the cross-domain meaning.
- (2) Group **b** has some interdisciplinary experience:
The senior industrial design students have participated in the interdisciplinary curriculum and different departments to fulfill the complete design proposal experience in the study process.
- (3) Group **c** has a complete interdisciplinary experience:
The senior students of the Department of Industrial Design have fully participated in the interdisciplinary courses of Tatung University, including business majors, engineering majors, and design majors.

3.3 In-depth interview

In this study, those who met the following three conditions were interviewed.

- (1) The interviewed group has experience in compliance with the corresponding learning background.
- (2) The interviewed group has a complete team cooperation experience in the learning process.
- (3) The interviewed groups have a preliminary understanding of interdisciplinary capabilities.

A total of 26 senior students of the Department of Industrial Design in this study were interviewed. The respondents were willing to participate and share their learning experience. 16 of them had cross-disciplinary cooperation experience (8 students participated in interdisciplinary activities, and 8 other students participated in the complete interdisciplinary courses) and 10 students have not participated in cross-disciplinary studies. From the

interviews of each stage, we will understand and record the discussions between the respondents and the team.

This study adopted (Thomas, 2000) procedure based on the “inductive method” to analyze the student interview data to:

1. Condense extensive and varied raw text data into a brief, summary format.
2. Establish clear links between the research objectives and the summary findings derived from the raw data and to ensure these links are both transparent (able to be demonstrated to others) and defensible (justifiable given the objectives of the research).
3. Develop of model or theory about the underlying structure of experiences or processes which are evident in the text (raw data).

In order to improve the coding efficiency, NVivo 11 is finally used as the coding software.

3.4 Product rating scale development

The purpose of the scale is to evaluate the kind of teaching that can effectively improve students' learning benefits. Rubrics is a meter used to evaluate diverse factors and subjective learning benefits and provide teaching direction and feedback. The Rubrics assessment method is suitable for interdisciplinary student learning outcome-oriented assessment. It is different from traditional quantitative data and can allow us to better understand the learning direction that students should adjust to strengthen their learning outcomes. This research is based on the Rubrics scale N22W329 (Rcampus, 2023) of the design course, General Rubrics for Art/Craft Assignments Rubrics DXW38XB (Rcampus, 2023) and designed five items including design concept and value, differentiation and innovation, feasibility, aesthetic appearance, and project completeness.

4. Analysis

4.1 Interview Coding Analysis of Participants

Through in-depth interviews with 26 industrial design seniors who belong to three different interdisciplinary learning experience groups, the interview data collection and coding are based on the interdisciplinary core competencies sorted out from the literature. Three factors extracted through selective coding include communication, reflection, and practice.

The 26 students were divided into (a), (b), and (c) three groups and numbered according to no interdisciplinary learning experience, interdisciplinary learning experience and complete interdisciplinary learning experience. For example, **a1** represents the first student in group **a** who has no interdisciplinary learning experience. The main category and subcategory details of the interdisciplinary core competence are extracted from the verbatim transcripts of the interviewers through selective coding and axial coding. In team communication and interaction, group **c** has the most mentions and group **a** has the least number of mentions. In the efficiency in learning, group **c** has the most mentions and group **a** has the least. In the feeling of inadequacy in learning, group **a** has the most mentions and group **c** has the least. In the feedback during learning, group **c** has the most mentions and group **a** has the lowest. In the teacher's opinion, group **c** has the most mentions and group **a** has the least number of mentions. In teamwork, group **c** has the most mentions and group **a** has the least.

Through the sub-item analysis of the core competency of team communication, the results show that group (a) and group (b) can communicate quickly within the team, the reason is that the team members of the two teams have the same major subjects, and the students only have partial interdisciplinary learning experience or no interdisciplinary learning experience, but the influence of each student's "personal style difference" factor leads to "communication difficulties" within the team.

In addition, the lack of students with different majors and professional backgrounds in the group is the main reason for the negative impact of "multiple thinking" and "project completion". The above effects cause the selection of sub-items encoded in the main axis of the core competence of reflection "learning regret" is extracted more often. Because of the complete interdisciplinary learning experience, group (c) can communicate well in the three aspects of "professional opinion", "multiple thinking" and "product structure". On the other hand, group (c) has communication difficulties in four aspects of "technical terms", "cognitive differences", "process conflicts" and "low participation". The reason is that team members have complete interdisciplinary learning experience. The analysis results of the selective coding and axial coding of the interviewed students are shown in Table 3.

Table 3: The analysis results of the selective coding and axial coding.

Coding		Group		
Selective coding	Axial coding	(a)	(b)	(c)
communication	Team communication	*	**	***
	Team interaction	*	**	***
reflection	Efficiency in learning	*	**	***
	Feel inadequate in learning	***	**	*
	Feedback during learning	*	**	***
	Teacher's opinion	*	**	***
practice	Teamwork	*	**	***
	Difficulties within the team	*	**	***

Number of mentions: *--Most, **--Middle, *--Lowest**

The results of the interview coding analysis of product development and design schemes show that the four main difficulties in group (a) are "differences in innovative design schemes", "limited thinking in design schemes", "feasibility of design schemes", and "developmental suggestions for design schemes."

The main reason is that the homogeneity of team members without relevant interdisciplinary experience is limited in "multiple thinking". Moreover, group a lacks other professional ability and can only screen proposals within the scope of existing ability. Therefore, the "multiple thinking" of early product concepts is limited. "Data collection of design schemes", "differences in innovative design schemes", "limited thinking of design schemes", "feasibility of design schemes" and "developmental suggestions for design schemes" are the main aspects of group (b)'s difficulty. The main reason is that group members have interdisciplinary experience, but students' learning experience is still dominated by a single discipline. When team members execute product proposals, the "data collection" in the "pre-concept of product design" will be limited. "Professional communication of design proposals", "differences in innovative design schemes", "conflicts in design proposal process", and "convergence of design proposal problems" are the main difficulties of group

(c). The reason for the difficulty is that the group members have complete interdisciplinary learning experience, which creates conflicts between different backgrounds. Team members need more time to adjust and communicate in the "pre-concept of product design". The results of the interview coding analysis of group of a, b and c are shown in Table 4, 5 and 6.

Table 4: The coding analysis results of group a in product development and design schemes.

Coding		(a)
Selective coding	Axial coding	Reason
Reflection	Differences in innovative design schemes	Limited in " multiple thinking "
	imited thinking in design schemes	
Practice	Feasibility of design schemes	Lack of other professional ability
	Developmental suggestions for design schemes	

Table 5: The coding analysis results of group b in product development and design schemes.

Coding		(b)
Selective coding	Axial coding	Reason
Reflection	Differences in innovative design schemes	Limited in " multiple thinking "
	limited thinking in design schemes	
Practice	Feasibility of design schemes	Students' learning experience is still dominated by a single discipline
	Developmental suggestions for design schemes	
	Data collection of design schemes	

Table 6: The coding analysis results of group c in product development and design schemes.

Coding		(c)
Selective coding	Axial coding	Reason
Communication	Professional communication of design proposals	Group members have completed interdisciplinary learning experience which creates conflicts between different backgrounds.
	Conflicts in design proposal process	
	Convergence of design proposal problems	
Reflection	Differences in innovative design schemes	Students' learning experience is still dominated by a single discipline

4.2 Product Development Rubrics Rating Scale

In this study, the scores of the Rubrics scale were analyzed by one-way analysis of variance. The results show that there are significant differences between group c and group a in terms

of “design concept and value”, “differentiation and innovation”, “feasibility”, “project completeness”, but there is no significant difference in “aesthetic”. In addition, there was no significant difference between group **a** and group **b** as well as between group **b** and group **c** in the five Rubrics scale scoring items. The ANOVA results of the Rubrics scores are shown in Table 7.

Table 7: The ANOVA results of the Rubrics scores.

ANOVA of Rubrics Scale Scores			
Variable	Group		P-value
1.Design concept and value	c	a	0.001*
		b	0.398
2.Differentiation and innovation	c	a	0.001*
		b	0.828
3.Feasibility	c	a	0.001*
		b	0.231
4.Aesthetic	c	a	0.772
		b	0.589
5.Project completeness	c	a	0.001*
		b	0.264

*-Significant

Further comparison of the average scores of group a, group b, and group c in the five scoring items of the Rubrics scale shows that the average scores of group c and group b are higher than those of group a. The results of the comparison between groups and the mean of the Rubrics scale scores are shown in Figure 2.

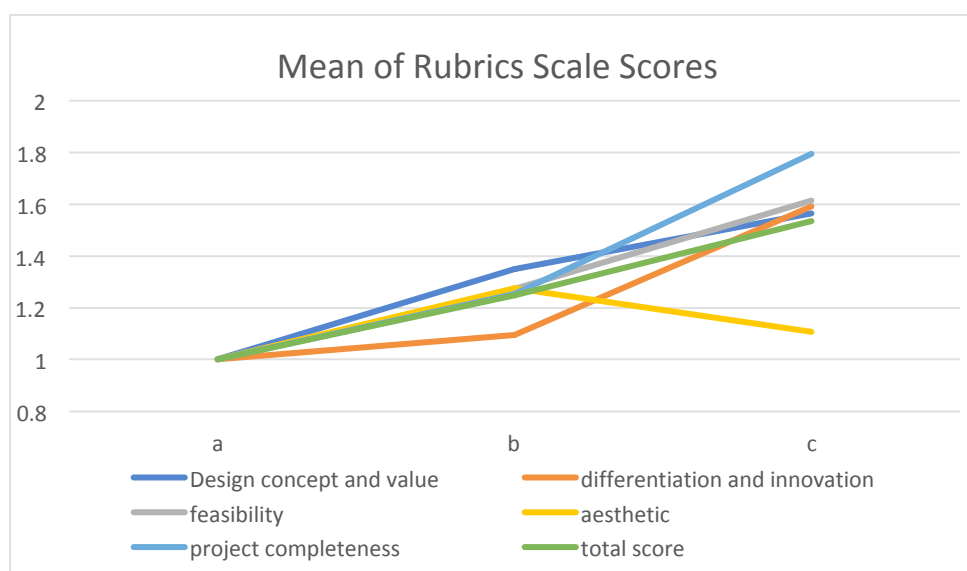


Figure 2: The results of the comparison between groups and the mean of the Rubrics scale scores.

5. Conclusions and Recommendations

5.1 Conclusion

1. In terms of student learning effectiveness, there is a significant difference between students with "interdisciplinary learning experience" and "no interdisciplinary learning experience." After the main axis coding analysis, the choice coding analysis, and the qualitative interview, the research results reveal the following conclusions. The efficiency and feedback of learning in teamwork and the complete product development process are higher for students with interdisciplinary learning experience than for students without interdisciplinary experience.

Therefore, actively encouraging students to participate in relevant interdisciplinary activities can enrich students' multiple thinking and break through the limitations of a single major. Diversity in educational background has a positive impact on team success. Multidisciplinary can generate new ideas at the intersection of disciplinary knowledge, while enhancing collaboration and improving research productivity. (Salazar et al., 2012, van Knippenberg, Ginkel & Homan, 2013).

2. Students of the Department of Industrial Design should combine interdisciplinary teams to complete the work when making project works. The average score of the student team with "complete interdisciplinary experience" is higher than that of the other teams in all aspects, except for the score of product aesthetics which is lower than the other groups. Especially in the feasibility and complete implementation of the project, team members from different professional fields can efficiently help in the implementation of the design and the assistance of non-design professional technology. Therefore, when designing students carry out project works and engage in related courses, they should first be introduced to interdisciplinary Experience to improve the efficiency and completeness of project execution. Salazar, Lant, Fiore and Salas (2012) also pointed out that diverse interdisciplinary teams were found to be associated with high productivity and having diverse researchers within the same organization can help improve team performance.
3. Increased participation in interdisciplinary teamwork and true interdisciplinary collaboration is important. It is joint disciplines that solve common problems and continue to help each other, rather than single disciplines solving problems alone (Borrego & Newswander, 2008). Collaboration is needed through a steady phase of course teams, with a focus on designing assessments and activities for multidisciplinary student groups, not just theory or classroom lectures (Hannon et al., 2018). Separate disciplinary structures have a limiting effect on academic collaboration. It should not simply use the department's theory as an interdisciplinary course plan but incorporate collaboration between different areas of expertise so that students fully understand its importance (Davison et al., 2012).

5.2 Recommendations for follow-up research

Regarding the limitations and results of this study, there are still some areas that need to be improved, and the following suggestions are made for future research directions.

1. Due to research limitations such as tracking the long-term learning process, the number of tested samples is relatively insufficient. In the future, the number of tested subjects should be expanded to explore its learning benefits in depth.

2. This study is mainly to explore the impact of different interdisciplinary learning experiences and the effectiveness of interdisciplinary ability training for design students. Future research can include more departments in the scope of the study.
3. The composition of interdisciplinary team members in this study covers business majors, engineering majors, and design majors. Future research can explore how to effectively improve the cooperation model with design majors from the perspective of different departments.
4. Improvements are needed in the studies of product animation, video clips, multimedia software and other related courses in the courses of the Department of Industrial Design to explore whether they can improve students' learning efficiency.

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Exploring Protective Factors of Resilience Among College Students

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Abstract

This study investigates possible protective factors that contribute to different mental health outcomes based on the resilience portfolio model. Using an explanatory sequential mixed methods design, the study first explores whether certain protective factors namely social support, regulatory strength, meaning making strength, and interpersonal strength would be associated with four distinctive mental health outcomes typologized by high and low levels of subjective well-being and symptomology in the dual-factor model. Then, the study examines how the high subjective well-being and high symptoms group achieve well-being despite clinical symptoms. Among the 311 college students who participated in the research, the high subjective well-being and high symptoms (symptomatic but content) group accounted for the highest proportion (49%), followed by the low subjective well-being and high symptoms (troubled) group (37%), the high subjective well-being and low symptoms (positive mental health) group (11%) and the low subjective well-being and low symptoms (vulnerable) group (3%). The quantitative result shows that the levels of social support, regulatory strength, meaning making strength and interpersonal strength significantly differ across the four outcome groups, revealing that these protective factors matter to determine one's mental health outcome. The qualitative result shows that students relied on different strengths that contributed to the same outcome. Most importantly, high self-efficacy and goal orientation were found to be common among the symptomatic but content. These findings support clinical approaches that strengthen protective factors and those that enhance cognitions about self-appraisal and goal orientation.

Keywords: Resilience Portfolio Model, Dual Factor Model, Subjective Well-Being, Protective Factors, Coping, Self-Efficacy, Goal Orientation

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Introduction

Working in the university setting in the Philippines, the researchers have witnessed increased mental health concerns among colleagues and students during the pandemic. Some, despite heavy personal losses, were able rebound from adversity, while others were less resilient. It is in this background that the study explores protection factors that underpin resilience for better-than-expected outcomes.

Resilience as a process

Resilience has been seen as an innate trait that enhances individual adaptation (Oshio et al., 2018). Resilience has also been considered as a process: one that overcomes the negative effects of risk exposure, copes successfully with traumatic experiences, and avoids the negative trajectories associated with risks (Wang et al., 2015). This process considers positive contextual, social, and individual variables that disrupt problematic developmental trajectories (Zimmerman, 2013). This process can also be seen as a pattern of adaptation that can be developed by everyone (Ungar, 2021) interacting within and between multiple systems that create the potential for those under stress to do better than expected (Ungar & Theron, 2020).

Promotive factors in the resilience process

Fergus and Zimmerman (2005) identified two types of promotive factors: assets and resources. Assets include positive factors that reside within individuals, such as self-efficacy and self-esteem. Resources include parental support, adult mentoring, and community organizations that promote positive youth development that provides youth with opportunities to earn and practice skills. It is believed that these assets and resources help less fortunate teenagers avoid the negative outcomes associated with poverty.

Grych et al. (2015) summed up prior resilience studies to create the resilience portfolio model. This model rebrands promotive factors as protective factors that also cover resources and assets. Assets in the new model include regulatory strengths, interpersonal strengths, and meaning making strengths. Regulatory strengths refer to emotion regulation capacity that seeks to manage negative emotions and generate positive emotions. Interpersonal strengths are characteristics within the individual that foster the development and maintenance of close relationships. Meaning-making strengths are concerned with the desire and the capacity to find meaning in difficult life events. Resources in the new model include people and environmental factors who and which can provide support and nurturing. Typically, a person having been exposed to violence would find support in their various personal strengths and external factors as they appraise the danger and adopt a strategy to cope with the situation, and the interaction with multiple systems and the person's responses will lead to a certain psychological health outcome (see Figure 1).

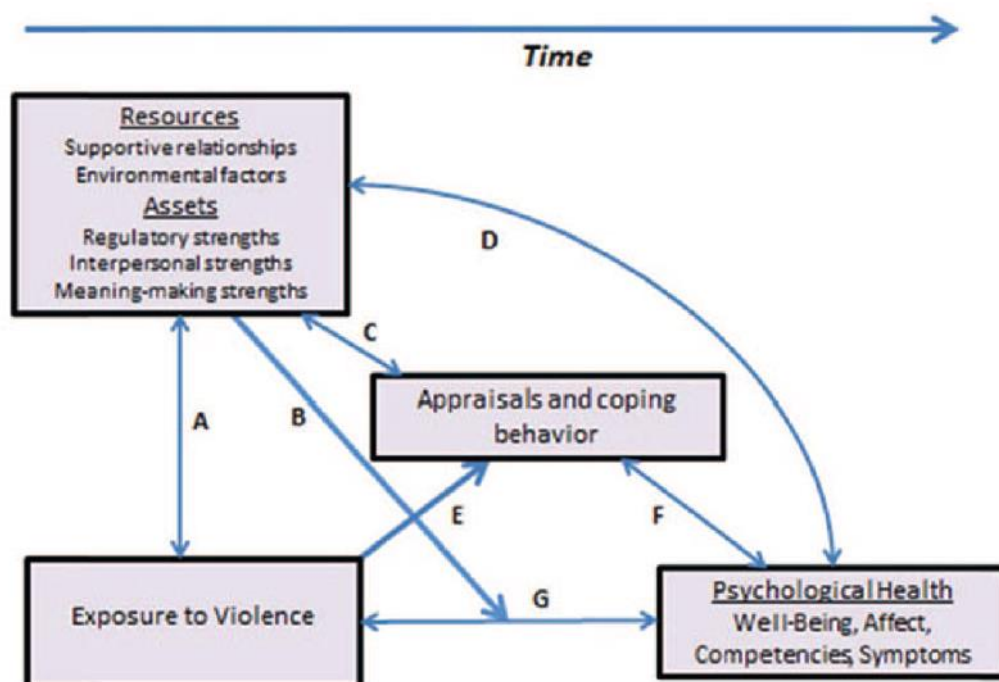


Figure 1: The Resilience Portfolio Model

Outcomes of resilience

The dual factor model sheds light on how to evaluate mental health outcomes with a more nuanced typology. It is suggested that the two concepts – subjective wellbeing and psychopathology - are important and distinct. Studies have found that both constructs are related but independent predictors of positive outcomes among students at various levels (Eklund et al., 2011; Suldo et al., 2016). Consistent with previous studies on the dual factor model, Grych et al. (2020) named the outcome groups as (1) positive mental health for those showing high subjective wellbeing and low symptoms; (2) symptomatic but content (high subjective wellbeing and high symptoms); (3) vulnerable (low subjective wellbeing and low symptoms); (4) troubled (low subjective well-being and high symptoms). Studies have consistently identified these distinct determinants and outcomes, demonstrating the need to assess mental health through the combined lens of symptoms and subjective wellbeing (Smith et al., 2020). Empirical evidence suggests that the dual-factor approach could be used in clinical or non-clinical settings, through different populations and lifespans (Iasiello et al., 2020). Grych et al. (2020) combined both the resilience portfolio model and the dual factor model and found that each of the four dual-factor outcomes was associated with various resources and assets.

Aim of the current study

This study uses the same model adopted by Grych et al. (2020), combining the resilience portfolio model and dual-factor model, to assess if it is true that the four mental health outcomes are associated with different levels of the assets and resources examined by Grych and colleagues (2020). With knowledge thus far, the assessment of dual-factor outcomes among university students in the Philippines has not been done. Additionally, this study takes an extra step to understand what representatives of the symptomatic but content (SBC) group, conventionally a minority group (around 4-17%) (Grych et. al. 2020; Eklund et al., 2011;

Suldo et al., 2016), can teach us about remaining satisfied about life despite ongoing symptoms.

Research Design

This study adopts an explanatory sequential mixed methods design for breadth and depth of understanding and corroboration (Johnson et al., 2007; Schoonenboom & Johnson, 2017). The intent of the design is to find qualitative data to explain the initial quantitative results (Creswell & Creswell, 2018). Part 1 uses multivariate analysis to determine whether membership in various mental health groups is associated with different levels of protective factors. Part 2 uses qualitative interviews to explain, from the perspectives of the participants, the dynamics of those protective factors among the symptomatic but content.

Participants

Participants were three hundred eleven (311), 18-33-year-old-university students recruited from De La Salle Medical and Health Science Institute, Lyceum of the Philippines University, Cavite State University, De La Salle University Dasmariñas (Age \bar{X} = 20.40, SD =1.98). The sample was 198 (65%) females and 108 (35%) males. Majority of the participants (71%) reported that they fall into the income bracket of below P10,957 to P43,828 representing a mix of poor, low income and lower middle class.

Measures

The measures used in this study were adapted from a similar study conducted by Grych et al. (2020) on American adolescents in low-income neighborhoods (42% of which receiving public assistance). To establish reliability and validity of the instruments applied in the Philippine setting, we tested them first on 48 participants from De La Salle University, Dasmariñas. Internal consistencies for the pilot averaged .87 (range .82 to .92) and improved to an average of .89 in the main sample (range .82 to .92). Validity was established in the pilot and the main samples with moderate correlations with related constructs.

The Four Mental Health Groups

Levels of wellbeing and symptoms of psychological distress given by measures with acceptable psychometric properties are used as a basis to categorize participants into groups. The levels of wellbeing and symptoms are each divided into high and low depending on the cut-off scores set by the corresponding measures, all standardized ones that have been used over many populations.

Subjective well-being. The Satisfaction with Life Scale (Diener et al., 1985) was used to categorize participants into high and low wellbeing groups. The five-item measure with a 7-point response scale assesses respondents' cognitive judgement of how well their life is. A sample item is "In most ways my life is close to my ideal." Internal consistency (coefficient alpha) in this sample was 0.895. The measure uses the scale midpoint (20) to differentiate higher and lower satisfaction scores, rating participants with a score of 20 or below as lower in wellbeing and a score above 20 as higher in wellbeing. The low wellbeing group comprised 40% of the sample, and the high wellbeing group is 60%.

Psychological symptoms. Kessler Psychological Distress Scale (K10; Kessler et al., 2002) was used to categorize participants into high and low symptom groups. The 10-item measure with a 5-point response scale assesses respondents' distress level based on questions about anxiety and depressive symptoms that a person has experienced in the most recent 4-week period. Sample items include "In the past 4 weeks, about how often did you feel nervous?" and "In the past 4 weeks, about how often did you feel hopeless?" Internal consistency was 0.914. The measure assesses that those with scores below 25 are likely to be well or have a mild disorder, and those of 25 or above are likely to have a moderate or severe disorder. Consequently, respondents scoring below 25 were categorized as low in distress, and those scoring 25 or above as high in distress. The low distress group comprised 15% of the sample, and the high group 85%.

Protective Factors

The resilience portfolio model revealed that both individual assets and external resources are protective factors that affect well-being and level of distress (Grych et al., 2015). Individual assets include regulatory strengths, interpersonal strengths, and meaning making strengths, which were found to be uniquely related to levels of well-being and distress (Hamby et al., 2017). External resources include support from parents, peers, teachers, and the wider community. The following constructs representing the various protective factors were assessed.

Social Support. The Multidimensional scale of perceived social support (MSPSS; Zimet et al., 1990) measures an individual's perception of support from family, friends, and the wider community. The adapted 12-item version with a 7-point response scale gives an internal consistency of 0.92 in the trial and the sample.

Emotion Regulation. Difficulties in emotion regulation scale-SF (Kaufman et al., 2016) is an instrument measuring the level of emotion awareness and regulation. An 18-item measure with a 5-point response scale asks college students how they relate to their emotion. A sample (reversely scored) item is "When I'm upset I have difficulty getting the work done". Internal consistency coefficient alpha was 0.86.

Interpersonal Strength. A 5-item question with 4-point response from Loyola Generality Scale (LGS; McAdams & de St. Aubin, 1992) was used to measure how college students create an impact in their personal lives. A sample item is "I try to pass along the knowledge I have gained through my experience.". The internal consistency coefficient alpha was 0.82.

Meaning Making. Meaning in life Questionnaire (Steger et al., 2006) was used in the study focusing on the presence of meaning which is a 5 item self-report scale. This measures the level of overall meaning college students perceive in their life. A sample item is "I understand my life's meaning". Internal consistency coefficient alpha was 0.90.

Results

Forming groups of different mental health outcomes

Each college student received a score of 0 (low) or 1 (high) on the satisfaction with life scale (subjective wellbeing) and K10 psychological distress scale (level of symptoms) by use of the scoring instructions provided in those standardized test. College students who scored a) high

subjective well-being (score above 20) and low symptoms (score below 25) are included in the "positive mental health" group (11%); (b) high subjective wellbeing (score above 20) and high symptoms (score 25 or above) the "symptomatic but content" group (49%); c) low subjective wellbeing (score 20 or below) and low symptoms (score below 25) the "troubled" group (37% of the sample); (d) low in subjective well-being (score 20 or below) and high symptoms (score 25 or above) the "vulnerable" group (3% of the sample). The SBC group accounted for the highest proportion, followed by the troubled group, PMH group and the vulnerable group, as shown in table 1.

Table 1: Dual Factor Groups Classification

Symptoms	Subjective Wellbeing	
	High	Low
Low	Positive Mental Health (PMH) (n= 35; 11%)	Vulnerable (V) (n= 10; 3%)
High	Symptomatic but Content (SBC) (n= 152; 49%)	Troubled (T) (n= 114; 37%)

Group membership and protective factors

We conducted a multivariate analysis of variance (MANOVA) to test whether the outcome groups differed significantly on the various strengths (meaning making, regulatory, interpersonal) and resources (social support). Group membership with the four outcomes is the independent variable (IV). The four protective factors serve as the dependent variables (DV). The MANOVA reveals that group membership has significant main effects on the protective factors, $F(12, 805) = 13.05, p < .001$.

Table 2: Multivariate Analysis of Variance

MANOVA: Wilks Test						
Cases	df	Approx. F	Wilks' Λ	Num df	Den df	p
(Intercept)	1	4288.500	0.017	4	304.000	< .001
GROUPS	3	13.053	0.625	12	804.600	< .001
Residuals	307					

Differences among groups on specific factors were examined with the post-hoc results. These analyses showed that group membership has significant main effects on all the factors. For meaning making, the test assumptions were checked using Welch's Test because Levene's test was significant ($p < .001$), giving $F=24.87 < .001$, partial eta squared =.196. For emotion regulation, no homogeneity correction is needed because Levene's test was non-significant ($p=.580$), giving $F=22.40 < .001$, partial eta squared =.180. For interpersonal strength the test assumptions were checked using Welch's Test because Levene's test was significant ($p < .01$), giving $F=5.76$, partial et squared =.053. For social support no homogeneity correction is needed because Levene's test was non-significant ($p=.532$), giving $F=21.18 < .001$, partial eta squared =.171.

Discussion

As expected, we could categorize college students into four outcome groups, and group membership has significant main effects on the various protective factors measured. A few points are worth noting. First, what was surprising was that the symptomatic by content group (SBC) was the largest in this study (49%), compared to SBC being the smallest in proportion (17%) in Grych et al. (2020). It seems to suggest that the proportion of the symptomatic but content (SBC) group could be higher in a majority world context. The observation should be treated with caution because the participants in previous studies were coming from younger teens while those in the current studies are older teens or young people in their early 20s, which may explain higher capacity to find “contentment” despite challenges. Second, the level of the examined protective factors are associated with mental health outcomes among college students. In general, the positive mental health and the symptomatic but content groups have the highest level of most protective factors, and the troubled group has the lowest level of all protective factors.

Qualitative Study

The qualitative study (Part 2) was conducted as a follow up of the quantitative study (Part 1) to explore what the SBC group (n=152; 49%) would say about the paradox of enjoying high subjective wellbeing while suffering high level of symptoms. The study zooms into those participants who are most representative of the group: those who are truly satisfied about life (SWL score \geq 25) and are severely symptomatic (K10 score \geq 30).

Research participants and procedure

We purposively recruited 3 participants, all female, aged 19, 21 and 22 years old, from different programs, all at different stages of their study, and all fitting the above criteria. We approached these participants first by email to express our interest to make a follow up interview on the survey (part 1 of this study) they took part in. After they replied to show initial interest, we called them up and passed them the informed consent by email. These three participants sent back the signed informed consent, as we set a time to interview them on Zoom or in person. The interviews, averaging 50 minutes, were conducted using Taglish by both researchers and were recorded with their approval. To protect the identity of the participants, code names are used in the report.

Instruments and measures

In-depth interviews were conducted with the research participants in late June, a few days after they completed the survey. The interviews were guided by semi-structured questions, which allowed the researchers to explore narratives of the respondents. An interview protocol was used to guide the exploration and to keep the conversation focused on the designed direction (Jamshed, 2014).

Data collection and analysis

The recorded interviews were all transcribed on <https://otranscribe.com/> into English and Tagalog depending on the language used. Tagalog phrases used were retained and English translation was added where appropriate. The transcribed data was analyzed in English.

Analysis of the interview transcripts was assisted by the software of QDA miner lite. The qualitative data analysis is both a step-by-step process and an interactive practice that goes back and forth between steps (Creswell & Creswell, 2018). In this study, the researchers read through the transcripts with the profile of the respondents in mind to get a big picture of all information. Then, the researchers read the transcripts line by line and bracket units of information by putting a word or phrase in the margins to represent some tentative categories. This open coding process generated numerous units of information that were grouped into more refined categories. The related categories are further grouped together as themes to address the research questions asked. These themes are refined as the relevant texts are reread and compared with one another. The whole process of transcription, coding, and identification of themes were done by the two researchers. Disagreements in the coding process were discussed and resolved.

Trustworthiness

Taking reference from Morrow (2005), various ways were employed to improve trustworthiness. First, the method and the process are articulated as clearly as possible to enable replicability of the research. Second, the researchers identified and discussed their assumptions to maintain a reflexive posture. We kept a journal to record reflections throughout the research process. Third, researchers worked independently on data analysis, before joining together to compare, discuss differences, and resolve disagreements. Fourth, research participants were contacted to verify major findings to allow member checking.

Findings

Self-affirmation	C: I really have the chance to know myself. Because at that time I also experienced a breakup. I was able to know myself more. To know the worth that I have. I was able to focus on my family and friends po.
	B: And if you know that you trust yourself, it's like there is a feeling na "ok I can do this na." Parang I am satisfied na
	A: I believe God and myself. He has set something much more for me.
Sense of moving towards a goal	C: I focus on loving myself, and then giving importance to my family of course, and honestly I am focusing on how to get a job after college.
	B: Isa po doon is yung failure, rejection, self-doubt; they are part of journey na at the same time nakakatulong din naman po sya sa growth ng isang tao
	A: We always see positivity. I didn't get accept in Ateneo and its ok. Kasi I set an ultimatum na ok after po I go to states and I'll study doctorate and I'll stay there and these are my second option ganun sir... ramdam ko naman na I'll reach that.

Table 1: Participants recapping what makes them feel well despite ongoing symptoms

What transpired in Part 2 of the study are how protective factors function and how they are prioritized by someone who is distressed but find life good for them. First, social support is a valuable resource. It was obvious that one participant had very strong family and peer support, and this support is not enough to help her avoid symptoms of anxiety and depression during critical times.

Second, regulatory strength in terms of emotional regulation is used frequently by participants in a variety of forms. Emotion regulation is concerned with using ways to modify emotions for people to feel better (Shaefer et al., 2020). The ways that were suggested could be further grouped into four categories, including impulse control (e.g. suppressing thoughts, neglecting criticisms), distraction (entertainment), rejuvenation (rest, play, hobby), and building on the positive (self-talk and counting achievement). These skills seem to build on past practices and contribute to helpful appraisal behavior when new challenges arise.

Third, participants are strong at different strengths, and it is possible that some (e.g., A who are not good at emotion regulation or interpersonal communication can make up for the lack thereof with other strengths such as meaning making to achieve high subjective wellbeing).

Fourth, interpersonal strength is tricky in the Philippine context. This strength is characterized by being nice and not saying no to others in the Philippines, and such strength may not necessarily get them the advantage they need. Participants (B & C) are not spared from peer-related pressure because of this strength, but it is notable that the participant (A) who did not show strength in this area seemed to suffer more distress from relational issues (e.g. misunderstanding and abandonment). It seems that this strength helps participants indirectly by not worsening the present situation in a community-based context like the Philippines.

Fifth, self-efficacy and orientation to a goal seem to be crucial for satisfaction in life despite the symptoms one experiences. All three participants shared they trust themselves because of prior experience or faith. All of them shared they are moving towards a goal (job, growth and study) despite the challenges (see Table 1).

Further Discussions

Part 1 has established that protective factors in the resilience model are useful in differentiating mental health outcome. It speaks for mental health intervention that targets meaning making, emotion regulation, interpersonal strength and identifying social support.

Part 2 reveals representative students of the symptomatic but content group have life challenges that are varied, coped with them counting on different emotion regulation, interpersonal, and meaning making strengths that they acquired from personal life experiences and relationships with others. External support from family and friends, not common to all, was not a prerequisite to subjective wellbeing. What seemed to be a consensus for subjective wellbeing was a demonstrated sense of trust in oneself (self-efficacy) and an urge to achieve a goal (goal orientation), whatever the goal is.

Clinically, the study suggests that resilience may be enhanced if a clinician is intentional in affirming a client's strengths and their internalization of such strengths. It also points to the potential of using strategies typical of hope therapy (e.g. Cheavens et al., 2006) that supports goal setting and goal achieving in helping students achieve subjective wellbeing even though clinical symptoms are present.

Conclusion

The mixed study aimed to verify whether some protective factors named by the resilience portfolio model mattered in differentiating various mental health outcomes: a) positive

mental health (high wellbeing, low symptoms), b) symptomatic but content (high wellbeing, high symptoms), c) vulnerable (low wellbeing, low symptoms), d) troubled (low wellbeing high symptoms). We conducted MANOVA on the samples, showing that different group memberships created significant main effects on all the factors under study: meaning making, emotion regulation, interpersonal strength, and social support. Among the symptomatic by content students, a majority group in the current sample, participants with very high symptoms and high satisfaction were interviewed. Their narratives produced a more nuanced understanding on how protective factors were used, and what the most important factors that kept them satisfied despite ongoing symptoms could be. The combined analysis highlights the importance of highlighting different protective factors and suggests that therapies that target self-efficacy and goal orientation could potentially be helpful in boosting subjective well-being high despite ongoing symptoms.

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***Exploring Guided Imagery, Mindfulness Meditation and Cognitive Restructuring
As Therapeutic Techniques for Treating Post-traumatic Stress Disorder***

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Abstract

PTSD occurs due to direct or indirect exposure to traumatic events, leading to prolonged psychological distress. Its symptomatology ranges from the experience of intrusive thoughts to continued avoidance of stimuli. A few physiological symptoms include heightened arousal and reactivity, which can be observed as rage outbursts, restlessness, reckless behaviour without regard for consequences, hypervigilance, sleep disturbances, and difficulties concentrating. Relaxation techniques have demonstrated considerable amelioration of physiological symptoms of trauma. According to van der Kolk (2002), PTSD treatment must address sensory reminders and help the individual gain bodily control over the triggers evoking traumatic reactions. The use of relaxation techniques may help manage an over-reactive stress response if the individual is cognizant of their triggers and can be ready to react to them. As hypervigilance lessens and focus improves, these strategies may be utilized as a stepping stone to get individuals with PTSD prepared to engage in other evidence-based treatment modalities. In the present review, we aim to explore the efficacy of therapeutic techniques for treating PTSD. We underscore three adjunct therapeutic interventions that techniques (guided imagery, mindfulness-based interventions and cognitive restructuring) two of which are mental relaxation techniques and one a psychotherapeutic intervention that address distressing symptoms of PTSD. The empirical evidence on the efficacy of such techniques is meagre. Still, a growing body of research indicates they are effective approaches for treating PTSD, especially for those individuals who have not been successful with traditional therapies.

Keywords: Post-traumatic Stress Disorder, Guided Imagery, Mental Relaxation, Cognitive Restructuring, Alternative and Complementary Therapeutic Techniques

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Introduction

Post-traumatic stress disorder (PTSD) is a mental health condition that can develop in individuals who have undergone or witnessed a traumatic event (Norelli et al., 2018). A few prominent symptoms of the disorders are intrusive thoughts or memories connected to the traumatic incident, avoiding triggers or recollections of the event, unfavourable shifts in mood or cognition, and elevated levels of arousal and responsiveness. PTSD significantly affects a person's capacity to function in everyday life not addressed appropriately. The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) lists specific criteria for its diagnosis, including exposure to a traumatic incident, repeated reliving of the event, avoiding stimuli associated with the event, negative alterations to mood and cognition, and hyperarousal (American Psychiatric Association, 2013).

While addressing appropriate treatments, an ideal treatment for PTSD must treat the anxiety response associated with PTSD. As it has been demonstrated that relaxation techniques can help with the physiological implications of long-term stress, these methods can be used to supplement traditional therapy. Alternative methods may help diminish the physiological symptoms of PTSD in people opposed to conventional, evidence-based treatments or those who have attempted conventional therapy without success (Scotland-Coogan & Davis, 2016).

Relaxation techniques, therefore, are used by individuals suffering from PTSD to alleviate the physical and psychological symptoms of stress and anxiety. These methods might range from deep breathing exercises to guided imagery, progressive muscular relaxation, and mindfulness meditation. By employing these techniques, individuals experiencing PTSD can learn to recognize and control the bodily symptoms of stress and anxiety, which can frequently elicit intrusive memories and thoughts surrounding their traumatic events. Moreover, relaxation methods can assist people with PTSD in controlling their emotions and creating coping mechanisms to deal with the difficulties of daily life (American Psychological Association, 2017). Although they can't be employed as a standalone treatment for PTSD, relaxation methods can be effective adjunct therapies when combined with other treatments like cognitive-behavioural therapy (CBT) or medication. Overall, relaxation methods can provide individuals with PTSD with tools to better control their symptoms and enhance their general wellbeing.

Guided Imagery's therapeutic method has been proven to be successful in reducing stress and fostering relaxation (Rossman, 2008). It can be employed as a method to assist individuals with PTSD in coping with their traumatic symptoms and has often been demonstrated to be effective in reducing PTSD symptoms in combat veterans (Wyka & Loewy, 2017). Participants are asked to visualize a tranquil and comforting environment or circumstance in a guided imagery session. This might entail conjuring up a vivid, all-encompassing mental image by utilizing all senses. Guided Imagery supports individuals with PTSD in dealing with intrusive thoughts and boosts positive emotions (Boyd, 2012). The therapist may also employ guided prompts to assist the client in achieving a greater state of relaxation and control over their thoughts and emotions. It can also help people with PTSD manage their hyperarousal symptoms and flashbacks (Wyka & Loewy, 2017). It helps lower their levels of tension and anxiety and achieve a stronger sense of control over their emotions by concentrating on a soothing and serene mental image. The frequency and severity of traumatic memories and intrusive thoughts may also be lessened as a result and can subsequently help people with PTSD lessen their feelings of anxiety and depression (Butler et

al., 2006). Overall, guided Imagery can be a valuable technique for people with PTSD, especially when combined with other treatment modalities (Sadock & Sadock, 2007).

Mindfulness meditation entails being in the present moment while remaining non-judgmental (Keng et al., 2011). In a mindfulness meditation session, participants pay close attention to their breathing, physical sensations, and thoughts while watching them objectively and without judgement.

For those with PTSD who struggle with symptoms like intrusive thoughts and hyperarousal, mindfulness meditation can be very beneficial. Individuals can learn to lower their levels of tension and anxiety and have a stronger sense of control over their emotions by learning to notice their thoughts and emotions without responding to them (Kabat-Zinn, 1990). The frequency and severity of painful memories and intrusive thoughts may also be lessened (Niles et al., 2012). Literature supports mindfulness meditation as a useful adjunct therapy for individuals with PTSD (King et al., 2013). It can also assist people with PTSD in building more resilience and coping mechanisms by raising their self-awareness and encouraging a sense of serenity and acceptance.

In the context of PTSD, cognitive restructuring aims to help individuals identify and change negative and distorted thought patterns connected to their traumatic experiences. PTSD has been connected to negative beliefs about oneself, others, and the world, as well as feelings of guilt, shame, and dread. These emotions and thoughts may contribute to developing and maintaining PTSD symptoms such as intrusive thoughts, avoidance, and hyperarousal. In cognitive restructuring for PTSD, patients work with a therapist to pinpoint and eliminate negative and false beliefs about their trauma. Examining the evidence in support of and opposition to these beliefs might assist with developing more accurate and impartial perspectives. For instance, a person who has PTSD may feel deeply ashamed and guilty because they feel responsible for their trauma, cognitive restructuring works around such thoughts and provides an alternative that helps reduce its impact.

In a similar vein, a study by Sripada et al. (2013) discovered that cognitive restructuring helped those with PTSD lessen their feelings of anxiety and despair by looking at the circumstances leading up to the trauma and recognizing that they were not to blame, therefore, they learned to challenge this belief through cognitive restructuring. This can lessen guilt and shame-related feelings and enhance general wellbeing. In general, cognitive restructuring is a crucial part of treating PTSD, individuals with PTSD can acquire more accurate and adaptive views, which can help to lessen symptoms and enhance their quality of life by confronting negative attitudes and beliefs connected to the experience.

Guided Imagery and PTSD

As discussed earlier, Guided Imagery (GI) is a behavioural technique that directs individuals to effectively create and manipulate mental representations to produce therapeutic changes (Strauss, Calhoun & Marx, 2009) and influence health outcomes in a clinical setting. It's a technique that utilizes narratives and stories to influence the images and patterns that the mind creates (Hart, 2008). In therapy, these techniques are used to guide another individual or oneself to imagine specific sensations or visualize images to elicit a desired goal or a physical response like reduced stress and pain. In essence, GI uses one's imagination to create images to generate beneficial and desirable emotional and physical outcomes. It can be delivered by a practitioner or can be practised on oneself via a recording. This mind-body

technique utilizes the components of mindfulness, skill training and visualization (Strauss, Calhoun & Marx, 2009) and usually begins with helping the client relax by taking some deep breaths. Then the client is guided to imagine peaceful and effective imagery that may promote healing.

The theory supports that if negative and disturbing images can create distressful psychological and physiological outcomes, pleasant and positive images may also help reduce stressful symptoms (Hart, 2008). However, GI should not be confused with positive thinking, as this is not just limited to thinking about pleasant events but also utilizes other aspects that employ imagination, emotions, and a spectrum of bodily senses (Naparstek, 1994), thus making it effective. It should also be distinguished from imagery that focuses on recalling the past traumatic experience, as GI centres around manipulating mental images that symbolize some aspects of oneself or the goal (Strauss, Calhoun & Marx, 2009). Hence, it's crucial to be critical of the various unstudied claims around GI before its implementation.

The literature focusing on the effectiveness of GI in reducing unwanted symptoms, stress, etc., is slowly emerging, and studies have found that GI is used for managing stress, anxiety, depression, pain symptoms, and preparation for medical procedures (Eller, 1999). Small-scale studies have suggested that GI may be used to improve numerous conditions like HIV-related symptoms (Auerbach, Oleson, and Solomon, 1992), post-cardiac surgery pain (Graffam & Johnson, 1987), cancer pain (Graffam & Johnson, 1987), and migraines (Mannix et al. 1999). It may also improve anxiety (Hammer, 1996; Schindler & Dana, 1983) and depressive symptoms (McKinney et al., 1997).

While GI has been shown to be effective against numerous disorders and conditions, studies have highlighted its efficacy in treating post-traumatic stress disorder (PTSD). An open trial of a group therapy intervention that included GI showed reduced trauma symptoms in 139 adolescents in post-war Kosova (Gordon et al., 2004). In another randomized controlled study by Beck et al. (2017), Guided Imagery and Music (GIM) was used on traumatized refugees seeking psychiatric help to cope with PTSD. The results revealed that GIM improved the psychological health of clinical populations and patients with PTSD. In another similar study by Jain et al. (2012), the researchers conducted a randomized controlled trial to determine whether a complementary medicine intervention (Healing Touch with Guided Imagery) reduced PTSD symptoms compared to the usual treatment returning combat-exposed active-duty military with significant PTSD symptoms. The results conveyed that participation in a complementary medicine intervention resulted in a clinically significant reduction in PTSD and related symptoms in a returning, combat-exposed active-duty military population. These studies provide a narrative elucidating the crucial role that guided imagery has been playing in treating PTSD symptoms, guiding us towards a better understanding of GI as a therapeutic technique and opening avenues for further investigation.

In alignment with this view, Strauss, Calhoun & Marx (2009) developed a clinician-facilitated, self-management intervention to treat PTSD through GI known as Guided Imagery for Trauma (GIFT). The researchers completed a feasibility trial on 50 women with PTSD related to military sexual trauma who were administered GIFT. After completing the full 12-week intervention, there was a significant reduction in PTSD symptoms. These findings highlighted that veterans well tolerated GIFT with military sexual trauma, and it can be easily administered.

As noted by studies, GI focuses on cognitive and affective aspects and actively employs these processes by taking into account the imagination and emotions of an individual. The technique directs an individual to imagine desirable goals/situations to elicit positive/desirable emotional responses and positive outcomes. Hence, it's important to note that GI may help tackle related cognitive and emotional symptoms of PTSD, like having negative thoughts about the world, lower cognitive functioning, difficulties with learning and memory (Roberts et al., 2022), feelings of sadness, anger, irritability, and detachment.

Mindfulness Meditation and PTSD

Kabat- Zinn (1994) describes mindfulness as "*paying attention in a particular way: on purpose, in the present moment, and non-judgmentally.*" This translates to "purposefully" shifting one's attention to the present moment and adopting a non-judgemental stance: meaning that the thoughts and emotions one experiences are noted without necessarily assigning a positive or negative connotation. The attention is returned to the breath again if the mind wanders. In mindfulness meditation, the object of focus is the arising, maintenance, and decay of various mental experiences. By observing such change, it is suggested that meditation may bring insight into the nature of the mind and relieve suffering through that insight (Lang et al., 2012).

Numerous studies have highlighted mindfulness meditation's effectiveness in reducing psychological, physiological and emotional stress and enhancing wellbeing. Meditation-based Interventions (MBI) have shown great promise in treating individuals with Major Depressive Disorder, Bipolar Disorder, Anxiety Disorder and Attention Deficit Disorder (Marchand et al., 2019). MBIs have been shown to reduce stress and pain among military personnel, and among Marines, MBIs led to reduced fatigue and increased memory function (Rice, Liu, & Schroeder, 2018). Mindfulness practice has also been shown to diminish physiological arousal, increase attentional control and foster acceptance of unwanted experiences, each of which may address processes that maintain PTSD (Lang et al., 2012). Mindfulness-Based Stress Reduction (MBSR) is a common resource for treating mental health and physical problems, which has been well-documented to improve stress-related symptoms such as depression, anxiety and PTSD (Goyal et al. 2014). In line with this idea, a study conducted by Kearney et al. (2012) discovered that veterans who participated in MBSR experienced significant improvements in measures of mental health, including measures of PTSD, depression, experiential avoidance, and behavioural activation as well as mental and physical health-related quality of life over a 6-month period.

These studies highlight an increase in the adoption of complementary and alternative medicine (CAM), especially mind-body therapies, which are considered effective in treating PTSD in military contexts (Polusny et al., 2015). Mindfulness is one such mind-body technique that emphasizes an array of emotional and attentional regulatory strategies that contribute to happiness cultivation and emotion management (Lutz et al., 2006). A narrative review by Haider, Dai & Sharma (2021) on understanding the efficacy of Meditation-Based Intervention on PTSD among veterans highlighted that meditation-based therapy is a promising approach for treating PTSD specifically among veterans resistant to trauma-focused therapies. Since taking treatment/ medical help may induce guilt and shame for veterans, this alternative approach (mindfulness meditation) may actively work to increase tolerance and acceptance and reduce possible negative moods like guilt and shame (Sun et al., 2021). The meta-analysis also revealed mindfulness meditation to have a significant and large effect on alleviating military-related PTSD symptoms. Therefore, mindfulness meditation can

be an effective therapeutic technique for reducing distressing symptoms of PTSD and enhancing psychological, emotional and physiological wellbeing.

A review by Lang et al. (2012) considered the three aspects of the Kabat-Zinn definition of mindfulness to provide a framework by which mindfulness meditation may help treat specific symptoms of PTSD. The authors state that individuals with PTSD demonstrate attentional bias toward trauma-related stimuli and have deficits in cognitive control (Buckley, Blanchard, & Neill, 2000). In such scenarios, attentional training programs have been shown to be effective in reducing anxiety symptoms (Amir, Beard, Burns, & Bomyea, 2009). Decreases in anxiety are purported to operate via changes in attentional allocation away from threat (Heeren, Lievens, & Philpott, 2011). This indicates that mindfulness, which aims to burnish one's attentional capacity, may be helpful in treating attention and anxiety-related issues in PTSD.

Secondly, the cognitive aspect of mindfulness focuses on being present in the moment (by focusing your thoughts in the "now"). In PTSD, the cognitive styles of worry and rumination have been shown to increase the negative effect, and both worry and rumination are associated with increased PTSD symptomatology (Ehring, Szeimies, & Schaffrick, 2009). This indicates that distressing cognitive patterns, which are a symptom of PTSD, may be reduced by incorporating mindfulness which focuses on a healthy cognitive pattern by allowing one to collect their thoughts and be present in the moment. Studies have shown that greater attention/ awareness to the present was associated with lower PTSD symptom severity and comorbidity, anxious arousal, and anhedonic depression symptoms in a sample of trauma-exposed adults (Bernstein, Tanay, and Vujanovic, 2011).

Further, Lang et al. (2012) also discussed that observing situations non-judgementally may counteract the tendency among PTSD patients to interpret internal and external experiences negatively. Those who adopt a non-judgmental stance may be more willing to approach fear-provoking or emotionally laden stimuli, which counteract avoidance.

These studies are critical in emphasizing mindfulness meditation's role in reducing PTSD symptoms and enhancing a positive state of mind.

Cognitive Restructuring and PTSD

Cognitive restructuring is the main therapeutic component of cognitive therapy, which A. T. Beck and colleagues initially popularised. As indicated previously, the goal of cognitive restructuring is to help patients recognize maladaptive thoughts and cognitive biases, elicit reasonable alternative concepts, and re-evaluate their views about themselves, the trauma, and the external world (Marks et al., 1998; Kubany et al., 2004; Ehlers et al., 2005). A CR conceptualization is centered around schemas since CR is characterized by schematic change. Schemas are meaning-making structures of the conceptual framework of cognition that have content, structure, and function (A. T. Beck, 1964). By challenging the natural acceptance of unfavourable schema-congruent information and promoting the assimilation of more adaptive schema-incongruent material, CR seeks to counteract this maladaptive tendency in schema-congruent processing. A shift in belief ratings is typically viewed as a sign that the individual has moved from maladaptive schematic processing to more adaptive, normalized schema activation (A. T. Beck et al., 1979).

The major focus of CR involves schematic content. Negative individualistic generalized attitudes, beliefs, and preconceptions about the self, personal environment, futures, accomplishments, and social interactions make up the content or predicate parts of maladaptive schemas (Dozois & Beck, 2008; Ingram & Kendall, 1986). According to A. T. Beck (1976, 1987), both healthy emotional states and other psychopathological disorders have distinctive belief contents. In contrast to exposure-based therapies for PTSD, this treatment is intended to reduce stress and assist patients in increasing social support both during and after treatment.

In an extensive review (Grunnert et al., 2007) comparing a frequently used technique—prolonged exposure (PE) with cognitive restructuring (CR), a thorough cognitive-behavioural investigation of two groups of post-traumatic stress disorder (PTSD)-afflicted industrial victims who did not improve with PE alone but did so when an imagery-based, cognitive restructuring aspect was incorporated into their exposure therapy was noted. The theoretical foundations and treatment components of the behavioural and cognitive therapies employed with the research subjects—PE and Imagery rescripting and reprocessing therapy (IRRT)—are compared. PE uses exposure, habituation, desensitization, and elimination as behavioural strategies to help patients process their emotions. PE is founded on theories of classical conditioning. IRRT, on the other hand, uses cognitive therapy to change one's images. In IRRT, exposure is used not for habituation but for trauma memory activation, which enables the identification, evaluation, revision, and integration of the stressful cognitions (i.e., the trauma-related pictures and beliefs).

People with PTSD who have experienced childhood sexual abuse (CSA) frequently experience the feeling of being contaminated (FBC). This ailment has so far received little attention in both study and treatment. To directly target the FBC, Jung and Steil (2013) created Cognitive Restructuring and Imagery Modification (CRIM), a two-session therapy that lasts 90 and 50 minutes. The results confirm the effectiveness of the recently created CRIM in easing FBC and PTSD symptoms in adult CSA survivors.

Another empirical study claims that CR is effective in reducing symptoms of anxiety, depression, and anger in CSA survivors but is less effective in reducing symptoms of guilt and low self-esteem (Möller & Steel, 2002). This study examined the effects of cognitive restructuring in terms of clinically meaningful change for adult survivors of CSA. Before and after ten weekly group sessions of rational-emotive behaviour therapy and during the follow-up session eight weeks later, 26 participants had their levels of sadness, state anxiety, anger, guilt, and self-esteem evaluated. An analysis based on clinically meaningful change revealed a different treatment impact than one based on statistical significance, demonstrating substantial improvements on all variables from pre- to post-treatment.

Consistent with most research conducted on the efficacy of CR in PTSD is the view that CR as a short-term intervention for PTSD helps alleviate maladaptive cognitive symptoms of PTSD and is an economical method that serves a short-term purpose (Müller-Engelmann & Steil, 2017). It is also important to note that there is a considerable dearth of research on the efficacy of CR when paired with other therapeutic interventions and comparative literature that identifies which such pairs could be used as long-term interventions. Therefore, CR provides relief along the lines of addressing maladaptive self-concept beliefs surrounding the trauma and not the memory itself. In doing so, it tackles symptoms of self-destruction, as seen in PTSD (Müller-Engelmann & Steil, 2017). Most studies that incorporated CR with

other therapeutic interventions mostly combined imagery modification (CRIM) and exposure therapy.

Furthermore, the study on the treatment process is still in its early stages and cannot yet advise clinicians on whether to use CR, when to integrate it with other therapies, or when to forego using it. Until then, clinicians can view CR as a successful technique that belongs prominently in their therapeutic arsenal.

Conclusion

The present review aimed to underscore the mental relaxation and complementary therapeutic approaches/techniques that may be effective complementary treatments for PTSD. We specifically focused on three techniques: Guided Imagery, Mindfulness-Meditation and Cognitive restructuring, which captures the cognitive and affective aspects (thoughts, beliefs, emotions) and relates to treating cognitive and affective symptoms of PTSD (lower cognitive functioning, difficulties with learning and memory, sadness, anger).

The studies conducted around Guided Imagery as a technique for treating PTSD Symptoms highlighted that GI effectively reduces stress and anxiety and even aids in physical pain related to HIV or medical surgeries. It has been shown to be effective in alleviating PTSD symptoms like anxiety, trauma-related stress, cognitive decline, etc., and enhancing one's psychological health.

The results were promising for Mindfulness-Meditation as well, as numerous studies revealed it to be an effective and efficient mind-body technique that helps enhance one's attentional capacity and reduce stress, anxiety-related symptoms, and negative and distressing emotions (like worry and rumination). Based on the previous studies, we can consider mindfulness meditation a useful tool in treating PTSD and enhancing one's health.

The greatest benefit of CR however, may be in providing longer-lasting therapy benefits or mediating a change in a particular condition's symptoms. It is also evident that CR, at least in terms of short-term symptom relief, is at best comparable to and at worst less effective than "noncognitive" therapies like exposure or behavioural activation. It is clear that cognitive change is not unique to CR, although there is strong evidence supporting cognitive mediation in symptom treatment. The causal direction is still up for discussion.

Considering that PTSD is a prevalent disorder, the work done around its treatment through alternative and complementary approaches is still limited. The significant treatment interventions/approaches used today for treating PTSD are cognitive behavioural therapy, exposure therapy, response prevention, eye movement desensitization and medications. However, there is a need to make these approaches diverse and accessible to all populations. One way of doing so is utilizing alternative methods like mental and physical relaxation techniques. Two such techniques that we have focused on are guided imagery and mindfulness meditation to delineate the effectiveness and usefulness of these approaches in reducing PTSD symptoms. These techniques will be helpful for individuals who are sensitive to or averse to traditional therapies. So to increase the retention rate, practitioners can adopt such therapeutic approaches. Moreover, techniques like GI and mindfulness meditation can also be practised by an individual on themselves, thus reducing the shame and guilt that a veteran might feel in seeking medical help.

Since there is a dearth of literature on such interventions, there is a need for more robust empirical studies to be conducted around complementary and relaxation techniques in treating PTSD. Secondly, most of the studies conducted in this domain have mainly focused on trauma elicited by military exposure. However, there are a range of predictors of PTSD, like a pandemic, abuse, etc.; hence, it will be helpful to extend these studies to consider if these therapies will be effective with other forms of PTSD.

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Personality Types, Illness Cognition and Health-Related Quality of Life in Myocardial Infarction

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Abstract

The illness cognition approach proposes that individuals try to make sense of changes in their somatic state. Through the process of sense-making, individuals develop their models of illness. These models influence their coping strategies as well as their quality of life. Illness cognition has been studied as an independent variable related to health-related outcomes. However, personality is a relatively understudied domain concerning illness cognition and patients' health-related quality of life (HRQoL). Some evidence in the literature indicates that personality can influence how patients cognize their illness. The paper investigates whether personality types influence illness cognition and HRQoL in myocardial infarction (MI) patients. It also explores whether the illness cognition of the patients mediates the relationship between personality types and HRQoL. A sample of 212 MI patients responded to questionnaires related to personality type A and type D tests, illness cognition and HRQoL. Results demonstrated that type A and type D personalities differ on four dimensions of illness cognition: Identity, controllability (personal control), timeline (timeline cyclic) and illness coherence (coherent understanding of disease). Results revealed that type A and type D participants significantly differed on emotional, physical, social, and total HRQoL. Illness cognition partially mediates the relationship between personality types and HRQoL. The findings have important implications for the health management of MI patients, as personality types play a vital role in understanding illness, coping and HRQoL.

Keywords: Illness Cognition, Health-Related Quality of Life, Type D Personality

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Introduction

The leading cause of death globally is cardiovascular disease (CVD). About three-quarters of CVD of deaths occur in low-and middle-income countries (WHO, 2021). In the Indian context, the incidence of cardiovascular disease is on the rise. According to Bhatia et al. (2021), "the prevalence of cardiovascular diseases is high in India, even among people who are slightly older than 45 years." (p. e-314). CVD is a broad category of diseases and hypertension, coronary heart disease, myocardial infarction (MI), heart attack, etc. are some of the examples of CVD. Apart from biological risk factors, several psychological risk factors have been identified concerning heart disease. Many psychological factors contribute to this risk, including stress, type-A and type-D personality types, and negative emotions like anger, hostility, depression, etc. These psychological factors may predispose an individual to heart disease (Davidson & Mostovsky, 2010; Neshatdiost et al., 2013; Kupper & Denollet, 2018).

It is important to study various psychological risk factors related to heart disease because it is chronic and requires proper management. Understanding the psychological aspects of heart disease is essential to its management. The present paper addresses three such psychological aspects: illness cognition, personality types, and health-related quality of life (HRQoL).

The self-regulation model of illness (Leventhal, Nerez & Steele, 1984, H. Leventhal, Breland, Mora & E. A. Leventhal, 2010) has been used to explore illness cognition in the present study. According to this framework, individuals based on their experiences develop their illness models that reflect the lay understanding of their illness. These illness models are subjective in nature and guide coping and adaptation to illness.

Based on extensive research, scholars have proposed five dimensions of illness cognition: identity, timeline, control, consequences, and causes (Diefenbach & Leventhal, 1996; Lobban, Barrowclough & Jones, 2003). Identity refers to the label an individual attaches to illness; timeline refers to an individual's belief regarding the duration of illness; control refers to the belief whether illness is controllable or not; consequences refer to beliefs regarding the possible consequences of illness and cause refers to an individual's perception regarding the possible causes of illness.

Illness cognition has been studied as an independent variable in coping and the outcome of an illness. However, personality is a relatively unexplored domain concerning illness cognition and HRQoL of patients. In the context of heart disease, it has now been established that certain personality characteristics operate as causal factors. These personality characteristics may predispose an individual to heart disease through certain behavioral patterns. Concerning heart disease, two personality types are prone to it: type A and type D. Interestingly, research on type A personality has used categories of type A and non-type A. Similarly, type D personality research has used categories of type D and non-type D. Researchers have also not studied both personality types together.

The type A behaviour pattern concept has been widely acknowledged (Friedman & Rosenman, 1959). As noted by Shahidi, Henley, Willows and Furnham (1991), the common characteristics that go with type A are "competitiveness, time-urgency, aggressiveness, drive and achievement striving" (p.1277). Amir, Gatab, and Shayan (2010) found that type A personality had lower levels of mental health. Mohan and Singh (2016) reported that type A behavior patterns positively correlated with anger and hostility among CHD patients. Sahoo,

Padhy, Padhee, Singla and Sarkar (2018) suggested that two of the dimensions of type A personality; anger and hostility, are the significant predictors of cardiovascular diseases.

Type D personality (Denollet, 1997) is another personality type that has been found to associated with cardiovascular diseases. According to Denollet and Conraads (2011), type D personality is associate with three time more increased risk for cardiovascular diseases. Negative affectivity and social inhibition have been identified as stable traits and they serve as a basis of type D personality or 'distressed personality' (Pedersen & Denollet, 2003, Kupper & Denollet, 2018). Experiencing negative emotions across time and situations is known as negative affectivity, while social inhibition refers to inhibit emotions and behaviors in social situations. (Denollet, Pedersen, Vrints & Conraads, 2006; Pederson et al., 2006). Clinical picture of negative affectivity suggests that individuals high on this trait are generally worrisome, irritable, depressed, anxious, and low in assertiveness and self-esteem. The trait of social inhibition is characterized by feelings of insecurity in social interaction, tendency to distance oneself from others, reserved behavior and perception of low social support (Denollet, Vaes & Brutsaert, 2000).

The examination of the quality of life from the viewpoint of health is known as health-related quality of life (HRQoL). Scholars have recognized that clinical or objective indicators are insufficient to understand patients' health status. According to Karimi & Brazier, (2016), HRQoL emphasizes health aspects associated with quality of life. The introduction of HRQoL emphasizes the inclusion of subjective indicators while evaluating a treatment process.

Thus, the present study aims to explore whether people with different personality types differ in terms of cognizing their illness and perceiving their HRQoL. The impact of personality types on illness cognition and HRQoL has been less explored. Personality types could play an important role in understanding illness, coping, and HRQoL. The findings may have important implications for patients with MI and their health management.

Method

Participants

The participants in the present study were male MI patients. The data was collected from one of the cardiology hospitals in Kanpur, India from patients who were admitted in the hospital for a minimum of seven days.

The sample consisted of 212 male MI patients. All the participants of the study were medically managed. The average age of the patients was 52.86 yrs and the majority of participants were married (91.98%) and were self-employed (43.86%) or in service (39.62%). The medical history of participants revealed that 22.17% of patients had a history of diabetes, whereas 11.79% of patients had a history of hypertension and the majority of participants (67.92%) had experienced heart attacks for the first time. The educational qualification of the participants ranged from High school to post-graduation.

Measures

Type A

Type A personality was measured by ERCTA scale (Sutil, Corbacho, Arias, Alvarez, & Requero, 1998). This scale consists of eight items. A Five point rating scale ranging from very low (1) to very high (5) was used. The cut-off score for screening type A was based on mean and median scores as suggested by the authors of the scale. The mean score for the present sample was 28.26 and the median score was 28. The standard deviation (SD) score was 5.36. A cut-off score of 28 was used. It was reasoned based on other research (Miller et al., 1991) that the distribution of Type A in the total population is around 50%, a score of 28 was considered as a type A orientation. Thus, only those patients were labeled as having a type A personality who scored above 28.

Type D

Type D personality was measured by DS14 developed by Denollet (2005). Using 14 items, this scale measures two traits: negative affectivity and social inhibition. Seven items were used to measure each trait on a five-point Likert scale ranging from false = 0 to true = 4) was used for the rating of items. The possible range of scores on each subscale was 0 to 28.

A cutoff score of 10 (as suggested by Denollet, 2005) was used for the screening of type D participants. Patients who scored greater than or equal to 10 on negative affectivity and social inhibition subscales were classified as having type D personalities.

Illness Cognition

The revised illness perception questionnaire (IPQ-R) by Moss-Morris et al. (2002) was used to measure the illness cognition of patients. This scale consists of eight cognitive dimensions: Identity, consequences, timeline acute, timeline cyclic, treatment control, personal control, illness coherence, and causes. All the original items of IPQ-R were retained except for the items of identity subscale. The items of identity subscales were replaced with 10 new specific symptoms related to MI such as, congestion, anxiety, gastric problem, nausea etc. Participants were asked to answer in either 'yes' or 'no' if they experienced the mentioned symptoms and if they believed that a particular symptom was related to their illness. Timeline acute, timeline cyclic, consequence, personal control, treatment control, and illness coherence subscales consisted of six, four, six, six and five items respectively. The cause subscale of IPQ-R consisted of 18 items reflecting possible causes of the disease. For all these subscales original items of IPQ-R were used. Five-point rating scale ranging from strongly disagree (1) to strongly agree (5) was employed.

Health Related Quality of Life (HRQoL)

MacNew heart disease health related quality of life questionnaire was used to measure HRQoL of patients (Hofer et al, 2004). It is a disease-specific measure of HRQoL. It assesses the HRQoL of heart patients pertaining to three major areas: physical HRQoL, emotional HRQoL, and social HRQoL. It also provides an overall score. The items are rated on seven point rating scale where 'one' indicates poor HRQoL and 'seven' indicates good HRQoL.

Results

The data was collected using specific questionnaires related to type A personality, type D personality, illness cognition, and HRQoL. The data was analyzed with the use of SPSS (version 13.0).

First of all, scores of personality tests (type A and type D) were obtained and participants were classified based on the scores. All the participants completed both type A and type D personality tests along with the measures of illness cognition and HRQoL. Based on type A and type D personality tests, 66 participants were classified as type A and 80 participants were classified as type D. Thus, data obtained from type A and type D participants were analyzed as per the aim of the present paper.

Personality Types and Illness Cognition

To examine the relationship between personality types and illness cognition *t*-test was employed. Mean and standard deviation (SD) were calculated for different dimensions of illness cognition and HRQoL. The mean and SD scores of type A and type D participants on different dimensions of illness cognition have been presented in Table 1. Results demonstrated that the mean scores of type D Participants are relatively higher than that of type A participants on significant dimensions of illness cognition except for the dimensions of personal control and illness coherence.

Table 1: Mean and SD scores of type A and type D personality types on different dimensions of illness cognition

	ID	TA	TCy	Cons	PC	TC	IC	Gen	Beh	Stress
Type A	.40 (1.48)	2.47 (4.59)	2.86 (3.08)	2.79 (4.09)	4.00 (3.70)	4.09 (3.09)	2.46 (3.17)	1.81 (4.21)	2.35 (3.88)	3.30 (2.68)
Type D	.45 (1.71)	2.61 (4.97)	3.30 (3.10)	2.91 (4.07)	3.33 (3.73)	4.19 (2.63)	2.23 (3.26)	1.94 (4.27)	2.55 (5.53)	3.17 (2.49)

ID: Identity, TA: Timeline Acute, TCy: Timeline Cyclic, Cons: Consequence, PC: Personal Control, TC: Treatment Control, IC.: Illness Coherence, Gen: General Risks, Beh: Behavioural Factor
Note. SD scores have been presented in parenthesis.

The mean scores obtained on the different dimensions of Illness cognition revealed that type A and type D participants cognized their illness condition (MI) differently. The next step was to examine whether these two personality types significantly differ in terms of their illness cognition. Results obtained from *t*-tests demonstrated that type A's significantly perceived higher personal control over Illness: $t(144) = 6.49, p < .01, d = 1.07$ and have a coherent understanding of Illness: $t(144) = 2.11, p < .05, d = .35$ as compared to type D's. On the other hand, type D's significantly scored higher on identity: $t(144) = 2.13, p < .05, d = .36$ and timeline cyclic: $t(144) = 3.42, p < .01, d = .57$ than type A participants. Results suggested that in comparison to type A participants, type D participants tended to attach more symptoms to their illness condition and perceived their Illness as recurring in nature.

Personality Types and HRQoL

Type A and type D personality types were also compared regarding the perceived level of HRQoL. Results obtained from mean scores demonstrated that type A's scored high on all the domains of HRQoL than type D's. The mean and SD scores of type A and type D participants have been presented in Table 2.

Table 2: Mean and SD scores of type A and type D personality types on different domains of HRQoL and total HRQoL

	Emo HRQoL	Phy HRQoL	Soc HRQoL	Tot HRQoL
Type A	64.69 (11.63)	50.36 (10.17)	51.38 (9.73)	114.09 (19.83)
Type D	58.37 (10.68)	46.73 (9.14)	46.10 (8.98)	104.82 (18.12)

Emo: Emotional, Phy: Physical, Soc: Social, Tot: Total

Note. SD scores have been presented in parenthesis.

Further, *t*-tests were computed to examine whether type A and type D participants were significantly different in emotional, physical, social and total HRQoL. Results obtained from *t*-tests demonstrated that type A's significantly scored higher on all the dimensions of HRQoL i.e., emotional HRQoL: $t(144) = 3.42, p < .01, d = .57$; physical HRQoL: $t(144) = 2.27, p < .05, d = .38$; social HRQoL: $t(144) = 3.41, p < .01, d = .56$; and total HRQoL: $t(144) = 2.95, p < .01, d = .49$ as compared to type D participants.

Personality Types, Illness Cognition, and HRQoL

The remaining analyses tested the possibility of whether illness cognition could mediate or moderate the relationship between personality types and HRQoL. Baron and Kenny's (1986) procedures were followed for mediation analysis.

There was a partially mediated relationship between personality types and emotional HRQoL mediated by personal control; illness coherence partially mediated the relationship between personality types and emotional HRQoL; and timeline cyclic partially mediated the link between personality types and emotional HRQoL. Timeline cyclic was also found to be a partial mediator between personality types, social HRQoL, personality types and total HRQoL. Timeline cyclic fully mediated the relationship between personality types and physical HRQoL. Thus, overall results demonstrated that illness cognition is a partial mediator between personality types and HRQoL.

Table 3: Results obtained from the third condition of mediation

Variables	B	SEB	β	β without mediator	R ²	F	Change in F
1) DV							
2) IV							
3) MV							
1) E HRQoL							
2) P Types	-.37	.18	-.18*	-.27**			
3) P Control	.19	.09	.19*				
					.10	8.21**	8.21**
1) E HRQoL							
2) P Types	-.60	.16	-.17**	-.27**			
3) I Coherence	-.16	.08	-.19*				
					.10	7.91**	7.91**
1) E HRQoL							
2) P Types	-.36	.16	-.20*	-.27**			
3) T Cyclic	-.28	.08	-.28**				
					.12	12.43**	12.43**
1) P HRQoL							
2) P Types	-.25	.17	-.12	-.19**			
3) T Cyclic	-.23	.08	-.23**				
					.08	6.40**	6.40**
1) S HRQoL							
2) P Types	-.44	.16	-.22**	-.27**			
3) T Cyclic	-.20	.08	-.20*				
					.11	8.99**	8.99**
1) T HRQoL							
2) P Types	-.34	.16	-.17*	.24**			
3) T Cyclic	-.26	.08	-.26**				
					.12	9.62**	9.62**

** $p < .01$, * $p < .05$

DV: Dependent Variable, IV: Independent Variable, MV: Mediator Variable, E HRQoL: Emotional HRQoL: P Types: Personality Types, P Control: Personal Control, I coherence: Illness Coherence, T Cyclic: Timeline Cyclic, P HRQoL: Physical HRQoL, S HRQoL: Social HRQoL, T HRQoL: Total HRQoL

Discussion and Conclusion

The present study's results demonstrated that type A and type D personality types significantly differed on four dimensions of illness cognition: identity, perceived personal control over illness, duration of the illness (timeline cyclic), and perceived understanding of illness (illness coherence). Participants with type A personality significantly scored higher on personal control and illness coherence dimensions than type D participants. Thus, type A personality participants perceived more personal control over their illness as well as a better and more coherent understanding of illness. Type D personality participants on the other hand scored low on these two dimensions. The possible explanation of this difference may be

attributed to the traits or characteristics that underlie type A and type D personality types. According to Smith and Gallo (2001), individuals with a particular personality type have a distinct and stable pattern of personality traits.

It has been reported that people with type A personality tend to exert control over their environment. As noted by Smith and Gallo (2001), overt behaviours of type A personality people exhibit a high motivation to exert control over the events occurring in the environment they live aggressively and assertively. Along with this, type A people have an exaggerated belief that they can control situations. They also believe that exerting control over the situation and others is the only coping strategy through which distress and problems in their life can be reduced. As discussed by Powell (1992), people with type A personality tend to exhibit a greater desire for control and the anger component in type A personality serves as a means to achieve this control. The other characteristics of type A personality such as, time urgency, impatience etc. also reflect their desire to control a challenging and uncontrollable situation. Thus, it can be concluded that a higher need for control among type A participants leads them to believe that they have higher personal control over illness. Moreover, type A's tendency for a higher need for control over illness might be an important factor in shaping the belief that they have a coherent understanding regarding their illness. Thus, their illness coherence scores were higher than type D participants.

The present study results demonstrated that type D patients significantly perceived their illness as highly cyclical compared to patients with type A personality. The clinical picture of type D personality shows that they lack assertiveness, are low in self-esteem, and feel insecure in social interactions (Denollet, Vaes & Brutsaert, 2001). Type D patients significantly scored low on the personal control dimension of illness cognition than type A personality, patients. This may be a reason why Type D patients perceived their illness as cyclical or recurrent and attached more symptoms to their illness than type A participants.

Type A and type D participants also differed regarding their perceived level of HRQoL. Type A participants were significantly high on all the dimensions of HRQoL i.e., emotional, physical, social, and total HRQoL as compared to type D participants. The difference in the perceived level of HRQoL between type A and type D participants may be attributed to illness cognition. Results demonstrated that both personality types had different cognitions about their illness. Type A participants perceived that they have more personal control over illness as compared to type D participants. Along with this, type A's also perceived that they have a coherent understanding of illness as compared to type D participants. This could be why type A participants reported better emotional, physical, social and total HRQoL than type D participants. Type D participants were high on the identity dimension of illness cognition and perceived their illness as more cyclical as compared to type A participants. Thus, the difference in illness cognition of type A and type D participants could have led to the difference in perception of HRQoL.

The results obtained from the present study imply that higher personal control and illness coherence is very important for perceiving better HRQoL. Belief in oneself to control the illness condition and a coherent understanding of illness might give confidence to type A MI patients regarding what to do and what not to do in illness. It might also help type A patients maintain their confidence and deals with various adversities related to illness.

In general, it has been observed in many studies that type D personality is related to poorer HRQoL. Pedersen and Denollet (2003) suggest that type D personality may be crucial in

determining patients' quality of life. As noted by Pedersen and Denollet, in a follow-up study conducted after 5 years, the likelihood of perceiving poor health was two-fold higher among type D patients as compared to non-type D patients. Depression and type D personality were found as independent predictors of patients' poor quality of life (Denollet, Vaes & Brutsaert, 2000). Al-Ruzzeh et al. (2005) studied the HRQoL of patients who went through primarily isolated coronary artery bypass grafting after a year. They found that type D was an independent predictor of patients' physical and mental HRQoL along with other biomedical indicators. In the case of heart transplant patients, Pedersen et al. (2006) found that type D participants were more vulnerable to impaired quality of life than non-type D patients. Aquarius et al., (2007) conducted a follow-up study on patients with peripheral arterial disease with a gap of one year. They reported that type D participants' HRQoL was found poorer than other participants.

Illness cognition dimensions also mediated the relationship between personality types and perceived levels of HRQoL. The results demonstrated that individual differences in personality types impacted illness cognition and HRQoL perception in MI patients.

The present study was conducted on patients who were undergoing the treatment during their hospitalization. The present study could not test the long-term stability of type A and type D personality of participants during the post MI period and its influence on how they perceive their illness and appraise their HRQoL. Some researchers have examined the stability of type D personality during eighteen months post-MI (Martens et al., 2007). Thus, future research can be carried out in this area where the assessment of personality and other variables can be assessed in a follow-up study after a specified period.

The present study's findings have important implications for the health management of MI patients. According to Donker (2000), patients of heart disease belong to a relatively heterogeneous group. Patients differ not only in terms of demographic factors (age and gender) but also in terms of psychological factors (perceived social support, perceived experience of illness etc.), socio-economic status and biological factors (precision of diagnosis, type of coronary disease etc.). All these factors may be considered while designing any health management programme. The knowledge of personality type (type A and type D) can be considered as one of the potential psychological factors which may influence patients' attitudes towards health management programmes. Patients' attitudes towards health management programs may largely depend upon how they perceive their illness and appraise different domains of life affected by illness. Generally, it has been reported that patients' illness models differ from those of health professionals' models. For example, Donker (2000) suggested that if cardiac rehabilitation considers only a 'medical model' then patients would perceive that they have no control over the causes of illness and its cure. Research has also shown that patients' illness models play a very important role in influencing coping with illness, adaptation to illness and other aspects related to illness (Gassner, Dunn, & Piller, 2002). The results of the present study suggest that health management programs for MI patients must take into account the psychological aspect associated with the disease such as, personality types and patients' cognition regarding their illness along with other aspects. Individual personality differences can provide relevant guidelines for behaviour modification leading to effective health management of MI patients. The cognitive-behavioural intervention has been found effective in cardiac rehabilitation (Bennett and Carroll, 1994). The results of the present study imply that cognitive-behavioural intervention among MI patients can consider the fact that different personality types would understand their disease differently. However, this implication needs to be further investigated in intervention studies.

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Using the Interpretive Structure Model to Design the Department of Industrial Design Curriculum of the Interdisciplinary Ability

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Abstract

Scholars believed that only by focusing on cultivating students with multi-knowledge integration learning and problem-solving ability to be able to face changing environment. To become cross-disciplinary talents with the ability to solve today's complex problems, the cross-field talents cultivated in the school must not only specialize in design professional knowledge, but also learn a variety of knowledge and skills. Therefore, curriculum content planning in design education is very important for cultivating interdisciplinary talents. This study takes the Department of Industrial Design as the object and conducts the construction and evaluation of cross-field ability courses. By using the Interpretation Structural Model (ISM) to discuss the correlation between courses, find out the cross-field courses suitable for the Department of Industrial Design. The results show that course design should focus on developing operational and institutional interdisciplinarity capabilities and usability. Curriculum design should match the problem base learning method to adjust the proportion and sequence of course credits. The arrangement of the courses should first allow students to understand the problems to be solved, and then assist them to build integrated concepts, so that students not only can have vertical and in-depth professional knowledge, but also think in horizontal, diverse and comprehensive ways. By increasing the diversity of design methods and knowledge as well as the opportunities to practice (such as internship) into course design, let students capable to understand the skills of adopting their knowledge and further build their interdisciplinary ability.

Keywords: Interpretive Structural Modeling, Interdisciplinarity Ability, Industrial Design, Curriculum Construction

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1. Introduction

According to the survey of 「2019 Taiwan Design Capability Report」, the top three important competence is interprofessional integration (54%), leading (53.2%) and problem solving (50.4%) on the manager's view; and the most practitioners consider problem solving is the top important competence they should have (Taiwan Design Research Institution, 2019). Many scholars have discussed the competence that college students should possess when facing complex problems. In the past decade, a great number of interdisciplinarity research has published, many studies proposed that college students should have innovative and interdisciplinarity skills and knowledge in order to face today's rapidly changing economic, environmental and social changes (Frodeman, 2013 ; Repko & Szostak, 2020 ; Yaghoubi & Banihashemi, 2010).

Design is the foundation of industrial innovation and a method to benefit mankind. Therefore, the training of designers should also develop in multiple fields and prepare designers with interdisciplinarity knowledge integration abilities to solve complex problems innovatively.

Hammick, Freeth, Koppel, Reeves, & Barr (2007) point out that the interprofessional ability is the collaboration ability of working/learning with/from different professions. Interprofessional education enables knowledge and skills necessary for collaborative working to be learnt. With this interprofessional competence, members (students) can enhance their learning as well as professional knowledge mutually, and understand each other's tasks, roles, and skills. Interdisciplinarity talents not only have personal professional skills, but also could understand different professions in order to integrate multiple professions to solve problems and adjust their cognition and cooperation mode in the team at any time to adapt to different professional environment.

OECD published "The future of education and skills education 2030" in 2018 to propose the vision of future education. The knowledge that students should possess in the future is no longer a single subject major but includes related knowledge in different fields of disciplines, cognition, and procedures. The concept of competency involves the mobilization of knowledge, skill, attitudes and values that can be used to solve problems in the future. In order to face the complex environment, students will need broad and specialized knowledge. Besides disciplinary knowledge, to think across different disciplines is also significant.

Self & Baek (2017) believed that interdisciplinarity training facing global economy can provide college graduates with the skills and competences to perform innovative contribution. Therefore, focusing on cultivating students with multi-profession integration learning methods and interdisciplinarity problem-solving abilities are crucial issues to equip the graduates to face the dramatic changing workplaces. Slaughter, Slaughter, & Rhoades (2004) believed that the technical disciplines are related closely, so the talents with product development and interdisciplinarity knowledge will be needed during team works. Design is a field of doing, making and creating products and services the fulfill human needs. To find and solve problems, designers need to understand people and society and capable to integrate different professions. The findings of social sciences and engineering are strongly needed to be emphasized into the theory and practice of design; therefore, design education must merge science and technology, art and business etc. (Norman & Klemmer, 2014). The cross-domain design thinking nature of designers should be trained by bring up interdisciplinarity problem solving ability (Kimbell & culture, 2011; McDermott, Boradkar, & Zunjarwad, 2014).

This study starts from listing the discipline of design by analyzing curriculums of all the Department of Industrial Design in Taiwan and interviewing with the industry experts to discuss the cross-field core competencies required by the design industry, especially for the consumer electronics products design. To create the value of cultivating talents in design-related industries, clarify important core competencies and deconstructing current courses should be an important topic. And the results of the study can be referred while design interprofessional education of design. The study began from literatures review and then interviewed with 3 senior electronic consumer product designers to understand the process between product development and interdisciplinarity collaboration. Furthermore, 19 young designers who work at 4 different electronic consumer product design company were interviewed to understand the difficulty of interdisciplinarity communication. At last, a questionnaire survey based on Interpretive Structural Modeling (ISM) was conducted to 7 scholars and 8 industry designers. ISM is a methodology for developing graphic representation of system structure and identifying relationships among specific factors which define a subject (Attri & Sharma2013). The advantage of ISM has considered as follow: 1. The process is systematic and efficiency, 2. Participants do not need to know about the process but understand the topic discussed, 3. it leads and records the results of group discussions on complex issues in an efficient and systematic manner, 4. It produces a structured model of graphical representation of the current issues that makes different individuals can communicate more effectively to each other, 5. It increases the quality of interdisciplinary and interpersonal communication, etc. (Watson, 1978). Alias, et al., (2013) pointed out that the ISM method can not only clarify the relationship between the elements of complex problems, but also apply the Hierarchical Digraph in Graphic Theory to present the vertical and horizontal and the overall correlation structure to reflect the complex issues between various factors and hierarch. ISM proposed by John N. Warfield in 1976 can convert the complex relationship between individual factors into the interaction situation and diagram of the factors between various hierarchies. By ISM, the overall associate structure of complex elements can be comprehended easily. Therefore, this study adopted ISM to explore the relevance of the newly added interdisciplinarity courses in the Department of Industrial Design to find out the best course for talents cultivation.

2. Results

From the outcomes of the interviews with experts, there are 3 professions, management, design and mechanism respectively, was included in the process of product development. That is, management and mechanism are two interdisciplinarity ability that required to cultivate industrial designers. The questionnaires then were analyzed by the software of ISM and a Hierarchical Digraph of interdisciplinarity courses for the Department of Industrial Design was obtained. Total 40 courses were included in the questionnaire. By integrate expert opinions, there are 4 hierarchies, “General Basic”, “Interdisciplinarity Concept”, “Design Profession” and “Integrated Practice” in the digraph. After analyzing the results obtained from questionnaires, some courses were deducted and only 29 courses were listed in the Diagraph shown as Figure 1.

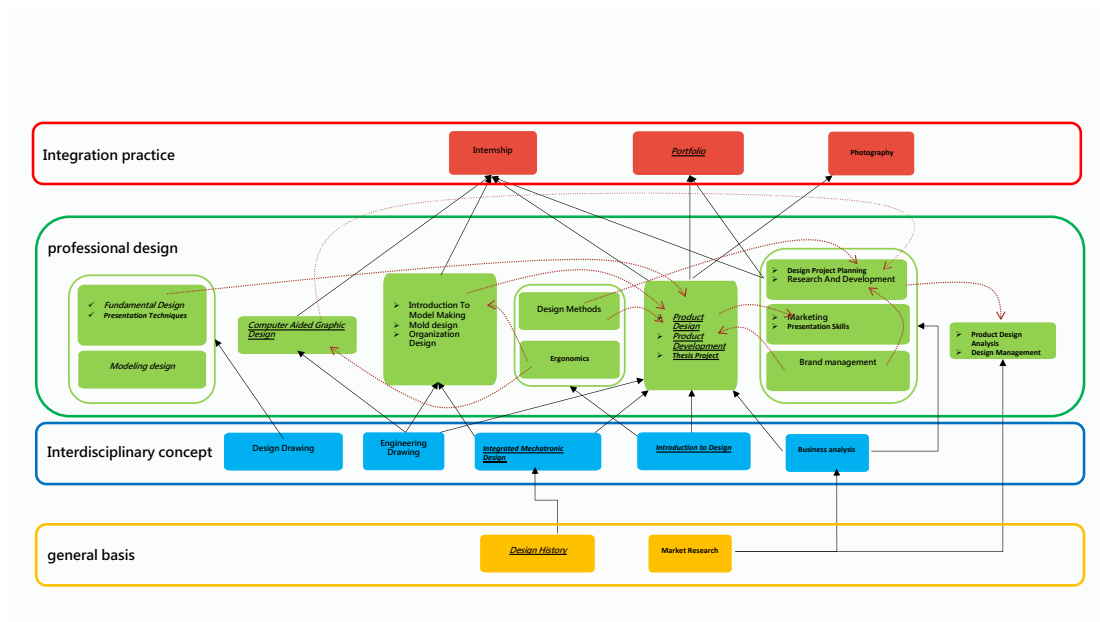


Figure 1. Course Modules for Interdisciplinarity Talents in the Department of Industrial Design Suggested Experts and Scholars

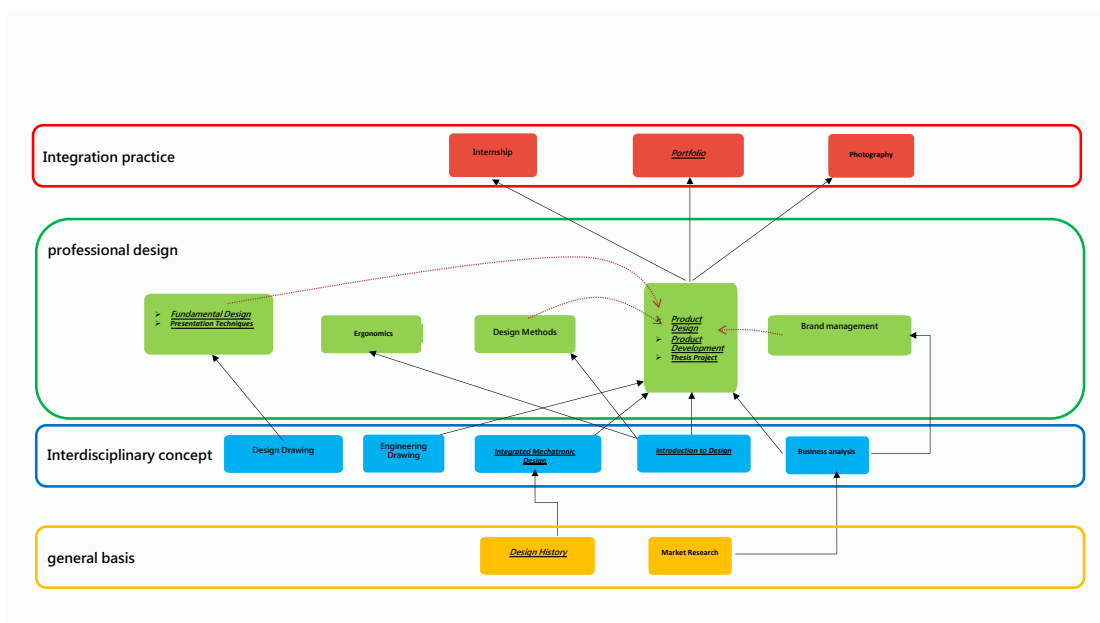


Figure 2. Core Competence Course for Interdisciplinarity Talents in the Department of Industrial Design

Most of the experts believe that “Design History” and “Market Research” are classified in “General Basis” of interdisciplinarity curriculum. Through the investigation of market research and the cultivation of design history knowledge, students' interest in product development can be increased. The investigative orientation of market research enables students to discover design issues through problem-based learning. The study of design history can increase students' observation and sensitivity to the aesthetics of product design, which is helpful for the study of other design majors and interdisciplinary courses.

In “Interdisciplinarity Concept” level, “The Introduction to Design” and “Business Analysis” can lead the students to understand the issues concerned within product design deeply.

“Design Drawing”, “Engineering Drawing” and “Integrated Mechatronic Design” are the courses cultivating students with other interprofession fundamental ability. Those courses are not only to cultivate designers' basic hand-painting ability and knowledge of product structure, but also train designers on the feasibility of product design ideas and product space acumen. By those training, the perspective of product design and the application of product structure and materials can improve, and more creative designs on appearance and mechanism can be produced.

In the level of “Design Profession”, the professional knowledge and skills of design are educated. Based on the training of the prior level, the learning efficiency can be improved in the current level. Among all the courses, “Product Design”, “Product Development”, and “Design Project” courses apply most of interdisciplinarity concepts which needs to integrate “Engineering Drawing”, “Integrated Mechatronic Design”, “The Introduction to Design” and “Business Analysis”. “Fundamental Design”, “Presentation Techniques”, “Ergonomics”, “Design Methods” and “Brand Management” are regarded as the basic courses of design majors.

Finally, “Internship”, “Project and Design” and “Photography” are the integrated practical courses of the course modules of the interdisciplinarity talents of the Department of Industrial Design. Through the knowledge learned from prior three hierarchies, students can improve the internship experiences effectively and conduct their job efficiently after graduate.

After qualitative interviews and curriculum structure analysis, this research understands the interdisciplinarity collaboration that designers need in the process of consumer electronics product development which includes “market research” and “business analysis” in administration profession and “mold design” and “Introduction of Mechatronic” in mechanism profession. By learning interdisciplinarity courses, designers can build knowledges to perform problem-based design to clarify user needs and improve their cross-field design capability. By integrating administration knowledge and skills, designers can transfer marketing terms into design ideas clearly and product characters that user preferred. Designers can design products that fulfill user needs and increase company's profits by educating students with this interdisciplinarity curriculum.

3. Conclusion

The research commences by examining the curricula of all the Departments of Industrial Design in Taiwan to compile a comprehensive list of design disciplines. In addition, industry experts were interviewed to explore the essential cross-functional core competencies demanded by the design industry, with a particular emphasis on the design of consumer electronics products. The insights gathered from the expert interviews indicate that industrial designers need to cultivate two interdisciplinary abilities, namely management and mechanism and there are four hierarchies, “General Basic”, “Interdisciplinarity Concept”, “Design Profession”, and “Integrated Practice”, included in the digraph.

Following qualitative interviews and analysis of curriculum structures, this study has identified the interdisciplinary collaborations required by designers in the development of consumer electronics products. Designers can enhance their cross-field design capabilities and address user needs through problem-based design by taking interdisciplinary courses.

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Mental Health and Academic Performance in the New Normal

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Abstract

Mental health is still relatively new concern, in recent years there has been a shift toward a more socially acceptable attitude toward discussing it. Concerns about college students' mental health are the subject of an ever-expanding body of research, which is currently being conducted in increasing numbers. The purpose was to assess the mental health status and its impact on the academic performance of students in a Higher Education Institution (HEI) specifically in Santiago City, Isabela, Philippines for proper interventions to succeed in their studies. A descriptive cross-sectional survey design was used in the study and analytical sample used was purposive sampling which composed of 356 respondents. Data collected using the General Health Questionnaire-28 (GHQ-28). The result revealed that there is a significant relationship on the mental status and academic performance. The study concludes that mental health awareness is a necessity especially for the college students to succeed in their chosen career. According to the results of our research, there is a statistically substantial connection between a person's mental health and their academic performance, which was measured by their overall weighted grade point average. (GWA).

Keywords: Mental Health, Academic Performance, College Students

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Introduction

The Covid-19 had a significant influence on the daily lives of people all over the globe. The new coronavirus disease (COVID-19) outbreak was declared a worldwide pandemic by the globe Health Organization on March 11, 2020. As of September 10, 2021, the total number of individuals diagnosed with COVID-19 was 219,456,675, with 4,547,782 million fatalities in the globe (Claro & Munar, 2022).

The pandemic caused by COVID-19 has had widespread psychological and societal repercussions, and it is possible that these repercussions will have a negative impact on people's well-being in the present and in the future (Lorca, et al, 2021; Claro & Munar, 2022). After an epidemic caused by a coronavirus, people may experience long-term psychological issues such as depression, anxiety, and a decline in their quality of life. (e.g., 2002 severe acute respiratory syndrome) (Stuijzand, S., Deforges, C., Sandoz, V. *et al.*, 2020; Lorca, et al, 2021).

Problems with a student's mental health can have repercussions in many different aspects of their lives, such as their quality of life, academic performance (Makhal et al., 2015), physical health, level of contentment with the college experience, and the quality of their relationships with their friends, family, and other members of their social networks. These repercussions can have a negative impact on a student's ability to thrive in college and in their future careers (Sharif, & Armitage, 2004; Lorca, et al, 2021). These facets of a student's existence are susceptible to having a negative impact when mental health problems are present. These problems can also have long-term repercussions for the students, including having an impact on the students' future employment possibilities, earning potential, and overall health.

Despite the fact that mental health is still a relatively new concern, there has been a change in recent years toward an attitude that is more socially acceptable toward addressing it. Concerns regarding the mental health of college students have been the focus of an ever-expanding body of research, which is presently being carried out in an increasing number of studies.

People are now accustomed to the new standard. After being confined to the property for nearly two years, they are attempting to readjust to life outside of it. Students who have participated in online learning for the past two years are now adjusting to the new standard operating procedures that are being implemented in traditional educational institutions such as schools, colleges, and universities. Due to the fact that mental illness can get in the way of a student's ability to achieve in their studies (Mehrabian, et al, 2022), it is absolutely necessary that this be done.

Research Questions

The purpose was to assess the mental health status and its impact on the academic performance of students in a Higher Education Institution (HEI) specifically in Santiago City, Isabela, Philippines for proper interventions to succeed in their studies. Specifically, it sought to answer the following:

1. What is the demographic profile of the participants in terms of:
 - a. Age
 - b. Sex
 - c. General Weighted Average (GWA)?

2. What is the mental health status of the participants?
3. What is the academic status of the participants?
4. Is there a significant relationship between the mental health status and the academic status of the participants when grouped according to their profile?

Null Hypothesis

The following is the null hypothesis to be considered:

1. There is no significant relationship between the mental health status and the academic status of the participants when grouped according to their profile.

Methods

This study made use descriptive quantitative methods. The descriptive quantitative approach is recommended by McCombes (2022) to identify characteristics, frequencies, trends, and groups. The research was conducted using a descriptive cross-sectional survey methodology, and the analytical sample consisted of 356 people chosen randomly from the population using purposive sampling.

Students enrolled in an undergraduate program during the academic year 2022-2023 at a Higher Education Institution (HEI) in Santiago City, Isabela, Philippines were the subjects of this research. The administration of the institution gave its stamp of approval for this research before it could proceed. The participants had their questions about the study's purpose answered, their written consent was acquired, and they were given the assurance that the confidentiality of their personal information would be maintained. The data were collected through the use of a self-administered form that was standardized and semi-structured. The students' socio-demographic characteristics, scholastic achievements, and scores on the General Health Questionnaire (GHQ-28) were the aspects of their lives that were investigated for this study.

The primary instrument that was utilized was a questionnaire in the form of a survey. The General Health Questionnaire-28 (also known as the GHQ-28) was utilized in order to determine the participants' levels of mental health (Goldberg & Hillier, 1979). The GHQ-28 is a screening tool that can be self-administered and can identify common non-psychotic psychiatric morbidity that is found in the community. These conditions include anxiety and depression. The symptoms that have been experienced in the most recent few weeks are referred to in the questionnaire. As a result, the questionnaire is an indication of state rather than trait characteristics at a particular moment in time. Although it is not possible to diagnose particular psychiatric disorders with the GHQ, it is capable of determining the presence of potential psychiatric morbidity. When screening for signs of psychological stress, we utilized the GHQ-28 variation of the questionnaire (Sterling, 2011). The GHQ-28 contained four different sub scales that were used to evaluate somatic symptoms, anxiety and insomnia, social dysfunction, and depression in that order. The scoring system uses a Likert scale that ranges from 0 to 3, which results in an overall score range that can go anywhere from 0 to 84. After that, the cumulative grade point averages of the participants will be taken into consideration in order to establish the participants' scholastic standing.

The descriptive analysis was computed in terms of mean and standard deviation, and for ordinal and nominal variables, the analysis was computed in terms of frequency and

percentage. Pearson's product-moment correlation was utilized to conduct correlation research between the total GHQ score and a variety of independent variables.

All of the statistical tests that were performed used the cutoff of $p < 0.05$ with two tails to determine statistical significance. To investigate the impact that some independent factors, such as age, gender, and general weighted average, have on the GHQ total score, a correlation analysis was performed, which was then followed by a multivariate linear regression analysis using the "enter" technique. To perform an analysis of the data obtained from this research, the statistical package for social sciences, version 28.0 (SPSS), was utilized.

Results

Table 1: *Profile of the Respondents*

<i>n=356</i>			
AGE		f	%
	17.00	2	0.6
	18.00	289	81.2
	19.00	51	14.3
	20.00	7	2.0
	21.00	3	0.8
	22.00	1	0.3
	24.00	1	0.3
	29.00	2	0.6
SEX		f	%
	Male	118	33.1
	Female	238	66.9
GWA		f	%
	94-96	3	0.8
	91-93	13	3.7
	88-90	47	13.2
	85-87	92	25.8
	83-84	66	18.5
	80-82	79	22.2
	78-79	12	3.4
	75-77	12	3.4
	BELOW 75	32	9.0

As shown in the table, there were 356 students who participated in the study. Majority of the students were aged 18 years old with 289 or 81.20%, female with 238 or 66.90% and with a General Weighted Average of 85-87 with 92 or 25.80%.

Table 2: *Independent Sample t-test on Mental Status and GWA*

<i>Mental Status</i>	f	%	t	df	p-value
<23	99	27.8	2.874	354	0.004
≥24	257	72.2			
Total	356	100			
Mean GHQ = 31.52, Median = 33.00, SD = 12.67					
Mean GWA (<23 = 84.81 ; ≥24 = 83.16)					

The table revealed that 27.8% of the students whose scores are <23 are classified as non-psychiatric, while 72.2% of students with scores ≥24 are classified as psychiatric. Independent sample t-test was conducted to compare the GWA of the respondents in terms of their mental health status. The test result revealed that the Non-psychiatric respondents have higher GWA compared to the psychiatric respondents.

Table 3: *GHQ-28 Scores of participants*

GHQ Subscale	M	SD
Somatic Symptoms	0.82	1.20
Anxiety and Insomnia	1.33	1.48
Social Dysfunction	1.52	1.35
Severe Depression	1.82	2.14
Total Score	5.33	4.86

The study population had an overall mean GHQ-28 total score of 5.33, with a standard deviation of 4.86; both of these scores were higher than the cutoff number (>4). The subscale that measured severe depression (1.82 ± 2.14 SD) yielded the greatest mean score, followed by the subscale that measured social dysfunction (1.52 ± 1.35 SD), then Anxiety and Insomnia (1.33 ± 1.48, then the category of "somatic symptoms" had the GHQ score that was the lowest overall, with a mean of 0.82 ± 1.20.

Table 4: *Pearson's Correlations*

Factors/Subscales		Age	Sex	GWA
Somatic Symptoms	r	-0.011	0.061	-.213 ^{**}
	p-value	0.836	0.249	<0.001
Anxiety and Insomnia	r	-0.029	0.055	-.309 ^{**}
	p-value	0.586	0.299	<0.001
Social Dysfunction	r	-0.036	0.071	-.294 ^{**}
	p-value	0.493	0.183	<0.001
Severe Depression	r	0.016	0.024	-.325 ^{**}
	p-value	0.769	0.646	<0.001
OVERALL	r	-0.018	0.063	-.353 ^{**}
	p-value	0.737	0.235	<0.001

Pearson Product Moment Correlation was conducted to determine if and how strongly the four factors/subscales and the profile of respondents are related. The test result revealed a significant relationship between GWA of the respondents with Somatic Symptoms ($r=-0.213$, $p<0.001$), Anxiety and Insomnia ($r=-0.309$, $p<0.001$), Social Dysfunction ($r=-0.294$, $p=0.001$), Severe Depression ($r=-0.325$, $p<0.001$), and with the four subscales ($r=-0.353$, $p<0.001$). It implies that the higher GWA scores indicate lower levels of distress.

Discussion

The purpose of this study is to evaluate the mental health of students attending a higher education institution and determine how their mental health affects their academic performance. There were 356 willing participants who came from different colleges inside the same higher education institution in Santiago City. According to the findings, the individuals all suffered from issues related to their mental health. When the participants were categorized according to age and sex, the researchers found no significant correlation between the participants' mental health status and their academic performance. This is similar to the studies of Makhal et al. (2015) and Farahangiz et al. (2016), which found no significant difference between mental health and academic performance in terms of sex. However, the researchers did find a correlation between mental health and the general weighted average that was statistically significant.

Conclusion and Recommendations

In the past few years, there has been a slow but steady rise in the number of college students who are experiencing difficulties with their mental health. The study concludes that mental health awareness is a necessity, especially for college students to succeed in their chosen careers. The findings of this study demonstrate a statistically significant relationship between a person's overall weighted grade point average (GWA), which serves as a proxy for academic performance, and their mental health.

One of the things that the researchers can point to as a shortcoming of this study is the fact that they did not compare students from which college and what years of college based on their GHQ scores. According to the findings of this research, academic performance is the most important element that determines a student's overall psychological health. According to the findings of this study, it is recommended that further research be done into other variables that may have a significant influence on the likelihood of a student developing mental health issues.

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Examine the Impact of Proactive Personality and Environmental Awareness on College Students' Pro-environmental Behaviors

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Abstract

Although there are many pro-environmental and green studies, relatively little effort has been made to investigate the connections between proactive personality, environmental awareness, and pro-environmental behaviors. 316 college students in Taiwan participated in this study, and the partial least squares structural equation modeling (PLS-SEM) analysis was performed to evaluate the connections between proactive personality, environmental awareness, and pro-environmental behaviors. The study findings have revealed that environmental awareness would be positively linked to conservation style, land stewardship, and social environmentalism, but not associated with environmental citizenship. Additionally, it has been found that proactive personality would be positively connected with environmental awareness, conservation style, land stewardship, environmental citizenship, and social environmentalism. The theoretical and practical suggestions are provided to enhance pro-environmental behaviors.

Keywords: Proactive Personality, Environmental Awareness, Green Behavior, Pro-environmental Behaviors

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1. Introduction

Proactive personality has been one of the focal points in previous studies, due probably to the central impact of proactive personality on career adaption (Tolentino, Garcia, Lu, Restubog, Bordia, & Plewa, 2014), intrinsic motivation (Horng, Tsai, Yang, Liu, & Hu, 2016), work performance (Fuller & Marler, 2009; Hung, Chen, & Lin, 2015), and entrepreneurial activities (Crant, 1996; Uy, Chan, Sam, Ho, & Chernyshenko, 2015). For example, Hung et al. (2015) has indicated that proactive personality could be closely associated with career success and work performance. Uy et al. (2015) has shown that proactive personality is one of the key elements that could drive more positive entrepreneurial intention. Although several researchers have highly stressed the pivotal role of proactive personality in individual outcomes, relatively little effort has been made to investigate the impact of proactive personality on pro-environmental behaviors. Specifically, whether proactive personality could be one of key predictors of pro-environmental behaviors has not yet been fully examined in previous reports. Therefore, the nexus between proactive personality and pro-environmental behaviors should be worthy of further discussions in this study.

Moreover, recently, there is a growing interest in the issues of environmental awareness, probably because environmental awareness could be one of the key elements that potentially affect energy consumption, environmental attitude, and pro-environmental behaviors (Blok, Wesselink, Studynka, & Kemp, 2015; Kikuchi-Uehara, Nakatani, Hirao, 2016; Moghimehfar & Halpenny, 2016; Pothitou, Hanna, and Chalvatzis, in press). For instance, Moghimehfar and Halpenny (2016) suggested that “awareness of environmental issues can be a potential predictor of behavioral intention” (p.366). Blok et al. (2015) indicated that environmental awareness, which could be viewed as “environmental knowledge and the recognition of environmental problems” (p.57), would lead to more positive pro-environmental behavior. Nevertheless, Pothitou et al. (in press) added that “while increased environmental awareness and concern may result from advanced environmental knowledge, this may not be sufficient to induce pro-environmental behavior” (p.2). In order to clarify the impact of environmental awareness on pro-environmental behaviors, the connections between proactive personality, environmental awareness, and pro-environmental behaviors should merit further investigations in this study. Hence, the primary goal of this study is not only to examine the influences of proactive personality and environmental awareness on pro-environmental behaviors, but also to explore the relationship between proactive personality and environmental awareness.

2. Barriers to Pro-Environmental Behaviors

Previous research has shown that there are many barriers to environmental friendly behaviors (Liobikienė & Juknys, 2016). One of the central barriers is closely linked to personal habits, not only because changing personal habits are very difficult, but also because it is hard to cultivate good habits. Liobikienė and Juknys (2016) suggested that “much of the prior environmental research on the theory of reasoned action and planned behaviour shows that there is a gap between environmental beliefs and actions caused by the great difficulty of changing habits”(p.3415). For example, Nasrudin, Rostam, and Noor (2014) have indicated that personal traveling habits could play a key role in enhancing sustainable traveling behaviors. Second, another barriers to environmental friendly behavior may be connected with personal finance and expected benefits of buying sustainable products. More precisely, Liobikienė and Juknys (2016) indicated that the costs of purchasing sustainable products could be another potential hindrance for environmental friendly behaviors.

In addition, Moser (2016) revealed that the potential benefits and costs of purchasing green products could be key determinants of environmental friendly behaviors. Third, it has been found that marketing and branding strategies for sustainable products are critical factors that could affect environmental friendly behaviors. Liobikienė and Juknys (2016) have revealed that poor image in sustainable products is another unfavorable factor that could impede environmental friendly behaviors. Finally, several reports have further indicated that environmental knowledge and awareness could be pivotal driving forces of environmental friendly behaviors (Liobikienė & Juknys, 2016). Accordingly, factors that could reduce barriers to pro-environmental behaviors should be focal points in this report. To close this research gap, and further clarify the connections between proactive personality and pro-environmental behaviors, consequently, this study proposes the following hypotheses and research framework (see figure 1).

H1: Environmental awareness will be positively associated with conservation lifestyle.

H2: Environmental awareness will be positively associated with land stewardship.

H3: Environmental awareness will be positively associated with environmental citizenship.

H4: Environmental awareness will be positively associated with social environmentalism.

H5: Proactive personality will be positively associated with environmental awareness.

H6: Proactive personality will be positively associated with conservation life-style.

H7: Personality will be positively associated with land stewardship.

H8: Personality will be positively associated with environmental citizenship.

H9: Personality will be positively associated with social environmentalism.

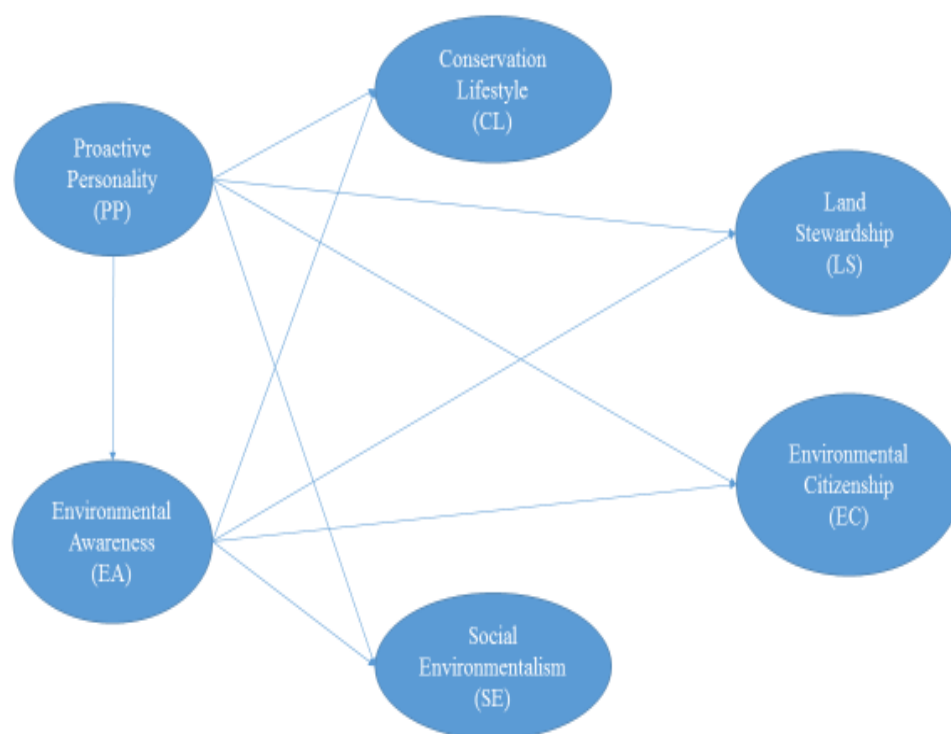


Figure 1: Research framework of the study

3. Research Methodology

Sampling profile

As shown in table 1, 316 undergraduate students participated in this study. The study findings indicated that there were 102 males, 212 females, and 2 unknown gender participants. Most of the participants were from college of public health and nutrition (n=134; 42%). Moreover, except 3 missing data, it was shown that freshmen, sophomores, juniors, and seniors were 88, 71, 140, and 14, respectively. Finally, it was demonstrated that the mean age of participants was 20.22, and standard deviation of the participants was 2.943.

Demographics	Items	Number	Percentage of respondents
Gender	Male	102	32
	Female	212	67
	Unknown	2	1
Academic Level	Freshman	88	28
	Sophomore	71	23
	Junior	140	44
	Senior	14	4
	Missing data	3	1
College	Liberal Arts	49	15
	Management Sciences	96	30
	Sciences	8	3
	Engineering	21	7
	Public Health and Nutrition	134	42
Age	Missing data	8	3
	Valid participants	311	
	Missing data	5	
	Mean Age	20.22	
	Standard deviation	2.943	

Table 1. Sampling profile

Data collection

Because the target population of this study were undergraduate students in Taiwan, the data was collected from various colleges and universities. Specifically, 800 surveys were delivered to undergraduate students from northern, central and southern Taiwan. After screening out the questionable data, the researchers finally obtained 316 usable surveys.

4. Data Analysis and Results

Measurement model assessment

In order to probe into the connections between predictor variables and pro-environmental behaviors, the SPSS and smart PLS software were utilized to examine the data. Specifically, the researchers carried out the partial least squares (PLS) analysis, a structural equation modelling technique (Lee, Petter, Fayard, & Robinson, 2011), to determine whether there is

any relationship between proactive personality, environmental awareness and pro-environmental behaviors. First, with regard to the assessment of measurement model, two critical values, the composite reliability (CR) and factor loading, were used to evaluate the reliability and internal consistency of the survey instrument. In table 2, it was found that the composite reliability (CR) of different variables and all factor loadings were greater than .70, which revealed that the reliability and internal consistency of the survey instrument were in line with the suggested criteria proposed by Fornell and Larcker (1981). Additionally, two pivotal values, the average variance extracted (AVE) and square root of AVE, were adopted to test the convergent and discriminant validity. As shown in table 2 and 3, it was demonstrated that the convergent and discriminant validity met suggested standards proposed by Fornell and Larcker (1981), not only because the AVE values were larger than the suggested criteria of .50, but also because the square root of AVE on the diagonal was larger than off-diagonal correlations. Consequently, it was revealed that the measurement model was satisfactory.

Item	CL	EA	EC	LS	SE	PP
CL1. Recycled paper, plastic and metal	.77					
CL2. Conserved water or energy in my home	.85					
CL3. Bought environmentally friendly and/or energy efficient products	.79					
EA1. Environmental pollution affects my health		.82				
EA2. I worry about environmental problems		.85				
EA3. Environmental problems are a risk for the future of my children		.83				
EA4. A better environment starts with me.		.79				
EC1. Voted to support a policy/regulation that affects the local environment			.83			
EC2. Signed a petition about an environmental issue			.90			
EC3. Donated money to support local environmental protection			.89			
EC4. Wrote a letter (an article) in response to an environmental issue			.83			
LS1. Made my yard or my land more desirable for wildlife				.87		
LS2. Participated (provided data) in a wildlife study				.86		
LS3. Volunteered to improve wildlife habitat in my community				.90		
SE1. Talked to others in my community about environmental issues					.92	
SE2. Worked with others to address an environmental problem or issue					.92	
SE3. Participated as an active member in a local environmental group					.86	
PP1. No matter what the odds, if I believe in something I will make it happen						.82
PP2. Nothing is more exciting than seeing my ideas turn into reality.						.79
PP3. I excel at identifying opportunities.						.82
PP4. I am always looking for better ways to do things						.83
PP5. If I believe in an idea, no obstacle will prevent me from making it happen						.85
CR	.84	.89	.93	.91	.93	.91
AVE	.65	.68	.76	.77	.81	.67
Cronbach's alpha	.73	.84	.89	.85	.88	.88

Note: CL, conservation lifestyle; EA, environmental awareness; EC, environmental citizenship; LS, land stewardship; SE, social environmentalism; PP, proactive personality; Diagonal elements are the square root of Average Variance Extracted (AVE);

Table 2. Confirmatory factor analysis

Construct	CL	EA	EC	LS	PP	SE
CL	.81					
EA	.32	.82				
EC	.38	.10	.87			
LS	.58	.23	.66	.88		
PP	.38	.28	.29	.40	.82	
SE	.52	.22	.73	.75	.40	.90

Note: CL, conservation lifestyle; EA, environmental awareness; EC, environmental citizenship; LS, land stewardship; SE, social environmentalism; PP, proactive personality; Diagonal elements are the square root of Average Variance Extracted (AVE);

Table 3. The correlations of each construct

Structural model assessment

Several indicators, including t-values, path coefficients, and R-square values, were utilized to test the structural model, hypotheses, and research questions in this study. In figure 2, it was shown that (H1, $\beta = .237$; $t = 4.488$), (H2, $\beta = .126$; $t = 2.469$), and (H4, $\beta = .115$; $t = 2.230$) were supported by study findings, whereas H3 ($\beta = .022$; $t = 0.415$) was not buttressed by the study results. In other words, the study findings indicated that environmental awareness was positively linked to conservation style, land stewardship, and social environmentalism, but not associated with environmental citizenship. In addition, it was found that proactive personality was positively connected with environmental awareness (H5, $\beta = .286$; $t = 4.566$), conservation style (H6, $\beta = .317$; $t = 5.983$), land stewardship (H7, $\beta = .361$; $t = 7.336$), environmental citizenship (H8, $\beta = .284$; $t = 5.235$), and social environmentalism (H9, $\beta = .375$; $t = 7.033$). Finally, the study findings demonstrated that proactive personality, which accounted not only for a total of 8.2 % of variance in environmental awareness, but also for a total of 8.5% of variance in environmental citizenship, were positively related to environmental awareness and citizenship. More importantly, proactive personality and environmental awareness, which explained a total of 20.0 % of variance in conservation style, a total of 17.3 % of variance in land stewardship, and a total of 17.8 % of variance in social environmentalism, were positively associated with conservation style, land stewardship, and social environmentalism.

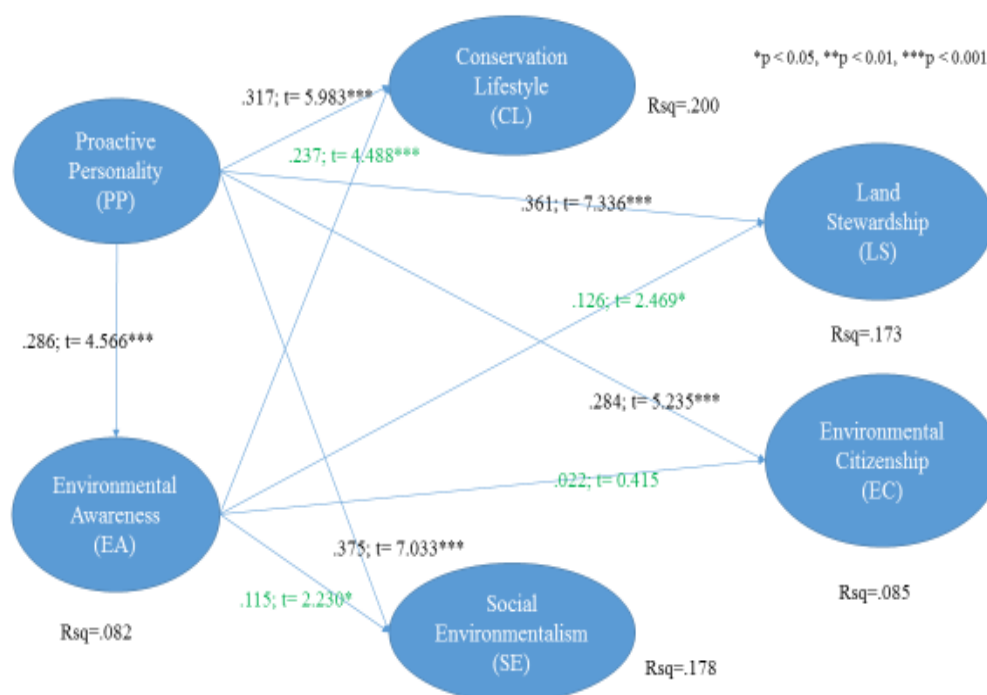


Figure 2: The path coefficient

5. Discussions and Implications

The primary purpose of this study is not only to examine the influences of proactive personality and environmental awareness on pro-environmental behaviors, but also to explore the relationship between proactive personality and environmental awareness. First, in terms of the connections between environmental awareness, and pro-environmental behaviors, the study findings, partly consistent with previous reports (Blok et al., 2015), have shown that environmental awareness could play a key role in determining more positive conservation style, land stewardship, and social environmentalism behaviors. Nevertheless, it has been found that environmental awareness could have no relationship with environmental citizenship behaviors. More precisely, the increase in environmental awareness does not result in the increase in environmental citizenship behaviors.

One possible explanation for this inconsistent result could be related to the participants of this study. That is, because the participants of this study are undergraduate students in Taiwan, it is likely that they could be too young to understand the importance of environmental issues and have financial resources to support local environmental protection. Although this study result is contradictory to previous research (Blok et al., 2015), it is in line with study suggestions proposed by Pothitou et al. (in press). Hence, in order to enhance pro-environmental behaviors, it is suggested that more efforts should be made to increase environmental awareness. For example, it is suggested that social media such as Facebook, Twitter, and online forums should be adopted to promote environmental awareness.

Last but not least, with respect to the role of proactive personality in environmental awareness, and pro-environmental behaviors, the study findings are in line with previous suggestions (Crant, 1996; Fuller & Marler, 2009; Hung et al., 2015; Uy et al., 2015), which indicate that proactive personality could be positively related to environmental awareness,

conservation style, land stewardship, environmental citizenship, and social environmentalism behaviors. In other words, people with higher levels of proactive personality are more likely to have better environmental awareness, and pro-environmental behaviors. Accordingly, it is implied that more attention should be paid to facilitating proactive people to participate in environmental protection activities, due mainly to the close link between proactive personality, environmental awareness, and pro-environmental behaviors. For instance, it is suggested that practitioners in the field of environmental protection should encourage proactive people to promote environmental awareness, and further join environmental protection activities.

6. Conclusions

The study findings have made significant contributions to the field of environmental psychology by verifying the connections between proactive personality, environmental awareness, and pro-environmental behaviors. As people have gradually noticed the importance of environmental problems, it is critical and considerable that more attention should be paid to examining the key elements that could influence environmental awareness, and pro-environmental behaviors.

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Factors Associated With Videoconference Fatigue Among Healthcare Workers in a Tertiary Government Hospital

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Abstract

This study was conducted to determine the presence of videoconference fatigue (VCF) and the factors associated with it. It was approached through an analytic, cross-sectional research design and a non-probability convenience sampling. The respondent's demographic and videoconference (VC) profiles were obtained using a closed-ended questionnaire. A validated and reliable 15-item Zoom Exhaustion and Fatigue (ZEF) tool was also incorporated to this research instrument. This online survey tool was distributed to physicians and nurses employed at a tertiary government hospital. Data were analyzed using the between-group comparisons approach and univariate binary logistic regression. Out of the 237 respondents, 189 or 79.75%, experienced VCF. The majority experienced fatigue on all constructs with general (85.23%, n=202), motivational (79.75%, n=189), visual (68.78%, n=163), emotional (67.09%, n=159), and social (64.98%, n=154) fatigue. Furthermore, several key findings were made evident. VCF was more prevalent in younger age, medical officers (MOs), and single respondents. More frequent use of VCs and negative attitude increased the likelihood of VCF. This research provided us with new insights on the field of virtual meeting. Given the ubiquitous nature of VCs, the results of this study serve as a testament that blurred work-life boundaries contributes to the growing VCF phenomenon, ultimately increasing psychological stress.

Keywords: Healthcare Workers, Meeting Science, Pandemic, Videoconference Fatigue, Videoconferences, Virtual Meetings

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CHAPTER I: INTRODUCTION

In 2020, the world was awakened by a highly contagious virus greeting everyone through the portals of their work spaces, leisure areas, and even their very own homes uninvited. Philippines has been hit hard by Covid-19 pandemic. The national healthcare system has been inundated. One such healthcare system is the National Children's Hospital (NCH), a pediatric tertiary hospital under the Department of Health (DOH), at the forefront of this unprecedented medical catastrophe. The gravity of this burden forced lifestyle changes, ultimately necessitating videoconferences (VCs) as a default platform to achieve work objectives and improve productivity. It is cost-effective and convenient. Adopting this has not been without a downside. It is not uncommon to hear healthcare workers (HCWs) complain about their mandated attendance on VCs in addition to their immediate onsite tasks, leaving them feeling drained and exhausted. Virtual meetings are not new technology but this trend has accelerated exponentially.¹ As a consequence, it has given rise to a newly observed phenomena called videoconference fatigue (VCF), popularly referred to as 'Zoom fatigue' by the British Broadcasting Corporation and National Geographic.^{2,3}

There are many ways to classify fatigue. For brevity, there is work fatigue characterized by extreme tiredness and reduced functional capacity that occurs in physical, mental, and emotional energy resources.⁴ It is temporally tied to during-and-at-the-end-workday.⁴ VCF shares the same characteristics, with a unique difference in that it occurs after engaging in videoconferences.^{5,6}

Despite these emerging issues, scant academic researches have been undertaken to ascertain the prevalence, magnitude, scope, and impact of this emerging VCF phenomenon. Therefore, this study aims to determine the presence of videoconference fatigue (VCF) and factors associated with it.

A. Objectives

Primary Objective:

Determine the factors associated with VCF (in terms of general, visual, social, motivational, and emotional factors) among HCWs.

Secondary Objectives:

To determine (1) the profile of HCWs actively participating in VCs according to age, sex, marital status, work position, type of video platform used, type of VCs attended, frequency of VC use per week, duration of VC use per session and attitude towards VC, (2) the prevalence of VCF according to the factors, and (3) association of factors affecting VCF.

B. Significance of the Study

Exploring the impact of VCF phenomenon may provide directions on structurally constructing evidence-based measures to mitigate the fatigue.

C. Operational definitions

• **Videoconferences (VCs)** refer to online meetings mandatorily attended by HCWs over video forum platforms such as but not limited to Zoom, Facebook Messenger, Skype, FaceTime, Microsoft Teams, etc. These VCs are in the form of admitting conferences,

hospital audits, lectures, case report, grand-rounds, or research presentations, and committee meetings.

- **VC attitude** can be negative, neutral or positive towards VC usage.

Negative attitude: Score of 1 means participant does not enjoy participating on VCs.

Neutral attitude: Score of 2.

Positive attitude: Score of 3 means participant enjoys participating on VCs.

- **Videoconference fatigue (VCF)** is classified into 5 constructs (general, visual, social, motivational and emotional fatigue), each with 3 construct-specific response items as illustrated in the instrument tool.

CHAPTER II: REVIEW OF RELATED LITERATURE AND STUDIES

A. Related Literature/Studies

Fatigue as a Symptom

There have been many attempts to combat fatigue but its conceptual definition and causes remain vague and complex.⁷ Fatigue is defined as a nonspecific manifestation of psychological and medical disorders characterized by a sense of weariness or loss of energy.⁸ When fatigue continues beyond 6 months and left unchecked, this could lead to a serious debilitating disorder that substantially impairs normal function along with worsening body malaise even with minor activities (or post-exertional malaise) that cannot be resolved by sleep or rest.^{7,9} This disorder is termed as the Chronic Fatigue Syndrome (CFS), a psychiatric condition we aim to avoid.^{7,9} Knowing virtual meetings are likely to stay, predicted to take place in 75% of meetings by 2024,¹⁰ prolonged use of this platform may exacerbate VCF, which is currently being pointed to as the newest addition to CFS' numerous causes.

Videoconference Fatigue as a Unique Construct

VCF is the exhaustion an individual feels after engaging in a VC.⁵ Six months after the covid-pandemic struck, the field of VCF was explored qualitatively and quantitatively.⁵ *Qualitative method* used open-ended questions related to VCF. Analysis of their results formed 3 themes 1) psychosomatic and psychological descriptions of the VC experience, 2) concept of time related to videoconferencing and its role on fatigue, and 3) in-meeting causes of VCF and common ways participants tried to reduce VCF. *Quantitative method* looked into the hourly trajectory of VCF. Online questionnaires, pivoted on when VCF occurs, were conducted for a total of nine hours each workday for 5 consecutive working days. Results revealed that VCs are associated with fatigue levels higher than one's expected fatigue trajectory at different times of the day.⁵ Furthermore, formation of these questions and methods were significantly influenced by the Attention Restoration Theory (ART), a psychological perspective developed by Kaplan which builds on the assumption that energy is depleted by sustained attention, pertains to the effort required to focus attention and process information.¹¹ In a nutshell, ART proposes that connecting with nature has the capacity to restore attention after exerting mental energy.¹¹ Several studies have tested this theory and have proven an improved performance on attention-related tasks after one was exposed to nature.¹² Attendees reduced attention demands by utilizing ways they presume to alleviate VCF (enabling mute, turning camera off, and hide self), mirroring ART's postulation.⁵ The nature of VCF was associated to fit within the broader domain of human

energy.^{5,11} The framework of ART was brought into play as it (1) recognized that energy is influenced by more than typical work demands,^{5, 13} and; (2) allowed investigators to explore that VCs are associated with fatigue due to a) increased sustained attention (how), b) timing or during certain times of day (when), and c) specific VCs characteristics (why)⁵. These factors primarily shaped their research questions. Results of the study underpin that VCF tends to occur closer in temporal proximity to the experience (temporal dimension) and ultimately that VCF is a unique construct. (Fig.1).

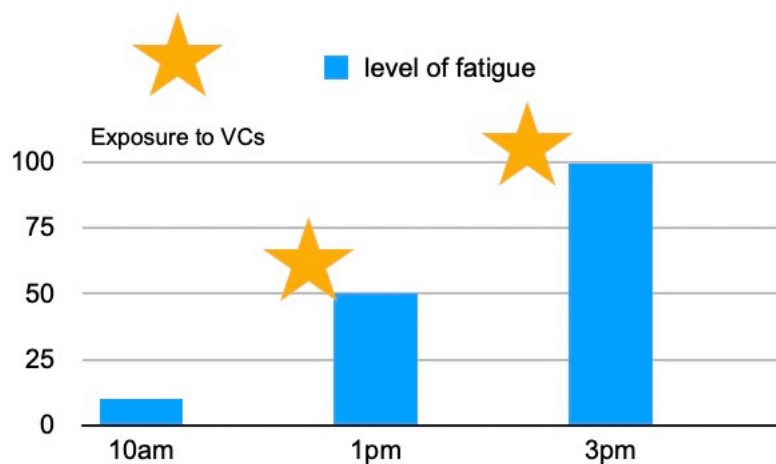


Fig. 1. Level of fatigue after exposed to VCs

Star indicates attendee has exposure to VCs. Columns height reflects level of fatigue.

Zoom Exhaustion and Fatigue Scale

One study has developed an online survey to measure fatigue that comes with VCs.⁶ This questionnaire was formed on the assumption that there are 4 nonverbal elements (eye gaze, cognitive load, all day mirror, and physical mobility constraints) that may contribute to VCF, emphasizing that these elements are amplified in virtual interface as opposed to face-to-face (FTF) interactions.¹⁴ Online meetings were presumed to increase load on **eye gaze** in that there is decreased interpersonal *distance* (referring to the space between the user and device monitor), increased *size* of the faces from the grid configuration, and increased *duration* of eye contact in zoom meetings. Bailenson cited Hall's theory on proxemics, a study of man's perception and use of space.^{15,16} This anthropologist devoted his work on nonverbal communication and divided human distances into 4 zones. He classified intimate distance as anything below 46 cm (Fig.2).¹⁵ It is estimated that the distance from the chin to forehead of the other person from a gadget screen is only approximately 13 cm, while the usual distance in FTF interactions is at least 50 cm.¹⁴ The proximity of VC set up is unsettlingly exhausting, forcing people to behave in stressful ways for it defies that nature of patterned human territoriality.¹⁵ The **cognitive overload** represents the need to (1) send extra cues (like nodding in an exaggerated way for a few extra seconds to signal agreement) and (2) comprehend limited receiving cues in an effort to be understood and get the right tune for interaction.¹⁴ **All day mirror** refers to the default self-view of the software which compels one to undergo the unavoidable, excessive self-evaluation.¹⁴ Lastly, **reduced mobility** refers to the physical movements restricted by the camera's frustum, or the field of view of a virtual camera system.¹⁴ This constraint complements theories that proposed people to produce more creative ideas with locomotion.^{17, 18}

Inspired by these arguments, a 15-item questionnaire Zoom Fatigue and Exhaustion (ZEF) tool was designed to measure fatigue experienced by consumers after attending VCs.⁶ The rigorous scale development process involved literature review and interviews that initially produced 49 items with 9 thematic constructs related to VCF.⁶ Some themes, namely general fatigue, physical fatigue, mental fatigue, reduced motivation, and reduced activity, were adapted from the Multidimensional Fatigue Inventory.¹⁹ Other themes included visual fatigue, vocal fatigue, emotional fatigue, and social fatigue. The research team recruited participants from Stanford University and various online sites such as Amazon, Mechanical Turk Worker System, and Lucid platform. After performing confirmatory factor analysis on this initial tool, the items were reduced to 15 items, ultimately forming 5 constructs to measure ZEF fatigue (general, visual, social, motivational, and emotional fatigue). In summary, the ZEF tool is comprised of questions that indicated the level of fatigue per domain (general, visual, social, motivational, and emotional fatigue). Each item was measured using a five-point Likert-type scale ranging from 1 = Not at all, 2 = Slightly, 3 = Moderately, 4 = Very, and 5 = extremely. This tool was adapted in this study.

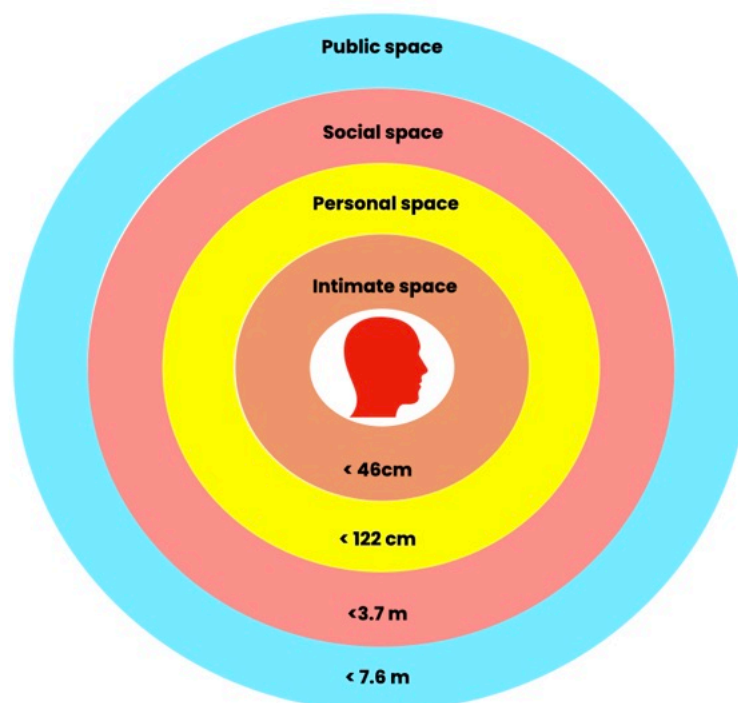


Figure 2. Interpersonal space. Hall, 1966.

B. Gap bridged by the study

Limited literatures have delved into the presence of VCF and developed tools to measure it but none investigated this phenomenon particularly on HCWs' well-being. This gap provides an avenue for research and must be undertaken to generate insights on how to reduce ill effects of VCF, preserve well-being of HCWs and ultimately protect sustained delivery of health care services.

C. Conceptual Framework

This study hypothesizes that the use of VC may cause fatigue in HCWs and several factors can possibly affect the degree of fatigue. Therefore, the conceptual framework involves the following elements: (1) VC use as the phenomenon; (2) Age, sex, marital status, work position, types of video platform used, types of VCs attended, frequency and duration of VC usage, and attitude as independent variables; and (3) videoconference fatigue as the dependent variable (Fig. 3).

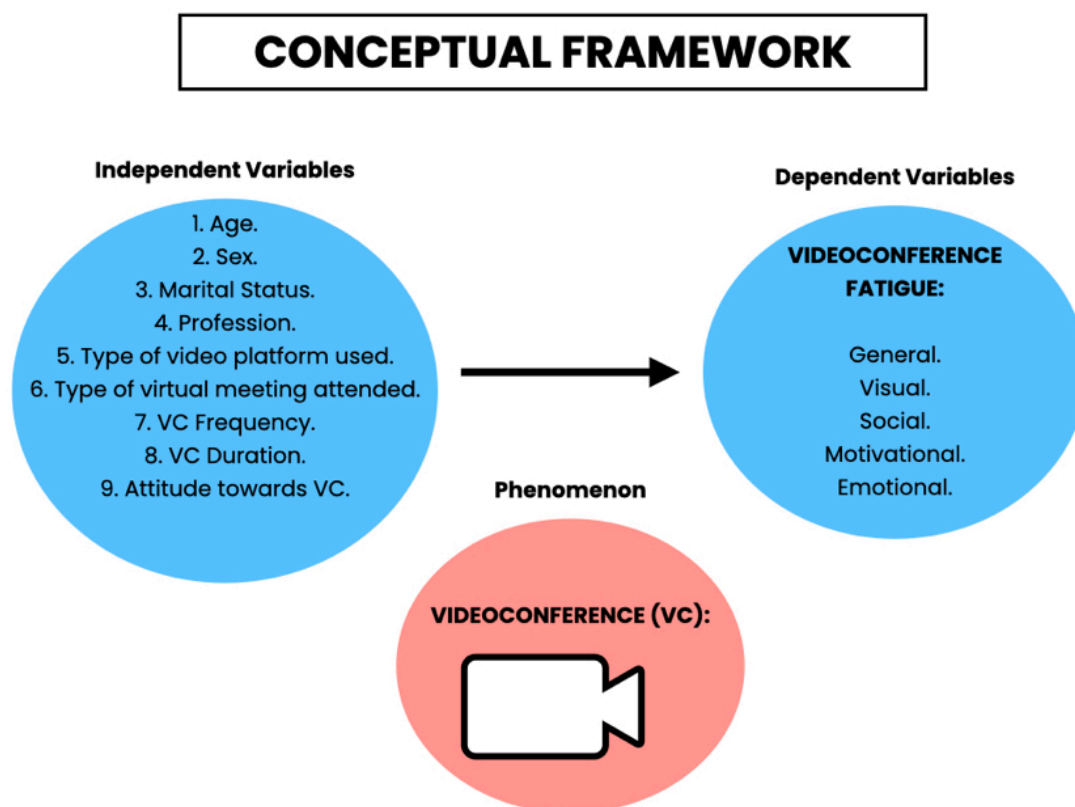


Figure 3.

CHAPTER III: RESEARCH DESIGN AND METHODOLOGY

1. Research Design

This study was approached through an analytic, cross-sectional research design and utilized an online survey tool composed of a closed-ended, quantitative set of questions. The tool was created from Google Form software and a link to this tool was shared through any mobile device.

2. Sources of Data

2. A. Sampling Design

Selection of participants was done through a non-probability, convenience sampling. This study involved physicians and nurses employed in NCH, Philippines. As of August 2021,

NCH has 224 doctors (155 full-time, 69 part time) and 201 nurses for a total of 425 employees in the field. Population was obtained from this group.

2. B. Sample size calculation

Sample size was calculated based on estimation of population, proportion of VCF among HCWs assumed to be 50%, there being no previous studies. With a maximum error of 5% and a reliability of 80% sample size required is a minimum of 167. This study was able to obtain 237 participants.

2. C. Inclusion Criteria

All participants must be employed in NCH and have been attending VCs for at least over 6 months. HCWs attending to VC at least once weekly are target subjects in this study.

2. D. Exclusion Criteria

Positions not required to attend regular VCs.

2. E. Withdrawal Criteria

Participants who opted not to answer some questions was withdrawn from this study.

3. Research Instrument

This study incorporated the Zoom Exhaustion and Fatigue (ZEF) tool, designed and developed by Stanford University researchers. Questions from this tool centered on VC fatigue and was categorized into 5 domains (general, visual, social, motivational, and emotional fatigue). Each domain allocated with 3 statements, adding up to a total of 15 items. Cronbach's alphas were calculated wherein each domain scored above 0.8 indicating a good scale reliability (general fatigue: $\alpha = .90$, visual fatigue: $\alpha = .89$, social fatigue: $\alpha = .88$, motivational fatigue: $\alpha = .85$, emotional fatigue: $\alpha = .88$). The average rating across the 15 items of ZEF score showed a reliability of $\alpha = .95$ proving the questionnaire to have high internal validity and good reliability.⁶ This tool instructed respondents to indicate their level of VC fatigue using a 5-point Likert scale: 5 points = Extremely; 4 points = Very; 3 points = Moderately; 2 points = Slightly; and 1 point = Not at all. The total ZEF scores, summed up at the last section, range from 15 to 75. Classification of VCF based on the ZEF scoring is as follows: (a) No fatigue for those who scored 15 to 30 points; (b) Mild fatigue for 31 to 45 points; (c) moderate fatigue for 46 to 60 points; and (d) Severe fatigue for 61 to 75 scores. Total ZEF score may indicate presence of fatigue but not all constructs need to fulfill the presence of fatigue. Thus, each construct was further classified into no fatigue (ranging from 3 to 6 scores) and presence of fatigue (7 to 15 scores). VC usage frequency and duration were added to our research questionnaire along with other considered factors (age, sex, marital status, profession, type of video platform used, and type of virtual meetings attended). Based on Erikson's life cycle stages, age was divided into 3 groups namely, early-aged 21 to 39 years old, middle-aged 40 to 64 years old, and late-aged 65 years old and above.⁷ [Appendix A, Appendix B]

4. Informed Consent Form (ICF)

The ICF consisted of the principal investigator's (PI) profile, the research background and its purpose, voluntary participation, procedures and protocol, duration, risks, benefits, reimbursements, and PI's contact details. Confidentiality for shared information was assured.

The right to withdraw was offered. Certificates of consents from both the researcher and research participant were provided prior to commencing the research proper.

5. Study Procedure

The online survey was distributed from August 10 to August 23, 2021 (over a year into the pandemic) among HCWs in NCH. Twenty (20) pilot participants were recruited via instant messaging through the PI's network. The initial survey was designed to assess readability of questionnaire items. Feedback from these respondents were accommodated virtually and FTF. Average completion time was 10 minutes. Test was validated by the PI prior to the survey proper.

Through Viber, Telegram, Facebook Messenger, and WhatsApp, Yahoo, Gmail, and Hotmail, an online survey link (https://docs.google.com/forms/d/e/1FAIpQLScc6bGx-MR4i7HhdlNa-w9PRDE75ChytwVJixmmIVbCYtvlg/viewform?usp=sf_link or <https://forms.gle/f5aDoSknv54Y27xx9>) was distributed among the HCWs list obtained from the human resource department. The respondents were allowed to share the same link individually and through hospital group chats. Clicking the link commences the survey process. Respondents were asked to sign in using their google account, ensuring that the survey has not been answered twice by the same user. Upon individual request, a separate link was given to those without google account. The survey proper started with the ICF. It was stated that only NCH personnel can participate in the study. Clicking the "I consent" button directed the respondent to the 2nd section, the participant's demographic data. The profile on VC usage (the type of video platform used, type of virtual meetings attended, VC frequency per week, VC duration per session, and attitude towards VC) comprised the 3rd section. Participation was automatically declined for respondents who have not attended VCs for more than 6 months. The 4th section incorporated the ZEF tool. An option to disclose an email address was provided on the space before the survey's submit button for respondents interested on receiving a copy of results. Each respondent was assigned a number code. For participants found to have VCF, referral to a specialist was offered.

6. Data management and Analysis

Statistical analyses were performed using STATA Statistical Software, Version 13, College Station, TX: StataCorp LP. A p -value ≤ 0.05 was considered statistically significant. Descriptive statistics included frequency and percentage for nominal data, median and interquartile range for ordinal data, and mean and standard deviation for continuous-level variables. Comparative analyses of the data according to presence of overall VCF (with and without) were employed using Chi-Square Test of Homogeneity or Fisher's Exact Test, if the assumption of at least 5 expected frequencies per cell is not met, for nominal data; Mann-Whitney U Test for ordinal or non-normally-distributed continuous data; and, independent t -test for normally-distributed continuous data. The prevalence of VCF as an overall measure and of the different construct, was estimated using chi-square test exact binomial approach.²⁰ Univariate binary logistic regression analysis was conducted to determine odds or likelihood of developing the videoconference fatigue, as an overall measure and in the different facets or constructs, according to the different predictors or factors.²⁰ Binary logistic regression is an inferential statistical test which determines the association, measured using odds ratio, between an exposure or predictor of any data measurement and a with a binary, outcome variable.²⁰

7. Ethical consideration

The study was reviewed and approved by NCH's Institutional Review Board (IRB). There were no conflicts of interest. All data were treated with utmost confidentiality.

CHAPTER IV: RESULTS

A total of 276 responses were received. Two hundred forty-seven (247) successfully submitted responses while 28 respondents abandoned the survey form or has withdrawn from the study. One did not consent to participate. Of the 247 who successfully submitted responses, ten (10) were excluded for **not** attending VCs for more than 6 months or more than once a week, leaving 237 eligible HCWs for this study.

Table 1 illustrates the demographic profile of the respondents according to the VCF status. It is noted that the mean age of the respondents was 36.47 years old ($SD=8.80$), with most of them being between 21 to 39 years old (73.84%). Results also showed that majority of the respondents were female (79.75%), single (57.38%), and medical officer III (31.22%). Results also showed that 41.35% of the respondents had a history of COVID-19 infection. Comparative analyses indicated that the mean age of the respondents was significantly higher among those without VCF ($\bar{x}=42.02$, $SD=11.12$), and that the proportion of those without VCF was significantly higher among those who were 40 – 64 years old (45.83%). The comparison of those with VCF was significantly higher among those who were single (63.49%). Similarly, the proportion of respondent with VCF was significantly higher among medical officers III (35.98%).

The VC characteristics of the respondents according to the VCF status is depicted in Table 2. The most commonly utilized VC platforms were Zoom (100%), Google Meet (33.05%), Facebook Messenger (22.36%), and Microsoft Teams (18.57%). Comparative analyses indicated that the proportion of respondents who did not have VCF used Facebook Messenger (33.33%), Microsoft Teams (31.25%), and Google Meet (50.0%). The most common type of VCs attended by the respondents were lectures (96.62%), hospital audits (82.28%), case presentations or grand rounds (75.53%), research presentations (72.57%) and admitting conferences (72.57%). In addition, comparative analyses showed that the proportion of respondents with VCF was significantly higher among those who attended admitting conferences (76.22%), case presentations or grand rounds (78.31%), and research presentations (77.78%). It can also be gleaned from the table that most participants attended VC for ≥ 5 times per week (40.51%) and each VC lasted for about 1 – 2 hours (80.59%).

Table 3 illustrates the prevalence of VCF among the respondents. The overall prevalence of VCF was 79.75% (95% CI = 74.11% to 84.42%). Among those with VCF, 35.86% had mild fatigue, 35.02% had moderate fatigue, and 8.86% had severe fatigue. In terms of the different constructs of VCF, results indicated that 85.23% had general fatigue, 68.78% had visual fatigue, 64.98% had social fatigue, 79.75% had motivational fatigue, and 67.09% had emotional fatigue.

The univariate binary logistic regression analyses of the different predictors of VCF among the respondents is presented in Table 4. Results indicated that age, marital status, work position, and attitude towards VC significantly predicted the odds of developing VCF among the respondents. In particular, results showed that age negatively affected the development of VCF ($OR=0.92$, $p=0.001$), wherein 1-year increase in age decreased the odds of VCF by 9%.

It can also be noted that marital status, specifically being married ($OR=0.29$, $p=0.001$), negatively affected the likelihood of having VCF. Those who are married were 3.45 times less likely to have VCF than those who were single. Interestingly, results showed that medical officers ($OR=3.10$, $p=0.001$) were 3.10 times more likely to have VCF than those who are non-medical officers. In contrast, medical specialists ($OR=0.32$, $p=0.004$) and nurses ($OR=0.33$) were 3.13 times and 3.03 times less likely to develop VCF, respectively, than their non-medical specialists and non-nurse counterparts. The negative attitude towards VC increased the likelihood of developing VCF ($OR=4.13$, $p=0.023$) by 4.13 times compared to those with a neutral attitude.

Table 5 depicts the univariate binary logistic regression analyses of the different predictors of the different constructs of VCF among the respondents. Results showed that age significantly predicted all constructs of VCF among the respondents. Specifically, results showed that for 1-year increase in the age of the respondents, the likelihood of developing general fatigue ($OR=0.95$, $p=0.002$) decreased by 5%. Similarly, the odds of developing visual ($OR=0.96$, $p=0.008$), social ($OR=0.93$, $p=0.001$), motivational ($OR=0.93$, $p=0.001$), and emotional fatigue ($OR=0.93$, $p=0.001$) decreased by 4%, 8%, 8%, and 8%, respectively, for every 1-year increase in the respondent's age. It can also be gleaned from the table that marital status predicted the likelihood of developing general, social, motivational, and emotional fatigue. Results indicated that married respondents were 2.33 times less likely to develop general fatigue ($OR=0.43$, $p=0.029$) than those who are single. In addition, those who were separated/widowed were 12.50 times less likely to have general fatigue ($OR=0.08$, $p=0.006$) than those who are single. Interestingly, results showed that the odds of social ($OR=0.46$, $p=0.006$), motivational ($OR=0.26$, $p=0.001$), and emotional fatigue ($OR=0.46$, $p=0.007$) were 2.17 times, 3.85 times, and 2.17 times lower, respectively, among married respondents than their single counterparts. In terms of work position, medical specialist ($OR=0.35$, $p=0.002$) were 2.86 times less likely to have motivational fatigue than non-medical specialist counterparts. On the other hand, medical officers were 2.56 times, 4.00 times, and 2.09 times more likely to develop general ($OR=2.56$, $p=0.016$), motivational ($OR=4.00$, $p=0.001$), and emotional fatigue ($OR=2.09$, $p=0.009$) respectively, than non-medical officers.

Results also showed that the frequency of VC significantly affected the development of general fatigue among the respondents. In particular, having 3 to 4 VCs per week ($OR=3.06$, $p=0.031$) increased the likelihood of general fatigue by 3.06 times than having 1 to 2 VCs per week. Similarly, the frequency of VC increased the chances of having general fatigue. Results showed those who attend VCs lasting for 1 – 2 hours ($OR=17.46$, $p=0.015$) and ≥ 3 hours ($OR=28.50$, $p=0.008$) were 17.46 times and 28.50 times more likely to have general fatigue than those who attend conferences which are less than 1 hour by duration. Finally, result showed that a positive attitude towards VC ($OR=0.37$, $p=0.034$) was 2.70 times less likely to have emotional fatigue than those who have a neutral attitude.

Table 1. Demographic Profile of the Respondents According to Videoconference Fatigue Status (N = 237)

Characteristics	Videoconference Fatigue Status			Test Statistic ^a	p-value (Two-Tailed)
	Without Fatigue (n = 48)	With Fatigue (n = 189)	Total (N = 237)		
Age (Year; \bar{x}, SD)	42.02 (11.12)	35.06 (7.51)	36.47 (8.80)	5.15 [†]	0.001
Age Category (f, %)				22.52 [†]	0.001
<i>21 to 39 Years Old</i>	24 (50.00%)	151 (79.89%)	175 (73.84%)		
<i>40 to 64 Years Old</i>	22 (45.83%)	38 (20.11%)	60 (25.32%)		
<i>≥65 Years Old</i>	2 (4.17%)	0 (0.00%)	2 (0.84%)		
Sex (f, %)				0.01	0.911
<i>Male</i>	10 (20.83%)	38 (20.11%)	48 (20.25%)		
<i>Female</i>	38 (79.17%)	151 (78.89%)	189 (79.75%)		
Marital Status (f, %)				14.46 [†]	0.001
<i>Single</i>	16 (33.33%)	120 (63.49%)	136 (57.38%)		
<i>Married</i>	30 (62.50%)	66 (34.92%)	96 (40.51%)		
<i>Separated/Widowed</i>	2 (4.17%)	3 (1.59%)	5 (2.11%)		
Work Position (f, %)				22.02 [†]	0.003
<i>Medical Specialist II</i>	9 (18.75%)	28 (14.81%)	37 (15.61%)		
<i>Medical Specialist III</i>	5 (10.42%)	13 (6.88%)	18 (7.59%)		
<i>Medical Specialist IV</i>	5 (10.42%)	5 (2.65%)	10 (4.22%)		
<i>Medical Officer III</i>	6 (12.50%)	68 (35.98%)	74 (31.22%)		
<i>Medical Officer IV</i>	8 (16.67%)	38 (20.11%)	46 (19.41%)		
<i>Nurse I</i>	6 (12.50%)	8 (4.23%)	14 (5.91%)		
<i>Nurse II</i>	5 (10.42%)	20 (10.58%)	25 (10.55%)		
<i>Nurse III</i>	3 (6.25%)	9 (4.76%)	12 (5.06%)		
<i>Nurse V</i>	1 (2.08%)	0 (0.00%)	1 (0.42%)		
History of Previous COVID-19 Infection (f, %)	20 (41.67%)	78 (41.27%)	98 (41.35%)	0.01	0.960

^aComparative analyses were employed using Chi-Square Test of Homogeneity or Fisher's Exact Test for nominal data; Mann-Whitney U Test for ordinal or non-normally-distributed continuous data; and independent *t*-test for normally-distributed continuous data.

*Significant at 0.05

[†]Significant at 0.01

Table 2. Videoconference Characteristics of the Respondents according to Videoconference Fatigue Status (N = 237)

Characteristics	Videoconference Fatigue Status			Test Statistic ^a	p-value (Two-Tailed)
	Without Fatigue (n = 48)	With Fatigue (n = 189)	Total (N = 237)		
Videoconference Platform (f, %)					
<i>Zoom</i>	48 (100.00%)	189 (100.00%)	237 (100.00%)	0.00	1.000
<i>Facebook Messenger</i>	16 (33.33%)	37 (19.58%)	53 (22.36%)	4.17*	0.041
<i>Skype</i>	0 (0.00%)	2 (1.06%)	2 (0.84%)	0.51	1.000
<i>Facetime</i>	2 (4.17%)	6 (3.17%)	8 (3.38%)	0.12	0.665
<i>Microsoft Team</i>	15 (31.25%)	29 (15.34%)	44 (18.57%)	6.41*	0.021
<i>Google Meet</i>	24 (50.00%)	54 (28.72%)	78 (33.05%)	7.82 [†]	0.005
<i>Webex</i>	1 (2.13%)	13 (6.88%)	14 (5.93%)	1.52	0.313
<i>Slack</i>	2 (4.17%)	11 (5.82%)	13 (5.49%)	0.20	1.000
<i>Viber</i>	4 (8.33%)	1 (0.53%)	5 (2.11%)	11.29	0.006
<i>Veeva</i>	0 (0.00%)	2 (1.06%)	2 (0.84%)	0.51	1.000
<i>Delex</i>	1 (2.08%)	0 (0.00%)	1 (0.42%)	3.95	0.203
<i>Docquity</i>	1 (2.08%)	2 (1.06%)	3 (1.27%)	0.32	0.494
Types of Videoconferences Attended (f, %)					
<i>Admitting Conferences</i>	27 (56.25%)	145 (76.72%)	172 (72.57%)	8.06 [†]	0.005
<i>Hospital Audits</i>	37 (77.08%)	158 (83.60%)	195 (82.28%)	1.11	0.291
<i>Lectures</i>	46 (95.83%)	183 (96.82%)	229 (96.62%)	0.12	0.665
<i>Case Presentations/Grand Rounds</i>	31 (64.58%)	148 (78.31%)	179 (75.53%)	3.90*	0.048
<i>Research Presentations</i>	25 (52.08%)	147 (77.78%)	172 (72.57%)	12.70 [†]	0.001
<i>Committee Meetings</i>	32 (66.67%)	115 (60.85%)	147 (62.03%)	0.55	0.458
<i>Patient Interviews</i>	0 (0.00%)	1 (0.53%)	1 (0.42%)	0.26	1.000
<i>Mentoring</i>	0 (0.00%)	2 (1.06%)	2 (0.84%)	0.51	1.000
<i>Ward Orientation and Endorsements</i>	1 (2.08%)	0 (0.00%)	1 (0.42%)	3.95	0.203
Frequency of Videoconference (f, %)				3.25	0.197
<i>1 – 2 Times per Week</i>	19 (39.58%)	50 (26.46%)	69 (29.11%)		
<i>3 – 4 Times per Week</i>	13 (27.08%)	59 (31.22%)	72 (30.38%)		
<i>≥5 Times per Week</i>	16 (33.33%)	80 (42.33%)	96 (40.51%)		
Duration of Videoconferences (f, %)				2.24	0.349
<i>1 Hour</i>	2 (4.17%)	2 (1.06%)	4 (1.69%)		

<i>1 Hour to 2 Hours</i>	38 (79.17%)	153 (80.95%)	191 (80.59%)		
<i>≥3 Hours</i>	8 (16.67%)	34 (17.99%)	42 (17.72%)		
Attitude towards Videoconference (f, %)				8.06*	0.012
<i>Neutral Attitude</i>	38 (79.17%)	132 (69.84%)	170 (71.73%)		
<i>Negative Attitude</i>	3 (6.25%)	43 (22.75%)	46 (19.41%)		
<i>Positive Attitude</i>	7 (14.58%)	14 (7.41%)	21 (8.86%)		

Table 3. Prevalence of Videoconference Fatigue among the Respondents (N = 237)

Characteristics	Frequency (f)	Percentage (%)	95% Confidence Interval
Constructs of Videoconference Fatigue			
<i>General Fatigue</i>	202	85.23%	
<i>Visual Fatigue</i>	163	68.78%	
<i>Social Fatigue</i>	154	64.98%	
<i>Motivational Fatigue</i>	189	79.75%	
<i>Emotional Fatigue</i>	159	67.09%	
With Overall Videoconference Fatigue	189	79.75%	74.11% to 84.42%
<i>Mild Fatigue</i>	85	35.86%	29.97% to 42.22%
<i>Moderate Fatigue</i>	83	35.02%	29.17% to 41.36%
<i>Severe Fatigue</i>	21	8.86%	5.83% to 13.24%

Table 4. Univariate Binary Logistic Regression Analyses of the Different Predictors of Videoconference Fatigue among the Respondents (N = 237)

Predictors	Videoconference Status (With Videoconference Fatigue)		
	Odds Ratio	SE	p-value (Two-Tailed)
Age (Years)	0.92 [†]	0.02	0.001
Sex (Female)	1.05	0.42	0.911
Marital Status			
<i>Single</i>	Referent	–	–
<i>Married</i>	0.29 [†]	0.10	0.001
<i>Separated/Widowed</i>	0.20	0.19	0.091
Work Position			
<i>Medical Specialist</i>	0.32*	0.13	0.004
<i>Medical Officer</i>	3.10 [†]	1.08	0.001
<i>Nurse</i>	0.33*	0.14	0.007
History of Previous COVID-19 Infection	0.98	0.32	0.960

Frequency of Videoconference			
<i>1 – 2 Times per Week</i>	Referent	–	–
<i>3 – 4 Times per Week</i>	1.72	0.70	0.182
<i>≥5 Times per Week</i>	1.90	0.73	0.095
Duration of Videoconferences			
<i>1 Hour</i>	Referent	–	–
<i>1 Hour to 2 Hours</i>	4.03	4.09	0.171
<i>≥3 Hours</i>	4.25	4.57	0.178
Attitude towards Videoconference			
<i>Neutral Attitude</i>	Referent	–	–
<i>Negative Attitude</i>	4.13*	2.58	0.023
<i>Positive Attitude</i>	0.58	0.29	0.268

*Significant at 0.05

†Significant at 0.01

Table 5. Univariate Binary Logistic Regression Analyses of the Different Predictors of the Different Constructs of Videoconference Fatigue among the Respondents (N = 237)

	General Fatigue		Visual Fatigue		Social Fatigue		Motivational Fatigue		Emotional Fatigue	
	OR	p-value (Two-Tailed)	OR	p-value (Two-Tailed)	OR	p-value (Two-Tailed)	OR	p-value (Two-Tailed)	OR	p-value (Two-Tailed)
Age (Years)	0.95 [†]	0.002	0.96 [†]	0.008	0.93 [†]	0.001	0.93 [†]	0.001	0.93 [†]	0.001
Sex (Female)	1.45	0.386	1.27	0.483	0.81	0.540	1.05	0.911	1.02	0.944
Marital Status										
<i>Single</i>	Referent	–	Referent	–	Referent	–	Referent	–	Referent	–
<i>Married</i>	0.43*	0.029	0.63	0.105	0.46 [†]	0.006	0.26 [†]	0.001	0.46 [†]	0.007
<i>Separated/Widowed</i>	0.08 [†]	0.006	0.24	0.126	0.25	0.136	0.19	0.078	0.52	0.483
Work Position										
<i>Medical Specialist</i>	0.51	0.074	0.70	0.246	0.57	0.058	0.35 [†]	0.002	0.59	0.084
<i>Medical Officer</i>	2.56*	0.016	0.89	0.668	1.69	0.057	4.00 [†]	0.001	2.09 [†]	0.009
<i>Nurse</i>	0.66	0.307	1.92	0.079	0.92	0.795	0.61	0.178	0.66	0.196
History of Previous COVID-19 Infection	1.42	0.360	1.05	0.865	1.29	0.359	0.98	0.960	1.10	0.725
Frequency of Videoconference										
<i>1 – 2 Times per Week</i>	Referent	–	Referent	–	Referent	–	Referent	–	Referent	–
<i>3 – 4 Times per Week</i>	3.06*	0.031	0.99	0.988	1.21	0.588	1.15	0.736	1.47	0.285
<i>≥5 Times per Week</i>	1.63	0.236	0.92	0.800	1.35	0.365	1.40	0.387	1.27	0.473

Duration of Videoconferences										
<i>1 Hour</i>	Referent	–	Referent	–	Referent	–	Referent	–	Referent	–
<i>1 Hour to 2 Hours</i>	17.46*	0.015	203	0.484	5.82	0.131	3.90	0.181	2.24	0.426
<i>≥3 Hours</i>	28.50*	0.008	3.67	0.224	5.40	0.159	5.00	0.137	1.47	0.713
Attitude towards Videoconference										
<i>Neutral Attitude</i>	Referent	–	Referent	–	Referent	–	Referent	–	Referent	–
<i>Negative Attitude</i>	4.15	0.059	1.72	0.167	1.83	0.113	2.82	0.062	1.77	0.147
<i>Positive Attitude</i>	0.47	0.154	0.64	0.339	0.63	0.323	0.43	0.089	0.37*	0.034

*Significant at 0.05

†Significant at 0.01

CHAPTER V: DISCUSSION

Research findings have proven that VCF, a phenomenon first explored in late 2020, exists among physicians and nurses of a tertiary pediatric government hospital in Philippines, yielding a prevalence rate of 79.75%. The instituted lockdowns and work-from-home (WFH) protocols brought about by the COVID-19 pandemic may have markedly contributed to the rise in videoconferencing methods and its associated fatigue, as seen in the sharp increase of 350 million Zoom users by December 2020 from 10 million users pre-COVID era.²¹ Using between-group comparisons approach and univariate binary logistic regression, several key findings were made evident:

Relationship of Age and Work Position with VCF

Research findings identified that VCF is more prevalent in the early-aged (21 to 39 years old) manifesting an overall VCF of 79.89 % as compared to middle-aged group generating only 20.11% (table 1). General, visual, social, motivational, and emotional fatigue decreased by 5%, 4%, 8%, 8%, and 8%, respectively, for every 1-year increase in the respondent's age (table 5). The proportion of respondents with overall VCF was also significantly higher among medical officers III (35.98%), followed by medical officers IV (20.11%) as seen in table 4. A univariate binary logistic regression analyses showed that MOs were 3.10 times more likely to have overall VCF than those who are non-MOs (table 4). MOs were 2.56 times, 4.00 times, and 2.09 times more likely to develop general, motivational, and emotional fatigue respectively, than non-medical officers (table 5). Notably, the medical officers III (MO III), also known as pediatric residents, and medical officers IV (MO IV) encompass bulk of the clinical, clerical and administrative responsibilities, consequently requiring their attendance on VCs more often in addition to regular FTF hospital duties. The study also demonstrated that more frequent use of VCs increased the likelihood of VCF. It can be inferred that VCF is more common among the younger age group for it correlates with their work positions (MO III) necessitating more VC exposure.

Relationship of Marital Status with VCF

Findings also showed that VCF was more prevalent in those who are single (63.49%, table 1), supporting a comprehensive review that categorized single people or older adults living alone

as part of the population more vulnerable to develop psychological distress in times of health crises.²² The rationale stems from inadequate social support.

Relationship between VC Attitude and VCF

Aligned with previous literature [6], negative attitude towards VCs increased the likelihood of developing overall VCF by 4.13 times compared to those with a neutral attitude (table 4). Furthermore, positive attitude towards VCs was 2.70 times less likely to have emotional fatigue than those who have a neutral attitude.

General, Visual, Social, Motivational, and Emotional VCF on Nonverbal

Overload, Attention Restoration Theory, and Media Naturalness Theory

Respondents experienced general (85.23%), visual (68.78%), social 64.98%), motivational (79.75%) and emotional fatigue (67.09%) after engaging to VC (table 3). This underpins the Nonverbal Overload theoretical argument by Bailenson that stated there is exorbitant demands of eye gaze (visual), self-evaluation generated by camera mirror anxiety (general, social, and emotional), and cognitive overload (general and motivational) from virtual meetings in contrast to FTF interactions.¹⁴ Fatigue may also be a result of energy depletion from the sustained attention demanded by VCs as proposed in ART.¹¹ Existence of these fatigue constructs could also be tied up to virtual meetings during Covid-19.²³ Our findings support the aforementioned theories as plausible explanations in developing the VCF phenomenon.

Limitations of the Study

While this research has contributed to the literature of VCF, there were some limitations. *Firstly*, the survey was conducted **online** creating (1) challenges in data gathering (ignored or deleted forwarded messages); (2) a potential biased sample, leading to an uneven distribution of sample size between doctors (78.1%) and nurses (21.9%); and (3) a possible intrasubject variation since the circumstance while answering the test was not supervised. *Secondly*, the survey tool asked only **closed ended questions** thus was limited by its inability to explore subtle dynamics related to respondent's behavior while engaging in VCs such as (1) if video camera was turned on or off; (2) if audio was unmuted or muted; (3) if respondent was attentive to VCs or simply had the tool as background sound; and (4) if respondent was multitasking while attending VCs. Some characteristics of respondents were not clarified as well such as those with (1) pre-existing psychological conditions, (2) single status but lives with family or friends or married status but lives alone, and (3) internet connectivity issues with speed and accessibility. *Thirdly*, participant **anonymity** was established making it difficult for the researcher to identify which ones need referrals. *Lastly*, this study was conducted only to doctors and nurses in **one government hospital** in the Philippines, rendering the findings as a weak representation of HCWs across the country.

CHAPTER VI: CONCLUSION AND RECOMMENDATIONS

Conclusion

Working people were forced to learn overnight the concept of VCs and instantaneously make these virtual platforms the main channel of communication. Research findings provided us

with new insights into the VCF and its relationship between age, work position, marital status, and negative attitude. The fields of meeting science and ART should be explored as these may guide organizations construct more structured virtual meetings and apply appropriate respite from work.^{24, 25} Researchers should be driven to develop ways and coping strategies that will mitigate the burden and complications that may arise from this phenomenon.

Recommendations for further studies

Open-ended interviews and small group discussions should be conducted to a larger sample size to refine our understanding on the field. Future work can build on areas that this research was unable to address.

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Appendix A DATA COLLECTION TOOL PART 1
Factors: This questionnaire is strictly for NCH personnel only.
Age/Sex:
Marital status:
Work position: Medical Specialist IV, Medical Specialist III, Medical Specialist II Medical officer IV, Medical officer III, Nurse VII, Nurse VI, Nurse V, Nurse IV, Nurse III, Nurse II
Attending online meetings for more than 6 months: yes/no
What type of video platform do you use for online meetings? Check as many. Zoom Facebook Messenger Skype Slack FaceTime Microsoft Teams Others
Types virtual meetins attended. Check as many. 1. Admitting conferences 2. Hospital audits, 3. Lectures 4. Case presentations/Grand Rounds Presentations 5. Research presentations 6. Committee meetings 7. Others
How often in a week do you participate in videoconferences? A. 1 - 2 times per week B. 3-4 times per week C. 5 times and more per week
On a typical session, how long does a typical conference last? A. Less than 1 hour B. 1 hour to 2 hours C. 3 hours and more
Previous history of covid infection: yes/no
Attitude measured on 5 point Likert-scale: 1 = not at all 2 neutral 3 = very much
How much do you enjoy/like participating in videoconferences? 1, 2, 3

Appendix B DATA COLLECTION TOOL PART 2					
Zoom Exhaustion Fatigue Questionnaire from Stanford University USA (February 2021)					
	Likert-scale: 1 = Not at all 2 = Slightly 3 = Moderately 4 = Very 5 = extremely				
	1	2	3	4	5
Thematic Constructs					
General fatigue	A. How tired do you feel after videoconferencing?				
	B. How exhausted do you feel after videoconferencing?				
	C. How mentally drained do you feel after videoconferencing?				
Visual fatigue	A. How blurred does your vision get after videoconferencing?				
	B. How irritated do your eyes feel hurt after videoconferencing?				
	C. How much do your eyes hurt after videoconferencing?				
Social Fatigue	A. How much do you tend to avoid social situations after videoconferencing?				
	B. How much do you want to be alone after videoconferencing?				
	C. How much do you need time by yourself after videoconferencing?				
Motivational Fatigue	A. How much do you dread having to do things after videoconferencing?				
	B. How often do you feel like doing nothing after videoconferencing?				
	C. How often do you feel too tired to do other things after videoconferencing?				
Emotional Fatigue	A. How emotionally drained do you feel after videoconferencing?				
	B. How irritable do you feel after videoconferencing?				
	C. How moody do you feel after videoconference?				
Reference: Zoom Exhaustion & Fatigue Scale. Fauville, Luo, Queiroz, et al. (Feb. 2021) <i>This questionnaire is strictly for NCH personnel only.</i>					

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***COVID-19 Preventive Behavior of Young Adults Living With Elderly
Through the Lens of Health Belief Model***

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Abstract

To suppress the Covid-19 pandemic, a series of preventive measures, both promotive and interventive were taken. From small children to the elderly, socialization continues to be carried out. However, there are quite a lot of risk factors for the elderly group, including comorbidity and elderly age. Then how about individuals living with the elderly? This research looks at the Covid-19 preventive behavior in individuals living with the elderly through the lens of the Health Belief Model (HBM) and individual perceptions of the susceptibility of the elderly to Covid-19 infection. Of the 305 research participants, the research results show that the Health Belief Model and individual perceptions of the elderly's vulnerability to Covid-19 infection can explain almost 25% ($R^2 = 0.247$) the variance of Covid-19 prevention behavior. Two variables were found to be significant in predicting Covid-19 prevention behavior, namely perceived benefits and cues to action. Therefore, if the individual knows that carrying out Covid-19 preventive behavior has many advantages and is awakened with information related to Covid-19 prevention, he will be more inclined to carry out Covid-19 preventive behavior.

Keywords: Young Adults, Health Belief Model, Elderly, Covid-19 Preventive Behavior

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INTRODUCTION

The health emergency shown by the increase in Covid-19 cases despite various policies that have been implemented continues to highlight how human behavior as an individual is very important in controlling the spread of the epidemic (Flaxman et al., 2020; Islam et al., 2020; Michie & West, 2020). The spread of Covid-19 can only be accommodated if the community adopts preventive behavior (Ahmad et al., 2020). From various promotions and implementation of health policies, encouraging the adoption of Covid-19 prevention behavior is a big challenge, especially among young adults (Nivette et al., 2021). 53.7% of positive cases of Covid-19 experienced by the productive age group (19-45 years; Lokadata, 2021). One risk among young people is the mobility and interaction of moving from one location to another via outbound flights, public transportation, and joining the crowd which is one of the causes of the prevalence of the spread of Covid-19 (McCloskey et al., 2020; Pluchino et al., 2021). In fact, maintaining a safe distance can reduce the risk of transmission by up to 85% (Covid-19 Handling Committee and National Economic Recovery, 2020). If we look at data in several parts of the world, in Georgia, for example, the study results reveal that Covid-19 is transmitted by young adults 2.78x more than others (Widyaningrum, 2020). The same phenomenon was found in India where the majority of the first patients in the chain of transmission were young adults aged 20-45 years (Laxminarayan et al., 2020). This becomes a concern when young adults live with the elderly.

This threat was also found by Fenoll and Grossbard, more individuals died from Covid-19 in areas with higher intergenerational residency rates where the two were positively related (Aparicio Fenoll & Grossbard, 2020). Not only that, elderly have symptoms that are more difficult to detect and require special attention which adds to the urgency for children and grandchildren who live with the elderly to pay more attention to health protocols (COVID-19 Handling Task Force, 2021). In the pandemic period, this creates an additional burden on individuals living with the elderly where research finds individuals living with the elderly have worse perceptions of physical and mental health than before the pandemic than other individuals (Fageera et al., 2021). There are emotional reasons that underlie the considerations taken by individuals living with the elderly (VOA Indonesia, 2020). Several studies have found that individuals who live with the elderly have a higher tendency to engage in behaviors that can prevent Covid-19 infection (Ozdemir et al., 2020; Sun et al., 2021).

From various theoretical models in understanding the adoption of preventive behavior in the health context, the Health Belief Model (HBM) theory synergistically seeks to create a greater understanding of the phenomenon that occurs, to reduce or avoid a disease condition, and to explain or predict public health behavior (Tarkang & Zotor, 2015). The results of a meta-analysis of 18 studies (2,702 participants) showed that individual perceptions of severity, inhibition, and benefit correlated with predictable directions for performing the target behavior. Through a literature review, Yastica and colleagues (2020) found that HBM has been found to have a significant effect on preventive behavior (Yastica et al., 2020). Considering the strength of the theory, HBM is a suitable model in researching Covid-19 prevention behavior in young adults living with the elderly.

Covid-19 Prevention Behavior

Preventive behavior is a series of actions related to general hygiene, social distancing, a healthy lifestyle, and anything that includes activities carried out by a person who believes

himself to be healthy for the purpose of preventing or detecting disease (Kasl & Cobb, 1965). Agencies such as WHO and CDC has suggested prevention strategies related to personal hygiene such as, for example, washing hands with soap and water, wearing masks when in public (Centers for Disease Control and Prevention, 2021; World Health Organization, 2021).

Health Belief Model

The Health Belief Model (HBM) is one of the extensively researched of health behavior that attempts to predict health-related behaviors from certain belief patterns (Mckellar & Sillence, 2020). HBM shows that individual beliefs about health problems are perceived severity, perceived susceptibility, perceived benefits, and perceived barriers (Tarkang & Zotor, 2007, 2015). In order to adopt health care behaviors and/or avoid disease risk, individuals must: (1) believe they are susceptible to disease; (2) believe that illness will have a negative impact on their lives; (3) believe that adopting certain behaviors is beneficial in reducing their vulnerability or, if they already have it, its severity; (4) can overcome perceived barriers (Kim et al., 2012; Rosenstock, 1974; Sayegh & Knight, 2013).

An additional variable proposed by Rosenstock and colleagues in 1988 (Rosenstock et al., 1988) is self-efficacy which is defined as the belief that an individual has in his or her ability to do something (Davis et al., 2013). In subsequent developments, Tang and Wong proposed other variables in the HBM used to date, cues to action which can be internal, such as perceptions of body conditions, or external, such as the influence of mass media and social pressure (Tang & Wong, 2004).

Prevention of Covid-19 By Young Adults Living With the Elderly

Although research conducted on the relationship between living with the elderly and behavioral changes in the pandemic is limited, based on the increased risk of Covid-19 faced by the elderly, it can be suspected that there is a change in behavior (Ozdemir et al., 2020). Gozzi and colleagues (2020) found that individuals living with older adults were significantly associated with moderate changes in behavior. Individuals who are aware of the risk of infection in the elderly will change their behavior as a preventive measure (Gozzi et al., 2020). One study, for example, found that individuals who lived with the elderly were more likely to reduce the time spent shopping compared to those who did not live with the elderly (Ozdemir et al., 2020). Research conducted by Sun and colleagues showed that individuals' willingness to receive the Covid-19 vaccine was 1,928 times higher in individuals who lived with the elderly so as not to transmit it to their families (Sun et al., 2021). However, further investigation is needed to determine the variables that influence the Covid-19 prevention behavior in individuals living with the elderly.

Dynamics of Covid-19 Prevention Behavior and HBM in Indonesia in Young Adults Living with the Elderly

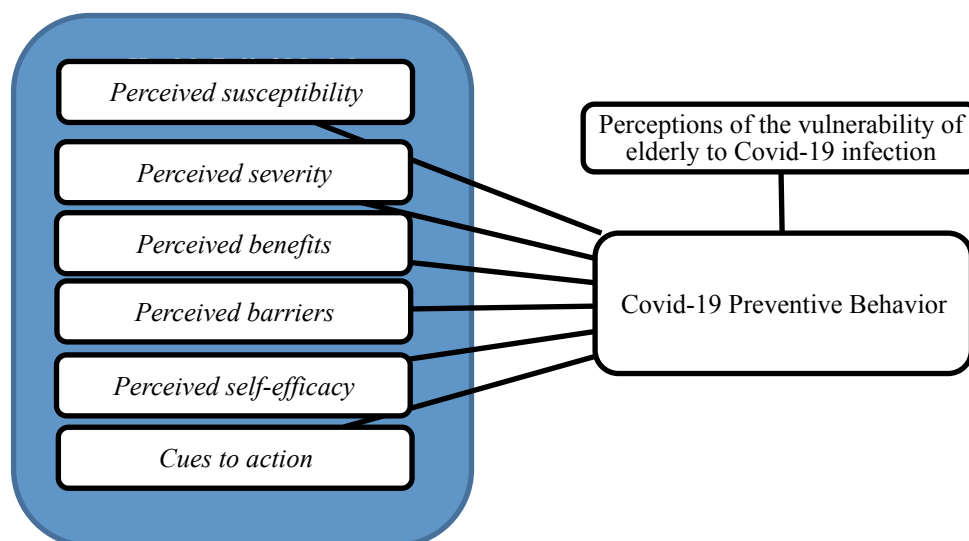


Figure 1. The dynamics between the Health Belief Model and Covid-19 prevention behavior in young adults living with the elderly

Study Design

The design of this research is non-experimental where the researcher does not manipulate the variables contained in this study (Gravetter & Forzano, 2012). This study will use a quantitative method with the Multiple Linear Regression design, where researchers look for variables that are the strongest predictors of Covid-19 prevention behavior.

Participants

The criteria for the limited sample of participants in this study are young adults aged 18-25 years in Greater Jakarta who live with the elderly (over 65 years) who have the status of Indonesian citizens (WNI). The sample size in this study was determined using G Power Analytics to predict the required sample size with statistical computational power analysis. With the Multiple Linear Regression technique, the effect size is 0.15 (medium), the coefficient significance is 0.05 and the power value is 80%, an a priori analysis.

Research Instruments

In measuring the variables in the Health Belief Model, this study uses a measuring instrument compiled based on the HBM by Shahnazi and colleagues (2020). The adaptation results show that all the reliability values of the HBM variable have a value above 0.7, except for perceived severity with a value of 0.405 and perceived susceptibility with a value of 0.089 which may be caused by imperfections in data collection techniques (Caesaron et al., 2021). The item score is obtained from the total score of all points with a Likert scale of 1-5 which measures individual agreement with the statement.

To measure the behavior of preventing Covid-19, the researchers adapted a measuring instrument in the same study as the measuring tool compiled by Shahnazi and his colleagues (2020) and adapted by Caesaron and his colleagues into Indonesian language. The results of

the adaptation show that the reliability value of the measuring instrument r has a value above 0.7. The item score is obtained from the total score of all points with a Likert scale of 1-5 which measures individual behavior frequency.

To find out individual perceptions of the elderly's vulnerability to Covid-19, the researcher added one statement item that had passed the readability test. The item score is obtained from the total score of all points with a Likert scale of 1-5 which measures individual agreement with the statement.

Data collection will use the convenience sampling method on the young adult population in Jabodetabek who live with the elderly using a Google Form which is open from November 17, 2021 to December 3, 2021. The questionnaire consists of informed consent, participant personal data, and measuring tools for preventing COVID-19 behavior. 19. The questionnaires were distributed through LINE, LinkedIn, WhatsApp, and Instagram social media.

After getting the data, for analysis, the researcher uses SPSS program to process the research data. First, the researcher conducted a descriptive analysis on the demographic data of the participants. Demographic data analyzed included age, domicile, last education, and occupation. The researcher tested the hypothesis by using correlation analysis technique using Multiple Linear Regression.

Results

In this study, as many as 305 people were willing to take part in the following research:

Table 1. Research Demographic Statistics (Age, Occupation, and Gender)

Occupation	Gender	Age						
		19	20	21	22	23	24	25
Others	Male	3	3	2	7	12	10	16
	Not comfortable to disclose	0	0	1	0	0	0	0
	Female	1	1	0	16	37	21	16
Student	Male	13	17	21	12	3	0	0
	Female	18	26	26	18	3	1	1

Table 2. Demographic Statistics of Research (Education and Domicile)

Characteristic	n	%
Education		
Diploma	23	7,5
Bachelor	99	32,5
High School	180	59,0
Middle School	3	1,0
Domicile		
Bekasi	32	10,5
Bogor	52	17,0
Depok	34	11,1
Jakarta	134	43,9
Tangerang	53	17,4

Table 3. Overview of Research Variables (N=305)

Variables	N	Min	Max	M	SD
Covid-19 prevention behavior	305	1,8	40	4,2	4,5
Perceived susceptibility	305	1,7	14	3,4	10,3
Perceived severity	305	2	15	4	2
Perceived barriers	305	1	38	2,9	9,8
Perceived self-efficacy	305	1	5	4,2	0,6
Perceived benefits	305	3	10	4,3	1
Cues to action	305	1,5	5	4,3	0,6
Individual perceptions of the vulnerability of the elderly to Covid-19 infection	305	1	5	4,4	0,6

*all data is divided per total item except SD

Table 4. Multiple Linear Regression HBM and individual perception of elderly vulnerability to Covid-19 infection in predicting Covid-19 prevention behavior

Predictors	R ²	p
Perceived susceptibility	0,012	0,932
Perceived severity	0,075	0,089
Perceived barriers	0,049	0,245
Perceived self-efficacy	0,051	0,084
Perceived benefits	0,163	0,000
Cues to action	0,105	0,001
Individual perceptions of the vulnerability of elderly to Covid-19 infection	0,002	0,445

*F(7, 297) = 13,932, R² = 0,247, DV = Covid-19 prevention behavior

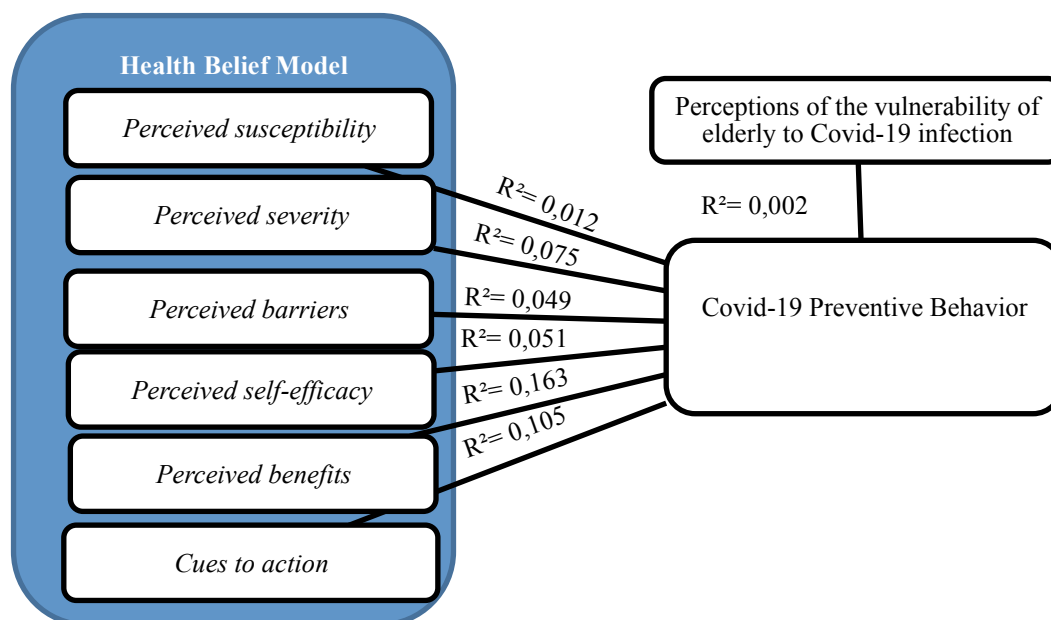


Figure 2. Regression calculations of the HBM and individual perceptions of the elderly's vulnerability to Covid-19 infection on Covid-19 prevention behavior

CONCLUSION

The results show that the Health Belief Model (HBM) and individual perceptions of the elderly's vulnerability to Covid-19 infection can explain almost 25% (R² = 0.247) the variance of Covid-19 prevention behavior. These results are similar to Karimy and colleagues (2021) who found that HBM can explain 27% of the variance of Covid-19 prevention behavior while Mirzaei and his colleagues found a higher number, 29% of the variance of Covid-19 prevention behavior can be explained through HBM (Mirzaei et al., 2021).

On the perceived susceptibility variable, the results are similar to several other previous studies (Mehanna et al., 2021; Mirzaei et al., 2021; Prastyawati et al., 2021; Shah et al., 2021)

which did not find any significant relationship between perceived susceptibility and behavior. Covid-19 prevention. This can be explained because in the early stages of the pandemic there was a cautionary urge to take preventive measures (Karimy et al., 2021a) while this research was conducted more than a year after the outbreak of Covid-19.

The relationship between perceived severity variables found in this study was also obtained by several other studies (Mirzaei et al., 2021; Prastyawati et al., 2021; Saputra et al., 2021; Shah et al., 2021; Wahyusantoso & Chusairi, 2021) and is in line with that proposed by Janz and Becker (1984) where perceived severity has relatively low relevance for preventive health behavior but can play a major role when the individual has been diagnosed with a particular disease. It is possible that the participants in this study had never been diagnosed with Covid-19 infection, similar to the results obtained by Chen and colleagues (Chen et al., 2020).

On the self-efficacy variable, several previous studies also found similar results to this study (Prastyawati et al., 2021; Shah et al., 2021). The low influence of perceptions of vulnerability and severity in predicting Covid-19 prevention behavior can be caused by individual feelings that think that Covid-19 is something that is out of control which can explain the low ability of self-efficacy in predicting Covid-19 prevention behavior (Shah et al., 2021). The decline in public confidence in the government in dealing with Covid-19 reported by the Indonesian Survey Institute from September 2020 to July 2021 can also be a trigger for this feeling (Jayani, 2021) similar to the results obtained in Pakistan where the majority of individuals (68.8%) doubt the government's ability to cope with the Covid-19 pandemic (Shah et al., 2021).

In addition to the perceived barrier, similar results were also found in previous studies (Prastyawati et al., 2021; Shah et al., 2021; Wahyusantoso & Chusairi, 2021). This may occur because the preventive behavior proposed in this study is relatively easy to do even though it causes discomfort (Tang & Wong, 2004). Face coverings, for example, become cheap and easy to obtain except at the beginning of the pandemic, so that preventive behavior is relatively easy to do (Tang & Wong, 2004).

For the individual perception variable on the vulnerability of the elderly to Covid-19 infection, currently, research regarding individuals living with the elderly is still very limited. In individuals living with the elderly, researchers suspect that the death of the elderly may have become inevitable, as found by Jacobi and his colleagues (da Silva Jacobi et al., 2017). Studies conducted by Duggleby also show that families living with sick elderly people generally expect comfortable and peaceful treatment, not healing from the disease (Duggleby et al., 2012). This assumption is one of the possible causes for the variable. Perceived susceptibility is not a significant variable in predicting Covid-19 prevention behavior.

In the perceived benefits variable, similar to the results obtained by Shah and colleagues (2021), individuals living with the elderly in Greater Jakarta are moved by the perceived benefits of preventing Covid-19 to comply with preventive behaviors that have been enforced by the WHO and the Indonesian government. In the HBM construct, indeed, the perception of benefits has been proposed to be a more prominent variable than other variables in predicting behavior (Carpenter, 2010). This is also evidenced from research in Indonesia, although there are differences in results, perceived benefit is indeed a variable that is easy to find significantly stronger in predicting Covid-19 prevention behavior compared to other variables (Djuningsih & Samputra, 2021b; Harahap et al., 2021; Saputra et al., 2021;

Wahyusantoso & Chusairi, 2021). When individuals perceive certain preventive health behaviors as effective in preventing disease, they will be motivated to engage in those behaviors (Lau et al., 2003, 2004, 2007; Rubin et al., 2009). Communication that enhances individuals' perceptions of the benefits of certain health-related behaviors has been shown to be successful in reducing health threats (Klohn & Rogers, 1991; Ronis, 1992).

Communication is related to the next variable, cues to action. In the context of Covid-19, communication that is continuously upheld in the community and easy to find can be a form of cues to action which is a significant predictor in this study (Tang & Wong, 2004). In Indonesia itself, the 3M Covid-19 prevention behavior campaign continues to be promoted by the government until the end of the year (Widiyanto, 2021). These results are consistent with those proposed by Tang and Wong (2004) and the alleged HBM. Several previous studies showed similar results where cues to action became a variable that was significantly positively related to Covid-19 prevention behavior (Caesaron et al., 2021; Karimy et al., 2021b; Tesema et al., 2021).

In interpreting the findings of this study, it is worth considering the limitations of the research conducted. First, this study is quantitative so it cannot answer why only perceived benefits and instructions/information obtained for taking action but not other HBM constructs significantly predict preventive behavior in this study participants. However, this study enriches the existing scientific literature and reviews a unique group of young adults living with the elderly. In addition, this study explains the dynamics of the Covid-19 prevention behavior variable after a lapse of more than a year people live life in a pandemic which may be different from the previous behavior pattern when the pandemic started.

Study Suggestion

In this study, the perceived benefits and the instructions/information obtained to act became the strongest predictors needed to trigger preventive behavior. In addition, further research can consider individual perceptions of the elderly's vulnerability to Covid-19 as a dependent variable that may be influenced by variables in the HBM. As a practical suggestion, the researcher proposes to continue to promote the adoption of preventive behavior through mass media, as well as send notifications via cellphones and social media, especially those that increase public awareness of the benefits of implementing Covid-19 preventive behavior to encourage Covid-19 prevention behavior.

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Military Life Challenges Among Military Spouses: Implications for Future Interventions

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Abstract

While there is a vast amount of research about the military in the Western setting, there is an undeniable scarcity in research involving the military, its members and their families in the Philippines. As the “overlooked casualties of war”, the researcher believes that military family members are equally impacted by the military lifestyle thus they also deserve equal research attention- especially the spouses who manage a handful of responsibilities in the family while the military member is away. This study aimed to arrive on certain research implications regarding the challenges faced by military spouses that will help design future interventions specific for military spouses in the Philippines. Using a mixed-method research design, the researcher investigated 4 major areas: stressors, coping resources, coping strategies, and perceptions of the spouses. The first phase of data gathering (survey) identified the top 5 responses in these 4 areas. While the second phase of data gathering aimed to elaborate the data. Data analysis revealed that anxiety was a major stressor. Other top stressors were media or media reporting, deployment and suspicion of infidelity. The spouses’ coping resources were classified into 2: social and personal coping resources. Coping strategies were categorized into 3: emotion-focused, problem-focused, and avoidance coping strategy. Lastly, perception about being a military spouse revealed 3 themes: resilience, sense of pride, and sense of security. These findings implied the need to design interventions specific for military spouses that will target stress reduction, enhancing coping resources and strategies and maintaining healthy perceptions of the spouses.

Keywords: Military Life Challenges, Military Spouses, Interventions, Stress, Coping, Perception

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Introduction

Military profession gives honor and pride not only to the military members but also to their families. As Blaisure, Dombro, Saathoff-Wells and Wadsworth (2015) pointed out, “military service is an obligation” above and before family needs. Each member of the family therefore commits to this obligation. Regarded as the “overlooked casualties of war” (De Burgh, Fear, Iversen & White, 2011), military families have gained little attention as research have greatly focused on military members. However, research attention shifted after the September 2001 terrorist attack where deployment of US military forces have been longer and more frequent. This event generated a lot of research queries in the military particularly the impact of military involvement and the lived experiences of military families. One research finding suggested that since the said attack, stress within US military families have increased dramatically due to deployment (Belasco, 2014). The stress of military life also reverberates towards the family which put a great impact among spouses (Beardslee, Cozza, Lester, Strouse & Wadsworth, 2013). Left with responsibilities of two house parents, the life of a military spouse may be very challenging and stressful and acknowledging this reality placed interest in research.

A vast amount to research literature pointed out how military lifestyle impacts military families particularly to the spouses. According to Barker and Berry (2009), the effects of separation along with other military- related stressors have caused high rates of mental health problems among military spouses. Illnesses that are due to military-related stress include anxiety disorders, depressive disorders, and sleep disorders have also been reported (Numbers, Osterlund & Ungvarsky, 2011). To overcome such challenges, military spouses employ different coping strategies to manage their situations and healthy coping must be developed in order to survive the impacts of stress (Beder, 2012). Moreover, there seems to be a slight interest with regards to how spouses perceive their military experiences but MacKenzie, McGuire, Runge and Waller (2014) suggested that understanding the perceptions of military spouses is important as it affects their own health and well-being. Thus, it is important to recognize that perception, along with stress and coping, forms a big part in military spouses’ experiences.

In the Philippines, although Philippine military research and statistics is scarce, result of informal interviews revealed similar findings especially during their husbands’ deployment where they need to manage the family alone. In 2019, there has been more deployment in areas of Mindanao where rates of armed conflicts are high. In the same year, there were also bombing incidences and other forms of violence taking place which called for higher security measures. More recently, in January 2020, as a response to the impending effects of the dispute between Iran and US, Philippine military troops were deployed in Iraq primarily to help in the repatriation of Filipinos. Situations like these where military members are working in high pressured situations may induce more stress not only to military members but to their spouses as well.

While programs and community support exist, there is very little or no known study that explored on psychological interventions especially offered for military spouses in the Philippines. Considering the accounts suggesting that stress due to military involvement have significantly affected western military spouses, it is highly likely that Filipino military spouses are at stake too and their coping and perceptions may be affected as well. Such experiences and the lack of intervention serve as the primary motivations of this study. Thus, by discovering such experiences (stressors, coping, perception), this study aims to provide

scientific data to draw out implications that will help the concerned agencies in giving future interventions that facilitate the needs of military spouses. Through a mixed- method research design (combining quantitative and qualitative methods), the researcher aims to satisfy the said objectives.

Conclusion

According to the ABC-X Theory of Family Stress and Coping (as cited in Rosino, 2016), families may encounter stressors (variable A) that may disrupt the family functions. In order to survive, the family needs to possess some crisis-meeting resources (variable B) to cope and maintain equilibrium. The theory also suggested that the perceptions (variable C) that the family makes out of their experiences with the stressors may impact their family functioning as well. The overall interaction between the kind of stressors that the family encounter, their coping, and perceptions will then determine the crisis (variable X) that the family will face. Such concept from the ABC-X theory is applied in this study to understand the challenges that occur in military families particularly among the spouses. Literature possesses significant evidence which suggest that among the members of the family, military spouses receive the biggest impact especially because they assume the responsibilities of two houseparents.

Using a mixed-method research design (survey and one-on-one interviews), the following are the relevant findings of the study:

Stressors of the spouses

Based on the findings, the researcher identified *Anxiety* as the major stressor. Specifically, the stressors of the spouses that were driven with anxiety are (1) media or media reporting, (2) deployment which involved partner's safety, parenting, and loneliness, and (3) suspicion of betrayal.

Media or media reporting

Currently, Facebook is the most frequently used social media platform for the spouses. Most of the spouses in the study are unemployed, stay-home spouses thus they rely more on the use of internet to provide connection with the outside community and entertainment as well. However, media has been a great source of stress for the spouses of this study due to the presence of "fake news" and other unreliable information. Fake news makes the spouses anxious and worried. Exaggerated comments from other Facebook users that are usually filled with emotional content were said to also add more anxiety to the spouses. Another stressful experience in the use of Facebook which affected the spouses was their tendency to empathize with other people who were posting about their loss and experiences with betrayal. Facebook posts that express the mourning and sadness of other spouses and families tend to drag the spouses emotionally.

Deployment

Many studies in the literature have tried to focus on the lives of military families during deployment and in fact Hall (2016) regarded deployment as one of the biggest challenges of military profession. In this study, there were three stressors that posed a great concern to the spouses during periods of deployment: (1) partner's safety, (2) parenting responsibilities, and (3) loneliness.

Partner's safety

Based on the demographics of the spouses in this study, majority had partners assigned to ranks that were noted to be active in the field of operations like Sergeants, Staff Sergeants, and Corporals. As these positions engage in operations, it is not surprising that safety is a concern among the spouses. According to the spouses in this study, the uncertainty of their partner's comeback and worrying about partner's safety has brought mixed emotions. They felt worried and fearful too while thinking about what was happening to their partners in the area. They revealed that their feelings were unexplainable at those times but certainly it made them feel uneasy. The stress from worrying over partner's safety was also found out to be reinforced with loss of communication or contact.

Parenting responsibilities

During deployment, the spouses felt as if they were "single parents" because they assume the roles of two houseparents. They were relied upon to become the primary child-rearers and manage all the things needed to sustain the family. More specifically, they revealed that one of the most complicated challenges related to parenting was taking care of a sick child. Moreover, according to the spouses, they also sometimes feel worried about the quality of care that they give to their children. According to Green, Lester and Nurius (2013), it was the spouses' role to maintain equilibrium and provide an anchor-like stabilizing role within the family. Otherwise, if the spouse fails to do the tasks efficiently, family functions may be disrupted. This puts more pressure in rearing the child or children alone and they thought it needed bigger efforts to fulfil their responsibilities as both mother and father.

Loneliness

Due to the nature of military life which they had to deal with, the spouses were prone to experiencing loneliness from not having their partners around all the time and as Pincus et al. (as cited in Savych, 2008) put it, "the soldier's departure creates a hole which can lead to feelings numbness, sadness, being alone and abandonment." Similarly, the spouses in this study reported that their loneliness primarily stemmed from the absence of their partners in the household. They felt lonely as they missed their partners being around, helping them in doing the household chores. They also missed the bond that they used to have with their partners particularly the ordinary conversations. According to Hinojosa and Hognas (2012), conversations or communication is very important for military couples as they go through deployment. They further explained that the diminished familiarity with one another's day-to-day lives may create a sense of disconnectedness and additional difficulties between couples (Hinojosa & Hognas, 2012).

Suspicion of Infidelity

Four out of five spouses who participated in the interview phase of this study confirmed that they have experienced betrayal by their partners in the past. But even the spouse who did not report having such history still reported to worry about the possibility of it happening to them. Even without prior experience, the spouses considered infidelity as a stressor because they perceive that betrayal is a part of military life as it was commonly experienced by other spouses. Thus, the spouses experienced the same anxiety. In fact, the spouses view it as a "normal" part of the challenges of being a military spouse. Furthermore, suspicion of betrayal makes the spouses overthink and experience mood changes. Such impact mirrors anxiety.

Coping of the Spouses

Coping is basically the response that a person makes towards life's stresses. Two dimension

of coping were explored in this study- coping resources and coping strategies. Further analysis classified the coping resources of the spouses into 2 types- personal and social coping resources.

Social coping resources

The researcher of this study defined the term social coping resources as “the types of coping resources that are found outside the individual.” In other words, these are coping resources that are drawn from other people. Social coping resources of the spouses in this study included the family (for strong family bond), god (for religion or spirituality), the partner (for partner’s support), and the children (support from child or children).

Personal coping resources

According to the researcher, personal coping resources are “the types of coping resources that are found within the individual.” The spouses in this study identified self-esteem a personal coping resource. Self-esteem was useful to the spouses as it allowed them to be more confident in handling stressors or problems. With high self-esteem, they believed that they were able to fulfill their tasks efficiently. Majority of the research found in literature have agreed that people with high self-esteem have less vulnerability towards stress while people with low self-esteem were prone towards psychological effects that eventually made them more vulnerable to stress (Farhan & Khan, 2015).

Coping strategies

Coping strategies refers to ways in which people use appropriate coping resources to protect themselves from the negative effects of stressors (Aycock, 2011). Further analysis classified the coping strategies of the spouses into emotion-focused, problem- focused and avoidance coping strategies.

Emotion-focused coping strategies

The spouses in this study prefers dealing with their stressors through prayer, venting, and reflecting. Such strategies had different advantages to the spouses but the most common was that it provided emotional relief. Generally, in using such strategies, they are putting more priority in releasing their feelings and emotions rather than directly confronting the problem.

Problem-focused coping strategies

Problem-focused coping strategies were used by the spouses in this study by employing planning and problem-solving strategies. While emotion-focused coping strategies helped the spouses by providing more emotional relief, these strategies helped by providing more direct solutions to their problems, eliminating the problems sooner, as the spouses explained.

Avoidance coping strategies

Avoidant coping strategies aim at distancing oneself from the stressful situations by engaging in distracting activities or socializing with others. The spouses this study used distraction by keeping themselves to distract them from frequently thinking about their problem. The spouses said that it was a form of escape. Spouses typically transfer their attention towards doing household chores or managing children’s needs.

Perception about being a military spouse

The responses of the spouses revealed three themes- resilience, sense of pride and sense of security.

Military spouses viewed themselves as resilient

In this study, resilience among the spouses was manifested in three ways: their commitment, responsibility, and adjustment. The spouses of this study believed that the longer they endure their role as a military spouse, the more they prove their commitment. Along with this commitment comes the sense of responsibility that they believe they possess as are expected to manage the entire household including child rearing. Lastly, part of their resilience is shaped by their ability to adjust their personal life in order to fulfill their responsibilities. Mainly, their biggest adjustment is on having limited socialization.

Being a military spouse is a pride

Undeniably, military profession was an honorable and well respected profession. In fact, military families reported increased sense of pride from having a military member in the family (Beckett et. al., 2008). Similarly, the spouses in this study revealed that they have gained a sense of pride as spouses of military members. It was discovered that their pride was primarily a result of their perception about their partner's job. They also shared that such pride came from having respect towards the huge responsibility of the military partner, being brave protectors of the country and maintain peace. The spouses also said that they were proud also because their partners' job enabled them to help others in financial need.

Being a military spouse ensures economic security

In the year 2018, Philippine President Rodrigo Duterte ordered a 100% base pay hike among military uniformed personnel. Such increase surely made an impact in the economic status of military families, thus financial burden in part of the spouse who manages the finance was lessened. In their study, Dursun and Sudom (2009) noted that majority of spouses were more comfortable in coping when there was financial comfort. This was supported by Page (2018) who pointed out that job security to be one among the highly important factors in coping among military spouses. This perceived security came primarily from the benefits that gave current financial comfort to the family until life after retirement.

Implications and Recommendations

The main aim of this study was to arrive on certain research implications that will help frame future interventions for military spouses in the Philippines. The following are the implications derived from the results of this study:

1. *Introduce anxiety-reducing strategies.* Introducing effective anxiety-reducing strategies will help them manage the behaviors and feelings brought by anxiety especially during deployment or separation from their military partners where anxiety was most likely to occur and escalate. Since help from other people is not available all the time, relaxation techniques that are easy and can be done at home will be convenient and practical. Psychoeducation by trained professionals like psychologists, counselors, and social workers will also be useful in helping them deal and understand anxiety's nature.
2. *Conduct group activities that encourage family involvement.* Social coping resources that were found to be most helpful particularly family and God (religion or spirituality) need to be sustained and strengthened through family activities that promote family interaction.
3. *Establish and organize support more groups involving military spouses.* As coping resource, support groups may provide spouses the sense of belongingness knowing

that they are talking to people who can relate to their experiences. This can encourage them to be more open thus they can raise their personal concerns and be helped. Establishing support groups will also make it easier to conduct interventions that are better done in groups.

4. *Employ couple interventions to enhance marital relationships.* Relationship between couples will also be a good target in addition to family programs. Interventions for couples that will highlight faithfulness, trust, effective communication between couples and other values surrounding a healthy marriage will be helpful in maintaining quality marriage.
5. *Allow military spouses to model good practices and help other spouses at risk.* Group interventions may highlight spouses who can serve as models or inspiration to other spouses who may have poor perceptions about their experiences. In this way, military spouses may be empowered not only as spouses but also as women.
6. *Conduct and encourage researches that would help frame future interventions.* As noted, the spouses viewed their stressors as normal. Also, since least attention was given to them, there was a lack of scientific evidence to prove the need for interventions among the spouses and thus no intervention for the spouses exist, particularly psychological interventions. Because of this, the spouses have yet to realize that they can be helped and their situation can improve if interventions were available for them. This implies the need for researches that focus on different dimension of the life of a military spouse. Research will help design interventions that are more extensive and appropriate for the unique experiences brought by military lifestyle.
7. *Train personnel.* This study acknowledges that there is an insufficient number of mental health professionals working in the Armed forces of the Philippines (AFP) nowadays. Because this reality cannot be controlled, the AFP can train their staff in handling spouses' concerns that are related to military lifestyle. It is very important that mental health service providers in the AFP are trained in order for the spouses to receive appropriate and effective assistance.
8. *Establish a helpline or an online channel.* This study revealed that the spouses spend more time online as outside socialization due to responsibilities at home becomes limited. To utilize the time spent online as well as the online resources, the AFP can create an online channel, a Facebook page for example, which will be regulated by the AFP itself. Aside from being a convenient and accessible source of information, this will ensure legit information and decrease anxiety of the spouses over fake news. It will be efficient also if the helpline or channel is available all the time so that spouses can report their concerns as they appear.
9. *Allow stakeholders to help.* There are many stakeholders in the community that can help and support the programs of the AFP. The AFP can allow different stakeholders to offer their services to the spouses and even to the personnel provided that proper permission from authority is obtained. This can be a convenient and practical strategy which will also expand the AFP's community involvement at the same time allow the spouses to be more recognized by the society.

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***Child Protection in Violent Contexts in Different Normative Systems
From an Occidental Perspective***

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Abstract

This study aims to examine the approaches and solutions proposed by various regulatory systems about child abuse and mistreatment. The focus is on the legal systems of the United States of America and Argentina, which have taken different stances on the Convention on the Rights of the Child. Two real legal cases, one from California State and another from La Pampa Province, are used as examples. The analysis of these specific cases was carried out through the comparison of the legislation applied in the matter by both countries, taking into account the consequences suffered by the children and the legal protection that professionals or public officials have in the intervention of these cases, in order to understand what are the legal gaps and/or adaptation of procedures necessary for effective child protection. Additionally, the paper suggests a comprehensive therapeutic approach to trauma that considers the difficulties and complexities of these cases, including the needs of vulnerable populations and the limitations of the healthcare system, to find a more holistic and effective solution to child abuse and mistreatment.

Keywords: Child Protection, Violence, Child Abuse and Neglect, Child Mistreatment, Normative System

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Introduction

It is important to define clearly what we understand by child mistreatment and how to measure it, if we want to address the abuse and neglect problem locally, and around the world. This is a fact whether we focus on the legal or the political aspects, on the responsive practices, or applied research. This broader search allows us to embrace the problem universally and adapt cultural differences as well as regulations. The definition allows us to see differences between communities: how they have changed over time, how they have been legally codified, regulating the governance of societies, and finally how we have achieved the desired objective, reducing the incidence of abuse (Williams, M & Week E. G, 2014).

In 1999, the World Health Organization formally defined child abuse for preventive purposes, understanding it as: All forms of physical and/or emotional abuse, sexual abuse, negligence, commercial treatment or other types of exploitation, generating real or potential damage to the child's health, survival, development or dignity in the context of a relationship of responsibility, trust or power (Williams, M & Week E. G, 2014).

The global perspective on this problem has been achieved by the International Society for the Prevention of Child Abuse and Neglect (ISPCAN). A global consensus has been emerging about what abuse and neglect are, but yet differences remain. The most common behaviors considered neglect and abuse in most parts of the world, have been physical abuse by parents or caregivers, and sexual abuse, defined as incest, sexual touching, and pornography. In contrast to previous years, in 2008, three types of maltreatment showed differences in the investigations, these being: 1) failure to provide medical care based on religious beliefs, 2) substance use by parents, and 3) physical discipline. It is important to take into account that although these types of abuse can be found separately, in general a combination of them appears (Williams, M & Week E. G, 2014).

Despite the progress in definitions, the achievement of global consensus on the matter, and the development of regulations in different countries, the protection of children around the world is taken on as an arduous task and not always possible.

Comparative Law

In the great contemporary legal systems, Rene David and Camille Jauffret-Spinozi refer to the ancient precedents that could be evoked in relation to comparative law. Some have considered comparative law as a branch of legal sociology, and although reservations can be made about this statement, the points of contact between both disciplines are due to the need of comparative law to consider law as a determining factor in human behavior, and how people consider it as a factor of social order. It could be thought that this situation is repeated in different countries where a comparable level of development has been reached, leaving aside the fact that for a long time, the law was taught in universities, and on the other hand, there were the rules of the law that were applied in the courts to solve disputes. However, in the West, the law is far from explaining all the realities of social life, since there are many elements of religious, political and social order that influence the way individuals act, beyond the legal text (David, R. & Jauffret-Spinozi, C., 2010).

Within the sources of the law, the different legal systems assign a different function to the law, the custom, the jurisprudence, the doctrine and the equity. For this reason, it is important to consider when studying a foreign law, the local conception of the relationships between the

different sources, thus varying the reasoning methods. If the right has a religious or sacred value, no legislator can modify its rules, while in another, a law can be a model that is modified according to custom. So that the comparative law can fulfill its functions, lawyers are required not only to limit themselves to the study of national law, but also to appeal to the comparative method. In our world, each State has its own law, and various rights apply within it. Also, some non-state communities have their own law, for example, Canon law, Muslim law, Hindu law and Jewish law. There is also an international law with the purpose of regulating relations between states and the international trade. Each right forms a system, uses certain concepts, sets the rules into categories, and uses certain techniques to formulate the rules and interpretation methods, linking the system to a social order conception for its application and functioning (David, R. & Jauffret-Spinosi, C., 2010).

Argentina and Roman-Germanic Law

The Argentine law system comes from the Roman-Germanic family, which brings together the countries whose legal system was formed on the basis of the Roman Law system. In these countries, the rules of the law are conceived as norms of conduct closely linked to concerns of justice and morality. The essential task would be to determine what those rules are. The legal system, like other regulatory systems, normatively qualifies certain behaviors in certain circumstances, regulating the behaviors of the individuals that make up a social group, thus contributing to a harmonious coexistence, anticipating in advance the way in which conflicts of interest that may arise must be solved (Alchourrón & Bulygin, 2021).

Since the 19th century, in the Roman-Germanic family, the law has a major function, for that reason the countries belonging to it have adopted the formula of codes. This family of legal systems was created to regulate relations between citizens, while other disciplines were developed with less perfection from the principles of "civil law", which was for a long time the legal reference by excellence (David, R. & Jauffret-Spinosi, C., 2010).

United States of America and the Common Law

The law of the United States of America comes from the Common Law, one of the great systems of law in the world in parallel with civil rights. As with the Roman-Germanic family, the expansion of English law did not happen without having the Common Law certain alterations, to adjust to the conditions of each country where the system was received (David, R. & Jauffret-Spinosi, C., 2010).

The first colonies founded in the territory of the United States of America date from the 17th century, where the common law of England was applied as long as the rules were appropriate to the conditions of life prevailing in the colonies. For this reason, the system based on the common law had its particularities, but always conserving in a general way the concepts, the ways of reasoning, and the theory of the sources of English law. The particularities were given by the geographical differences between the two countries, as well as the traditional history of England and the search for a homeland in the populations that came to form a new way of life on the continental mass (David, R. & Jauffret-Spinosi, C., 2010).

The Tenth Amendment of the United States Constitution in 1791 stated unambiguously: "The powers that the Constitution does not delegate to the United States, and that it does not prohibit the federal entities from exercising, are reserved to each of the federal entities respectively or to the people". This postulate has never been abandoned. The legislative

competence of these federative entities is the general rule and the competence of the federal authorities is the exception, so this exception must be mentioned in the express text of the Constitution. The sources of the law in this country are jurisprudence and legislation. The formation of the jury is guaranteed by the seventh amendment of the constitution at the federal level, in civil and criminal matters, and all citizens can demand that their dispute be resolved by a jury as long as it exceeds twenty dollars, and when it cannot be resolved by an Equity procedure (the parallel system to the common law that came to resolve by written procedure issues that were presented as insufficient). The rule of stare decisis, refers to the rule of precedent, where each federative entity from its Supreme Court of Justice has the power to reverse its jurisprudence, adapting the interpretation of the constitution to the various currents of thought and the economic needs of the modern world, giving stability to American political institutions. The Constitution of the United States is a Roman type law, whose primary purpose is not to settle controversies, but to provide general rules of law for organization, and to govern the conduct of rulers and administrators (David, R. & Jauffret-Spinosi, C., 2010).

Regulations Related to Child Abuse Cases in Both Countries

The Convention on the Rights of the Child (CRC) is the international treaty adopted by the General Assembly of the United Nations on November 20th of 1989, which recognizes all persons under the age of 18 as subjects with full rights.

The national law number 23.849 approved the Convention on the Rights of the Child in 1990 in Argentina. At the same time, the national law number 26.061 for the Comprehensive Protection of Boys, Girls and Adolescents of the year 2005 establishes in its 2nd article, the mandatory application of the Convention on the Rights of the Child, declaring in its 3rd article, the concept of the Best Interest of the Child for the purpose of respecting his status as a subject of right, the right to be heard and take into account their opinions, the right to personal development in the family, social and cultural sphere, respecting their age, maturity degree, discernment ability, and other personal conditions, as well as respecting their center of life where they have spent most of their existence. The 9th article refers to respect of children's dignity and protection of their personal integrity. In this sense, it establishes that children and adolescents should not be subjected to violent, discriminatory, vexatious, humiliating or intimidating treatment; not to be economically exploited, subjected to torture, abuse, negligence, sexual exploitation, kidnapping or trafficking for any purpose or any other form of cruel or degrading treatment. For this reason, children and adolescents have the right to their physical, sexual, mental, and moral integrity. The law adds that people who become aware of situations that threaten children and adolescents in any of the previously mentioned ways must notify the local authority for the application of this law. At the same time, the law number 23.849 in its 9th article states in its first paragraph that: States Parties shall ensure that the child is not separated from its parents against their will, except when, subject to judicial review, the competent authorities determine, in accordance with the law and applicable procedures, that such separation is necessary in the best interests of the child. Such a determination may be necessary for example, in cases where the child is abused or neglected by the parents or where the parents live apart, and a decision must be made as to the child's place of residence. On the other hand, the law number 24.417 for Protection against Family Violence in the city of Buenos Aires (law number 1918 in La Pampa province, etc), sets the concepts of protection against violence and establishes in its 4th article the precautionary measures that the judge may adopt, upon becoming aware of the facts that motivated the complaint, arranging the duration of these measures according to the background of the case,

calling a hearing within 48 hours after precautionary measures have been taken. In this sense, it is also important to mention the law number 26.485 of 2009 for Comprehensive Protection of Women, which seeks to prevent, punish and eradicate violence, also due to the damage done on the maternity capacity, in the cases of abused women. The enunciated laws mark some of the procedures that must be carried out from the civil jurisdiction, and from interdependent organizations for children and adolescents protection purposes, beyond the processes that may arise through the criminal jurisdiction in response to complaints made, such as the statement that could be taken from children and adolescents through the Gesell Chamber, and forensic psychological interviews.

In the United States of America, and resulting from the historical State's conformation, as well as from the difference in normative systems that come from different law families, the processes, the parties involved, and the sources of the law used to resolve controversies, as the approach of the cases are presented in a different way. First of all, the United States of America did not adhere to the Convention on the Rights of the Child adopted by the General Assembly of the United Nations in New York on November 20 of 1989. In this sense, we can consider a judicial ruling of the Supreme Court of the State of California regarding a child abuse case dated November 30, 2015. "B.H., a Minor, etc., Plaintiff and Appellant, v. COUNTY OF SAN BERNARDINO et al., Defendants and Respondents. No. S213066". Bearing in mind in the first place that the higher law that unifies all of the United States is the National Constitution with all its amendments, and that at the national level the Supreme Courts of Justice address those issues that have to do with federal rights, while the other issues are addressed from the federative entities. There is evidence of child protection in a particular way, taking into account the codes that govern the federative entities with their own particularities. The CANRA (Child Abuse and Neglect Reporting Act) is California's child abuse and neglect reporting law. This law emanates from the penal code in its part 4, title 1, chapter 2, which aims to prevent crimes and detain criminals, establishing the obligations that people have in an investigation, to do everything necessary to protect and prevent the child's psychological damage, defining in the section the concepts of child, abuse, and negligence. At the same time, it defines who is obliged to report known incidents, as well as differentiating the investigations that arise from what is reported as false, unsubstantiated and inconclusive. The law establishes a meticulous detail of what must be reported and to which agencies (which are specified in certain sections of the code) and what must be investigated. The law establishes the need for a first telephone or fax communication and later within 36 hours the case follow-up. It refers to the concept of reasonable suspicion, which does not imply a certainty of the abusive acts or a requirement for medical attention, focusing on the responsibilities of the officers who take notice of the facts without enunciating the child as a subject of law.

Brief Development of the State of California's Judgment

In the judgment mentioned, of the plaintiff and the appellant against the State of California, more particularly against the County of San Bernardino, the facts detailed are the following: An anonymous citizen called a 911 operator to report an incident of suspected child abuse during the child (2-years-old) visit to his father. The operator who answers the call relayed the information to the sheriff of the department of San Bernardino. The deputy bailiff came out to investigate the report. The officer determined that there was an ongoing custody dispute between the parents, and that the child was not a victim of abuse, and that there was no need for further investigation.

Neither the sheriff's department nor the officer cross-checked the information reported by 911 with the County Child Welfare Agency. Approximately 3 weeks later, the boy suffered extensive head injuries while visiting his father. The child, through a guardian ad litem, sued the county and the deputy sheriff, among others, for failing to report initial allegations of child abuse to the Child Welfare Agency, in violation of CANRA, based on reasonable suspicion. The Trial Court granted the defendants' request for summary judgment and concluded that there was no obligation to cross-report and that the defendants were immune from liability. The Court of Appeal affirmed the trial court's ruling.

From the case it appears that: When emergency personnel were called, they responded and transported the plaintiff (child) to Loma Linda University Medical Center. The Plaintiff, unconscious and suffering from seizures, was treated for severe head trauma and was given a craniectomy, in which a portion of the skull is removed to relieve pressure on the brain caused by swelling. The Plaintiff suffered subdural hematoma, cerebral edema, and subfalcine herniation caused by intracranial pressure. A consulting pediatrician forensic determined that the injuries had been caused by child abuse, most likely the "Shaken Baby Syndrome."

Analysis

The facts analyzed deal with the responsibility of the operators, according to CANRA, but beyond the obligations of the officers, it is alleged that the immunity is given because according to the experience of the investigator, and the subjective discretionary determination, there had been no child abuse, and therefore there was no responsibility to act, even when the facts and pediatrician opinion indicated otherwise. Throughout the jurisprudence, different parts of the California Penal Code are mentioned, as different rulings of the federal entity, which at the same time would contemplate procedural differences from one county to another.

La Pampa Province Case

In Argentina, more particularly in Santa Rosa city, province of La Pampa, in the months of December of 2022, hundreds of witnesses statements were taken for the death of Lucio Dupuy (November 26, 2021) in the Court of Hearings of that city, behind closed doors because the victim was a child, where a crime of sexual integrity was being debated, due to the level of evidence seriousness and the high sensitivity of the case, leaving the process development under strict confidentiality as well as the first instance file. The 5-year-old boy, who was tortured and abused by his mother and a same-sex partner, had hits, bites, and burns. The autopsy determined that death was caused by internal bleeding. The child had lived through a judicial process before the Covid-19 pandemic, which included visitation regimes, family disputes and a final agreement that gave the mother and her partner the possibility of having him permanently after having been under the custody of some uncles in General Pico City. From the information shared, the child would have attended at least 5 times in a period of three months due to polytrauma at different centers in the province, without registering any reports by professionals in the healthcare system, nor of the authorities of the kindergarten where the child had attended.

Analysis

In Argentina, professionals and/or public officials who become aware of these acts of violence or violation of rights have the legal obligation to report them. Unlike in the United States of America, in Argentina there is no law that protects professionals who intervene in cases of violence, so immunity from liability cannot be claimed. As the result of the homicide, the mother and the couple were sentenced to life imprisonment, also a law project (Lucio Law) was approved in the National Congress. It proposes national training for civil servants and/or public officials to know how to proceed in these circumstances and the creation of a free line that allows anonymous complaints to be made, since in certain circumstances, professionals from the education system wanting to intervene, have been attacked by relatives of the victim. However, it can be seen in the healthcare system, there is reluctance when it comes to intervene in these cases. As if the professionals said I did not study medicine or psychology to be involved in legal proceedings for complex issues of the context. This is particularly evident in cases of rape, when it does not fall within the protocol and a legal doctor cannot be called because several days have passed. It is worth wondering if the existence of a law in Argentina that gives immunity to professionals would change this position, but what we can see from the California case is that immunity does not necessarily guarantee greater efficiency from professionals, nor does it prevent harm to children and adolescents. Specialization in the subject would seem to be a way of selecting professionals with a vocation for this type of assistance, putting the emphasis in communication, in the follow-ups, speeding up the intervention as established in the General Observation N°14 of the Convention on the Rights of the Child.

Approach

Being in Argentina, in the Family Violence Unit at General Children Hospital “Dr. Pedro de Elizalde” the approach is centered on the safeguard for adherence to the Convention on the Rights of the Child. Professional action within the public healthcare system must be carried out without overlapping with judicial processes to avoid re-victimizations. The assistances can be given in cases of spontaneous demand, inter consultation between the different services at the hospital or due to judicial request. Whether an orientation is expected, a psychodiagnosis that can last approximately 8 sessions seeing the child must be done, or a treatment is necessary. The sessions are with the children, but it is necessary to interview the related or cohabiting relatives to work with the entire family system, since the events that are being reported can be isolated or long-standing chronic situations that tend to be repeated from one generation to another. The therapeutic interventions depending on the theoretical conceptions have a greater or less standardization. In cases of violence, communication procedures are followed, psychoeducation is carried out, and work is done with different members of the family. The interdisciplinary approach contemplates in the case analysis both protective factors and vulnerabilities. Some frequent variables that appear in the histories of these families are, physical illness, mental illness, substance abuse, problems with the law, child language disorders, abusive situations between siblings, housing problems, migration, lack of social and family network, illiteracy and orphan hood. The configuration of variables will give rise to the complexity of the cases that could demand a longer treatment.

Although the judicial system intervenes by giving the legal framework to the procedures, the Boys, Girls and Adolescents Rights Council is the one that must promote, protect and guarantee the rights, but many times they do not work in connection with the different agents, avoiding the reinforcement of therapeutic achievements and/or in many cases reaching them,

being the interventions and the child protection interrupted. Children and adolescents would not appear in this way neither as subjects of rights nor as beings to be protected. It is worth wondering if this is due to issues related to lack of budget or ideological differences when it comes to acting, where public officials would not agree with the law that gave life to the convention in Argentina, or due to ignorance of the cases that are treated.

Conclusion

The California ruling referred to, does not mention the definitions of the California codes whether there was abuse/neglect by the parents. It only mentions what the forensic pediatrician determines as a syndrome. The child is named the plaintiff. The California Penal Code defines abuse as... “any person who knowingly inflicts cruel or inhuman corporal punishment on a child or injury resulting in a traumatic condition is guilty of a felony and shall be punishable by imprisonment...”, so that physical punishment is to a certain degree accepted as the way in which parents must discipline the child. Beyond the normative and/or procedural differences, as well as the intervening agents where in the United States of America the police have direct action in these matters, and the difference in considering children as beings to be protected instead of considering them as subjects of rights, the systems with more or less material/professional resources in both countries, several times fail to protect children. There are severe consequences for them, as stated in the above ruling, and sometimes, even death, as happened in Argentina with the case of Lucio Dupuy occurred in the city of Santa Rosa, being the mother and her partner implicated, and having witnesses of the mistreatment to which the child was subjected.

What seems to be clear is the need for an interdependent approach among agents and professionals interdisciplinary work, in a non-compartmental way, but synergistic to enhance the resources of the healthcare system. Reinforcing communication between services to avoid the procrastination of actions. The professional should seek to analyze each case, observing what the family needs are from their perspective and from ours. Contemplating in the approach to trauma when basic needs may not be satisfied in cases of poverty. Also, when there are urgent physical and/or mental health issues to assist to, and due to the same marginal reality, they are not covered. When language disorders slow down interventions making difficult to find evidence, and the reports more complex. Moreover, when children are in foster care waiting for a family, even having suffered failed adoptions processes. Furthermore, when building a network is a priority as well as an individual psychological session in migratory situations, and when as professionals from our culture do not come to understand what does not become disruptive to the psyche of the other, because protective factors that we do not know make the other a more resilient being than ourselves. Knowing that not all the cases will be fulfilled, but with the conviction that the interdisciplinary intervention can be an open window for our children where they can see another reality, so far, the results have shown that when institutions stick together in the goal achievement, the children get better in terms of symptoms and in their psychophysical development.

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***Educational Approach of Leprosy in Primary School Students:
An Approach to Social Stigma Reduction***

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Abstract

The effort of eradicating leprosy in Indonesia has taken place for a long time, but new cases are detected up to now. The government has launched numerous efforts in light of eliminating leprosy. However, the results were not satisfactory. Medical and community approaches are equally important to be carried out simultaneously, in order to obtain comprehensive treatment. One of the aspects that needs to be emphasized is the stigma reduction, towards leprosy patients as well as the patients' self-stigma. KATAMATAKU Universitas Indonesia conducted an action research whose objective was increasing awareness, considering to complement the comprehensive leprosy management. The first collaboration was carried out with the Gemala Ananda School in Jakarta, Indonesia, specifically for fourth-grade students. The tiered educational model was chosen in order to produce impactful activities. After acquiring the education provided by the KATAMATAKU team, students were asked to re-explain the information to their closest social circle about leprosy. By this educational intervention trial, it is prospected that a better educational model could be applied to reduce the stigma of leprosy in Indonesia.

Keywords: Leprosy, Stigma Reduction, Education Approach

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INTRODUCTION

New cases of leprosy in Indonesia continue to emerge every year, even though the leprosy control program has been implemented comprehensively with the involvement of various disciplines. Based on WHO data for 2022, there were 10,976 new cases of leprosy in Indonesia, and 9.89% of them were new cases of leprosy at a young age. This fact places Indonesia in third place in the world after India (75,394 cases) and Brazil (18,318 cases). This situation shows that although leprosy has existed in Indonesia for a long time, the treatment carried out so far has not shown satisfactory results.

There are various reasons for not optimally suppressing the number of leprosy patients worldwide, including in Indonesia. Stigma is one of the factors in the dynamics of leprosy that causes patients to stay away from treatment (Luka, 2010). In India and other endemic countries, including Indonesia, it was found that the stigma from society and self-stigma in leprosy patients caused the actual number of leprosy sufferers to be far higher than what had been revealed. In many attempts, removing the stigma is difficult because the understanding of leprosy itself is still inaccurate and uneven in society. Even in some areas, regional leaders, religious leaders, or community leaders believe that leprosy is a form of the curse of the Creator still exists (Singh, Singh, & Mahato, 2019; Rai, Irwanto, & Peters, 2020). Stigma ultimately impacts individual, community, and public health programs and interventions (Luka, 2010).

Stigma can occur in various diseases, affecting public health programs and individuals suffering from it (Hatzenbuehler, 2013). Stigma can hit individuals with infectious diseases or not. Regarding infectious as the nature aspect of the disease, leprosy and HIV are two examples of easily stigmatized diseases (Van Brakel, Sihombing, Djarir, Beise, Kusumawardhani, Yulihane, 2012; Turan, Hatcher, Weiser, Johnson, Rice, Turan, 2017). Furthermore, the findings from the research of Rai, Irwanto, and Peters (2020) confirm the formulation of the experience of stigma by Scambler (2004), which existed beforehand and occurred at the structural, interpersonal, and individual levels. These three levels of stigma experience then impact four aspects, namely social, behavioral, psychological, and medical. On the social aspect, the impact that occurs is isolation or isolation (Van Brakel et al., 2012). On the behavioral aspect, there is a reluctance to come out (Peters, Hofker, Van Brakel, Marjolein, Seda, Irwanto, Bunders (2014). On the psychological aspect, there is stress, anxiety, and suicidal ideation (Browne, Ventura, Mosely, Speight, 2013); and on the medical aspect, namely delays in visiting health facilities or interruptions in the treatment process (Stangl, Earnshaw, Logie, Van Brakel, BarreI, Dovidio, 2019). Therefore, eliminating this stigma is a challenge in the management of leprosy.

According to Heijnders and Van der Meij (2006), various interventional approaches can be taken to reduce or eliminate the stigma on the issue of leprosy. Counseling, support groups, socio-economic development, and advocacy are alternatives that can be considered. Another formulation by Peters, Dadun, Zweekhorst, Bunders, Irwanto, & Van Brakel (2014) states that the intervention that needs to be done to reduce the stigma of leprosy patients is direct exposure by leprosy patients to the community or society. Singh, Singh, and Mahato (2019), from their research in Nepal, also previously emphasized that good public understanding is the main target for changing attitudes towards leprosy and, of course, patients suffering from leprosy.

The eradication of leprosy indeed prioritizes medical intervention or treatment. At the same time, strengthening the community and education regarding psychological dynamics also needs to occur because correcting the misunderstanding in the community from both sides is essential. In Indonesia, treating leprosy by administering Multidrug therapy (MDT) follows WHO guidelines (1982) accompanied by education about the disease, including medication adherence. The approach from the aspect of knowledge about leprosy sometimes still needs to touch and be comprehensive in various levels of society. This aspect is a side that is only sometimes a priority in education programs in the community due to various limitations.

We promote the strengthening of educational aspects as well as contact intervention as an intervention program that is carried out. In this action research, we jointly propose a tiered education model for elementary school students. The tiered education in question is a program that contains presentations on leprosy from a medical and psychological perspective to students, followed by giving assignments in the form of compiling campaign activities about leprosy. This education aims to make students understand leprosy, especially its psychosocial aspects so that they can empathize with people with it. At this age, they can properly and correctly receive education provided by experts because social stigma has yet to be formed within them. We offer a tiered education model as an alternative to regular education from limited government health resources. Gradually, the plan is that after the information is presented, it will be passed on to the surrounding community, starting with the closest family. Intervention models of strengthening education and contact intervention are believed to have the greater transformative power to correct the misunderstanding and stigma. This is because direct exposure can help improve the understanding of potential parties or certain groups that develop this stigma (Brown, Macintyre, Trujillo, 2003; Heijnders, 2004; Dalal, 2006). This model selection certainly requires full and ongoing support from the school. Thus, there is a hope that social stigma can be reduced gradually. In this report, we prioritize a review of the component of strengthening education for elementary school students as a particular population.

The KATAMATAKU University of Indonesia team designed the tiered educational model activity. Initially, the KATAMATAKU team designed activities through educational presentations from resource persons followed by sharing sessions from leprosy survivors with the audience. After discussing with Sekolah Gemala Ananda, the school aligned this activity with a program ready to be implemented at school, namely the end-of-semester project, since Sekolah Gemala Ananda also used a Project Based Learning approach. In general, the implementation of this activity is divided into three stages:

1) Preparation Stage

Preparation, participant and recruitment

In February 2022, the team agreed that a tiered education model would be the chosen activity. The material in this activity is related to the medical aspects of leprosy and the psychological dynamics of leprosy patients. The team chose this activity at the Sekolah Gemala Ananda (SGA) in South Jakarta because, since 2013, SGA has implemented a curriculum with an integrated model between subjects. This curriculum allows schools to incorporate particular material that aligns with the main learning objectives.

Agreement between the team and the school, the participant's criteria and activities were as follows:

1. This activity was given to the fourth-grade students who were undergoing learning on the theme of empathy and health.
2. This activity is carried out using the Zoom online virtual meeting media.
3. This activity was carried out in two days on May 30th, 2022, with 20 minutes for medical material, 20 minutes for psychological dynamics material, and 20 minutes for questions and answers, followed by a survivor's sharing session on June 3rd, 2022.
4. The accompanying teacher will act as a moderator of the activity.
5. The school will continue to assign students as their Grade Four Final Project to represent the material presented to families or people who live in the same house.

2) Activity Stage

The activity was carried out according to plan on May 30th, 2022. The day before, students were required to watch an animated video entitled "Knowing Leprosy", a duration of 10 minutes, specially designed by the KATAMATAKU team for elementary school students. An educational comic book also created by The KATAMATAKU team inspires this video with the same title.

The school opens the Zoom application at 12.30 PM and opens activities at 12.50 PM. A total of 43 Grade Four students attended the activity. The speaker on medical material started his session at 1 PM and immediately continued with the speaker on psychological dynamics at 1.20 PM. In medical-related material, the main content presented is about leprosy, its causes, ways of transmission, forms of abnormalities, treatment, and prevention that can be done. While on psychological-related material, the content presented includes how to behave towards persons with leprosy and the empathy that is developed. Each material is delivered in a simple and easy-to-understand manner for elementary school students with a presentation time of 40 minutes. The delivery structure is the presentation of the two parts of the material sequentially, followed by a question and answer session. The moderator opened the question and answer session at 1.40 PM, moderated several questions, and closed the session at 2.10 PM.

The activity continued with assignments from accompanying teachers to students who took part in this activity. Students presented back to family members at home and recorded using each student's cell phone or their parents'. The results of the recording are given to the school teacher to be used for evaluation and giving feedback.

3) Evaluation Stage

Activity evaluation

Activity evaluation was completed by filling out a questionnaire with parents and interviewing the schools involved. Activity evaluation is carried out to obtain an overview of 1) the overall implementation; 2) the assessment of the material; 3) the assessment of the sources; 4) the accuracy of the activity method; 5) the possibility of repeated implementation in the future. We compiled a questionnaire instrument with ten items covering the aspects of the assessment that have been mentioned. At the same time, in-depth interviews were conducted to the school's staff from questions derived from the items in the questionnaire. Interviews were chosen as an evaluation method by the school to be able to obtain more comprehensive data.

a. Participants

Eight participants from parents completed the questionnaire, and we interviewed the school principals and education coordinators for grades four, five, and six who were directly involved in designing activities.

b. Result

i. Parent’s aspect

In Table 1, we can see that all of the responder already had prior information about leprosy; belief that the activity can reduce stigma; belief that students empowerment are one of the effective way; and also says that the activity can be replicated to other educational institutions. While 87.5% of the responder claimed gain more information about leprosy after the activity and also perceived that the students are capable to reproduce the information to others. From Table 2, we can obtain that added information after the activity is started from a basic information, such as source of leprosy and the fact that leprosy is curable. We also can see that responders perceived a mass education about leprosy through various media is needed to increase community’s awareness.

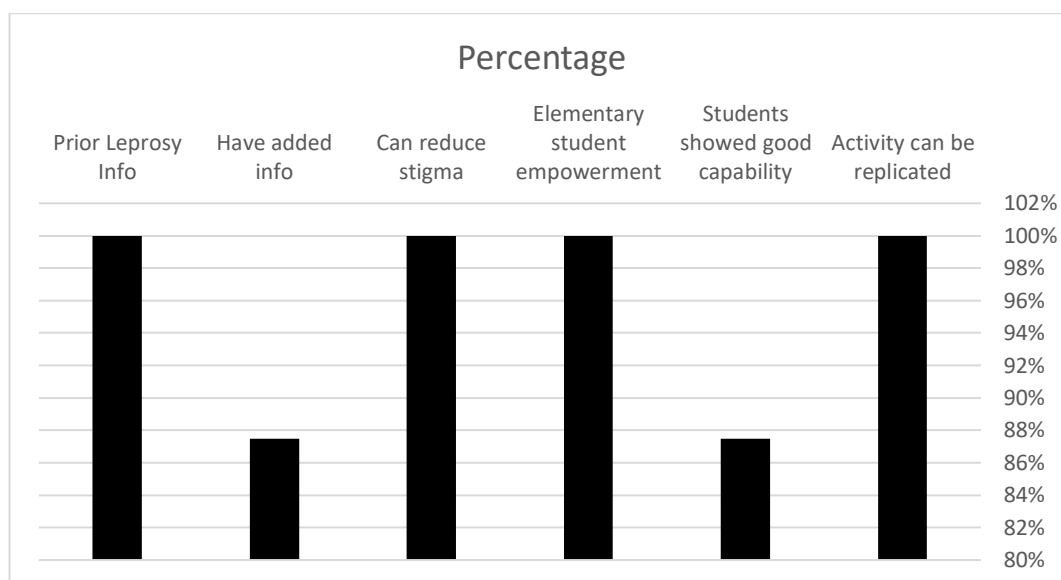


Table 1: Parents’ questionnaire result

Inquiry of question number 6 about additional information after the activity	
1.	How to prevent
2.	That leprosy is curable
3.	That leprosy is not as contagious as perceived before
4.	That leprosy caused by bacteria
Inquiry of question number 13 about how to increase community’s awareness about leprosy	
1.	Socialization through social media
2.	Increase the frequency of leprosy education through all media probable (social media, talkshow, schools/educational institution)

Table 2: Inquiry on question number 6 and 13

ii. School administrator's aspect

The following are the results of the interviews, which have been summarized in Table 3 according to the five aspects explored:

Aspects	Person	School's Principal (JJ)	Fourth to Sixth Academic Coordinator (EN)
1. Overall evaluation		<ul style="list-style-type: none"> It is excellent because it follows how the school implements project-based learning. Thus, the KATAMATAKU program can run in harmony with school principles. 	<ul style="list-style-type: none"> The teachers and children were very enthusiastic and happy with this program. The teachers only need to consider how technical it would be delivered to the children and who suits the activity better. It has been perfect because it aligns with SGA's vision and mission: solutions and benefits. This program can also be carried out by children so that it runs smoothly and benefits the community.
2. Material evaluation		<ul style="list-style-type: none"> Information conveyed with pictorial illustrations: provides an excellent initial understanding for children. It is felt that it will be right on target if this program is meant to eliminate the stigma on sufferers/survivors because children meet people directly. Make it easier for children to carry out campaigns because they understand clearly and have traces of experience received → increasing understanding of the case. 	<ul style="list-style-type: none"> The books provided can be used to prepare students to understand what leprosy is, how to treat it, and its distribution in Indonesia. Through an actual campaign program, children can directly take a small role in reducing the stigma of leprosy in their immediate environment (family).
3. Speaker's evaluation		Competent. Providing a platform for children to have discussions, triggering curiosity, and increasing empathy for survivors → This is evidenced by the many questions that keep popping up despite the duration of the event.	Competent. The presence of resource persons can make children understand how leprosy affects the resource persons so that it fosters compassion for children.
4. Activity choice		Precise, following the learning objectives to be achieved.	It is proper because it includes three taxonomic domains (cognitive, affective, and psychomotor).

Aspects	Person	School's Principal (JJ)	Fourth to Sixth Academic Coordinator (EN)
5. Future feasibility		<p>Very feasible, with more attention to:</p> <ul style="list-style-type: none"> • Need for a comprehensive assessment of school readiness. • Ensuring that KATAMATAKU assists (runs simultaneously) with the teacher. • Need to understand more deeply the extent of information exposed to children. For example, are there any children familiar with leprosy around the house because their neighbors are sufferers/survivors? • The output for this activity can be adapted. For example, if it is not possible to use a campaign, a reflection session can serve as an alternative. It is essential to understand each school's readiness with various characteristics of teachers and students. • Understand the technical implementation of the Permendikbudristek No. Program. 56/M/2022, P5 (Project for Strengthening Pancasila Student Profiles) can be a gateway for KATAMATAKU to carry out similar activities in other schools. The P5 program has a composition of 20% in each school's teaching and learning process. 	<p>Very feasible, with more attention to:</p> <ul style="list-style-type: none"> • There needs to be a program framework to run smoothly and have an impact. • Other school may need examples/templates/models provided so the program can be implemented in a more structured manner • Search for resource persons for survivors or persons with disabilities that are appropriate for the age of the children (participants) so that children are more "in touch" with the story.

Table 3: School administrator's interview result

CONCLUSION

From the result, the program trials carried out are considered successful in several aspects. The program designed supports the main objective of the activity, namely reducing stigma. In general, some of the points that can be concluded are:

1. In terms of implementation, the activities have gone very well. Material aspects, presenters, and the arrangement of activities are considered to have all the necessary elements. This activity can also be replicated in various other educational institutions.
2. Regarding activities, the tiered model applied and strengthened by exposure to survivors is considered to have a reasonably substantial impact. The impact was sufficient to fill the need for exposure to leprosy materials in society, which was not comprehensive enough in reality by far.
3. In terms of material, it was found that medical and psychological materials and direct discussions with survivors could make students learn in total, covering the cognitive, affective, and psychomotor domains.

SUGGESTION FOR FURTHER STUDY

This activity needs to be developed again at various levels of society. Some points of note if this program wants to be replicated in other educational institutions are:

1. A thorough assessment of the destination school is needed so that good coordination can be achieved because not all schools are ready with a student-centered and project-based learning approach.
2. Submission of video and book material before the presenter's session will help to facilitate the discussion process.
3. We can consider various survivors with varying conditions of leprosy to present a better discussion because students will see for themselves the condition of the leprosy patient.

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3. Parents of the Fourth Grade Student in 2022. We express our appreciation to the parents that are very cooperative in the activity.

GLOSSARY

KATAMATAKU: Identifikasi tanda mata, ekstremitas dan kulit pada kusta. Is an organization with a concentration of activities on education and intervention for people with leprosy. This action research group was formed in 2019, with members from various lecturers and researchers from all faculties at the University of Indonesia.

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***A Study of the Process of Resilience in the Face of Economic Crises in the Past:
A Case Study of Micro-Enterprise Entrepreneurs in Bangkok and Vicinity
Who Experiencing Repeated Economic Crises***

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Abstract

A micro-enterprise entrepreneur is particularly vulnerable to developing mental health issues due to the pressures of economic volatility. Although resilience is an important factor in helping a person maintain good mental health when faced with difficult situations, the findings of current research do not cover the knowledge needed to describe the process of resilience. This study aims to find an explanation for the process of resilience and understand the resilience from previous economic crises of micro-enterprise entrepreneurs, leading to enhancing characteristics of resilience in the face of repeated economic crises. The study uses a case study method and in-depth interviews with 8 entrepreneurs in Bangkok and surrounding areas who have experienced repeated economic crises. The results showed that resilience is a process caused by emotional mechanism, cognitive mechanism, and resources from networks mechanism. The study also found that past experiences with economic crises can lead to characteristics includes letting go, becoming indomitable, planning and adaptation which can help entrepreneurs deal with future crises. The findings of the study can be used as a guideline for micro-enterprise entrepreneurs and related agencies to promote resilience and as a basis for further research using other methods.

Keywords: Resilience Process, Micro-Enterprise Entrepreneur, Economic Crises

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Introduction

Economic crises do not only affect economic system but also people's mental health as seen from the increasing number of people with mental health problems, especially anxiety and depression, and successful suicide attempt (National Suicide Prevention Center, 2022; World Health Organization, 2022). Economic crisis is a situation influencing many sectors and entrepreneurs must be affected absolutely, in particular, micro-enterprise entrepreneurs basically have low liquidity and fewer channels of crowdfunding than large enterprises (Thailand Development Research Institute, 2021). According to the report of Office of Small and Medium Enterprises Promotion (OSMEP), the spread of COVID-19 had an impact on sales decrease among micro enterprises. Some micro enterprise needed to close. The situation affected work and financial aspect of micro-enterprise entrepreneurs, contributing to stress since they needed to face various obstacles. Generally, entrepreneurs must confront uncertainty, have high responsibility, time pressure, and long working hours, considered stressors that have effects on mental health. Therefore, micro-enterprise entrepreneurs are classified as a risk group for mental problems (Naseub, 2020; Phantarak, 2019; Stephan et al., 2021). Mental resilience is an important variable that helps people to be able to adapt themselves to various situations and helps people to maintain good health though they have to confront difficulty (Department of Mental Health, 2020). Owing to the spread of COVID-19, Department of Mental Health published manuals as a guideline for promoting mental resilience among people. However, based on searching, a manual for enhancing mental resilience among micro-enterprise entrepreneurs, whose job characteristics are specific, is not available. The review of literature relevant to mental resilience revealed that previous studies were conducted on factors associated with mental resilience (Kooariyakul et al., 2019; Photipim et al., 2021; Toonsiri et al., 2019) but did not cover the knowledge describing the process of mental resilience. Moreover, based on the literature review, it has not been previous studies conducted on a case of persons who experienced repeated economic crises. Therefore, this study aimed to find an explanation for the process of resilience among micro-enterprise entrepreneurs and to understand mental resilience from economic crises in the past of micro-enterprise entrepreneurs, which shall lead to enhancing characteristics of persons with mental resilience when facing repeated economic crises. An in-depth interview was used with micro-enterprise entrepreneurs in Bangkok and vicinity who experienced repeated economic crises. The findings from this study can be a used as a guideline for micro-enterprise entrepreneurs and relevant agencies to enhance mental resilience, including being a guideline for building upon future research using other methods.

Research objectives

1. To describe the process of mental resilience of micro-enterprise entrepreneurs during the spread of COVID-19.
2. To understand mental resilience from economic crises in the past of micro-enterprise entrepreneurs that shall lead to enhancing characteristics of persons with mental resilience when facing repeated economic crises.

Method

This research was conducted on the basis of a case study research design. The study was granted ethical approval for research involving human subjects, number SWUEC-G-425/2565E. An in-depth interview was used for collecting data from key informants who are micro-enterprise entrepreneurs who experienced repeated economic crises, selected by

purposeful sampling method. The inclusion criterion is persons who have been micro-enterprise entrepreneurs at least 10 years and until now in Bangkok and vicinity. They must pass the evaluation of resilience scale introduced by Department of Mental Health, confirming that their resilience scores are higher than normal and experienced at least one time of economic crises in the past before the spread of COVID-19. The study was conducted among 8 micro-enterprise entrepreneurs. Content analysis was used for data analysis in response to the research objectives.

Findings

In response to objective 1 - the explanation for the process of resilience of micro-enterprise entrepreneurs during the situation of Covid-19 spread, key informants explained their feelings when facing problems and methods they used to live their lives to get through difficulties. The process of resilience is caused by 1) emotional mechanism, 2) cognitive mechanism, and 3) resources from network mechanism. All 3 mechanisms are considered major themes while subthemes and quotes can be identified as seen in Table 1.

Themes	Subthemes	Quotes
1) Emotional mechanism	1.1.) Negative feelings	<i>"I'm a bit worried because I have no idea what the future will be, when it will be ended, whether I will have jobs at all times or not or how long I can support the office."</i> (M1).
	1.2) Reducing negative emotions	<i>"When I get stressed, I pray. There are many prayer books in my bedroom. I feel more relieved when praying."</i> (M4).
	1.3) Developing positive emotions.	<i>"I had to stop working. It looks like I take a rest because normally I work every day. During COVID-19, it seemed I took a break."</i> (M2).
2) Cognitive mechanism	2.1) Problem evaluation	<i>"Actually, the big flood is more serious than COVID-19 because I did not have products to deliver. During COVID-19, I could buy things to sell."</i> (M8).
	2.2) Problem Solving	<i>"I need to think what I can adjust. I cannot reduce the costs but need to adjust other parts."</i> (M6).
3) Resources from networks mechanism	3.1) Emotional support	<i>"If I get stressed very much, I will call my sister-in-law or my mom. They said things would last for a short time. They have positive words to cheer me up. I'm encouraged to work further by not being disappointed. They said it is just a beginning."</i> (M5).
	3.2) Instrumental support.	<i>"I have seen a problem about insufficient budget in the company, like payroll for employees, my husband took responsible for me, never complained, never asked what happened."</i> (M3).

Table 1: Themes, Subthemes and Quotes of the process of resilience

Based on the interview, these mechanisms did not occur step by step but partially overlapped as seen in Figure 1. Once entrepreneurs face business problems, they will have negative feelings. (1.1) Though they had negative feelings, all key informants responded to negative feelings by looking at the problems and finding a way to solve the problems. (2.2) While they

solved the problems, in the context of entrepreneurs, they must have operating expenses for business operating expenses which are fixed costs that they cannot postpone. As entrepreneurs have the family to be able to willingly give financial support, they could get through difficulties during the crises. (3.3) Besides, another mechanism occurring while entrepreneurs had negative feelings was problem evaluation. (2.1) Entrepreneurs identified that problem evaluation could help them though that they would get through the economic crisis caused by the spread of COVID-19. Since the spread of COVID-19 was a situation causing an economic impact for such a long time, based on the interview, it was found that entrepreneurs performed some activities to get themselves relaxed (1.2) and created positive emotions (1.3) to ensure they can live their lives under circumstances that they need to fight against business operation problems. In addition to coping with their own negative emotions, key informants said about receiving emotional support from their families and persons around them (3.1).

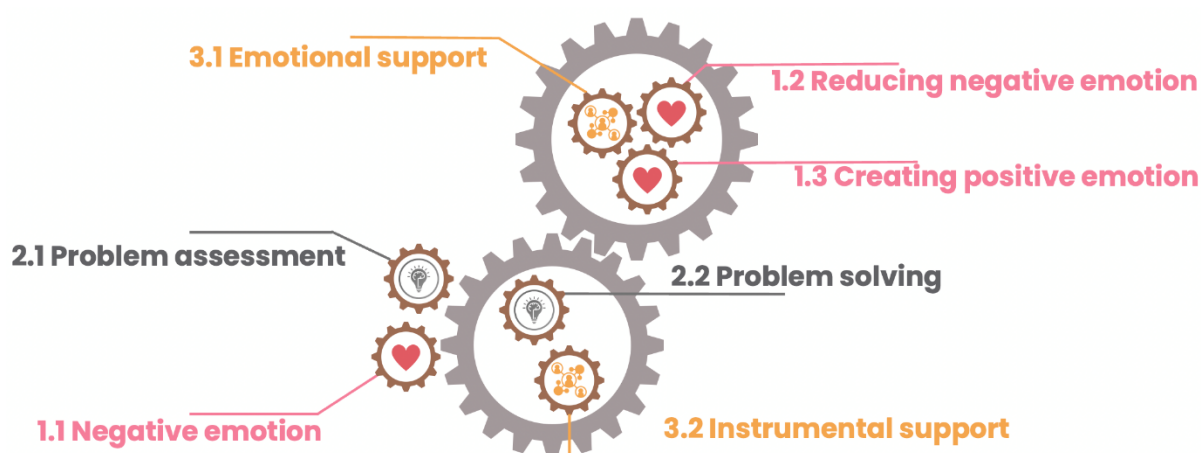


Figure 1: The process of resilience

In response to objective 2 - understanding resilience from economic crises in the past of micro-enterprise entrepreneurs, leading to enhancing characteristics of persons with resilience when facing repeated economic crises, according to the interview, all 8 key informants absorbed the lessons from economic crises in the past and crystallized an idea to become their characteristics to use when facing the economic crisis caused by the spread of COVID-19. Such characteristics can be divided into 2 types as 1) mental characteristics and 2) skills characteristics. The details of subthemes and quotes of each characteristic are shown in Table 2.

Themes	Subthemes	Quotes	
		Past crisis	COVID-19
1) Mental Characteristics	1.1) Letting go	<i>“I don’t think about that too much, I don’t think or do something repeatedly. I focus on my job.” (M2).</i>	<i>“It is a global problem. I just let it go, don’t pay attention to it at all times. I find something else to do so that I will not focus on the same thing.” (M2).</i>
	1.2) Becoming indomitable	<i>“I need to find customers. If I know that this house owner raises a dog, I give him free</i>	<i>“If customers are afraid to go out, I deliver it to them. If I don’t fix a problem, customers will not get in a shop. As I told</i>

Themes	Subthemes	Quotes	
		Past crisis	COVID-19
		<i>samples of dog food. I don't know if he will buy or not but if he buys, he will come to the shop, and I will have a chance to sell something else.” (M3).</i>	<i>you, our location is not good, I need to try harder than others.” (M3).</i>
2) Skills Characteristics	2.1) Planning	<i>“I need to have a plan b since this is not my place, I rent it from someone. Change can occur at any time. I need to have a way to solve a problem.” (M7).</i>	<i>“The ways I think about how to solve the problems are costs must be cheaper. There should be a wider variety of reasonable price products to let new customers get in a shop to compensate income from expensive products. A plan should be made and changed, a plan b is necessary.” (M7).</i>
	2.2) Adaptation	<i>“I must get ready for changing myself. I have changed a lot, I changed from spending money too much as I used to buy unnecessary things. I changed almost 100%.” (M6).</i>	<i>“If I stay at home and feel lonely, I will watch a movie I like, no need to go out to spend a lot of money on gasoline, socializing, etc.” (M6).</i>

Table 2: Themes, Subthemes and Quotes, characteristics of persons with resilience when facing repeated economic crises

Conclusions

The findings about the process of resilience indicated that resilience of micro-enterprise entrepreneurs when facing the economic crisis caused by the spread of COVID-19 was generated from the interaction of emotional mechanism, cognitive mechanism, and resources from network mechanism. All these 3 mechanisms did not occur step by step but each mechanism was driven to have interaction with each other and partially overlapped with each other, consistent with the idea of Garrett & Zettel (2021) identifying that resilience is the process generated from 1) emotional mechanism – persons intentionally create positive emotions when facing adversity, 2) cognitive mechanism – persons interpret that the problem they are facing is a challenge rather than adversity and 3) mechanisms linking social ties – persons are given advice, financial support, and encouragement from their families. Characteristics of key informants during economic crises in the past appeared again when they had to face the economic crisis caused by the spread of COVID-19, consistent with an idea of Zimmerman et al. (2013) who made a comparison of challenge model, a model of the process of resilience, that it is similar to getting vaccinated, namely, persons who could get through difficulties in the past shall be able to overcome problems in the future.

Limitations

This was a small study of 8 participants and the findings are not generalizable; however, they may be applicable to similar cases and raise relevant topics for discussion among other micro-enterprise entrepreneurs. The participants were from Bangkok and vicinity only and thus comparisons could not be made with the culture of other provinces of Thailand.

Further Studies

Firstly, based upon the findings about the process of resilience, an additional study should be conducted on how variables in each mechanism perform their duty as mediator variables and moderator variables to resilience. Secondly, the informant scoping in this research did not cover business cycles, therefore it was recommended to explore processes of resilience in different business cycle contexts.

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The Effects of Mindfulness Based Cognitive Therapy (MBCT) Group Counseling Program to Enhance Flow in Playing Music of Music Students

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Abstract

This study is the quasi-experimental research. Its purposes were to 1) comparing the flow in playing music of students majoring in music between before and after attending mindfulness based cognitive therapy group counseling program; and 2) comparing the flow in playing music of students majoring in music between the experiment group, who attended a group counseling program using mindfulness based cognitive therapy and the control group, who did not participate in the program. The sample consisted of 24 undergraduate students majoring in music, who met the inclusion criteria. The sample was divided into 12 students in the experiment group and other 12 in the control group. The research used a pretest-posttest quasi experimental design. The research instruments were the flow in playing music measurement and the mindfulness based cognitive therapy group counseling program. The program was administered into 8 sessions with approximately 120 minutes each time. The data were analyzed using mean, standard deviation, and t-test. The findings of this research were as followings: 1) the flow score of students majoring in music after attending the mindfulness based cognitive therapy group counseling program was higher than attendance before at .05 level of significant; and 2) the flow score of students majoring in music after attending the mindfulness based cognitive therapy group counseling program was higher than the control group's scores at .05 level of significant.

Keywords: Flow, Music Student, Mindfulness Based Cognitive Therapy, Group Counseling Program

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Introduction

Creativity and Music Students

Creativity is an attribute of persons who have outstanding ability of imagination. Their expression of thoughts is meaningful and unique (Rankin, 2005; Reid & Bennett, 2014). A study conducted by Byrne (2005) found creativity plays an important role in music learning. Therefore, music students stress on developing creative music skills. Music creativity is imaginative thinking through sound and creation of interesting and new music styles (Hickey, 2012 as cited in Roger, 2019). However, music educators are concerned with shaping students to become creative musicians who are able to transfer skills obtained from learning to music playing. They are also concerned with efficiency of performing live music (MacDonald, Miell, & Morgan, 2000). It is clearly seen that the 1st year music students of a university in Canada had higher mental health problems regarding anxiety and stress than the 1st year students who did not study music (Bruder et al., 2021). This is consistent with a study conducted by Gilbert (2021) finding that undergraduate students majoring in music had higher anxiety and depression than students who did not major in music. A study of MacDonald et al. (2000) adopted the flow theory of Csikszentmihalyi (1992) to learning environment of music classes and it was found that increased flow levels were associated with increased creativity (MacDonald, Byrne, & Carlton, 2006).

Flow in Playing Music

Flow refers to a state in which people are so involved in an activity that nothing else seems to matter; the experience is so enjoyable that people will continue to do it even at great cost, for the sheer sake of doing it (Csikszentmihalyi, 1990), and the mental state in which persons are engaged in an activity when they are fully immersed in a feeling of energized focus, full involvement, and success in the process of the activity, contributing to positive experience (Jackson & Mash, 1996). American Psychiatric Association (APA) (Vandenbos, 2007) defines flow as a state of optimal experience arising from intense involvement in an activity that is enjoyable. (Chen, 2006). Flow has 2 experience dimensions, namely, challenge and skill. When persons are able to create a balance between their own skills and a challenging task (challenge-skill balance), flow is a channel between anxiety and boredom as persons will not be anxious about a task that is more difficult than the skills they have and will not get bored when a task is too easy (Csikszentmihalyi, 1990).

According to a study conducted by Csikszentmihalyi, there are 9 components of flow; 3 components lead to flow, i.e. 1) challenge-skill balance 2) clear goals and 3) unambiguous feedback, and 6 components are attributes of flow, i.e. 1) concentration on the task at hand 2) sense of control 3) loss of self-consciousness 4) action-awareness merging 5) transformation of time and 6) a feeling of autonomy (Cohen & Bodner, 2019; Csikszentmihalyi, 1990,1997).

It is concluded that “flow in playing music of music students” refers to positive experience of music students when they have the balance of challenges and skills in playing music. It is a proper state of mind that music students wish to achieve. It is the enjoyment of music playing and really enjoyable experience coming with mindfulness. In this regard, music students shall meet an apparent goal and obtain knowledge about the activity, achieve a state of total concentration, the feeling of control and become one with the activity.

Flow Enhancement in Playing Music

Tan and Sin (2020) proposed 10 methods to help create flow experience in music classes and music practice rooms as follow: 1) Consider challenge–skill balance 2) Set clear goals 3) Cultivate grit 4) Nurture reflection 5) Empower students 6) Promote mastery-approach goals 7) Stay positive 8) Connect emotionally 9) Flow together and 10) Play through from time to time. Additionally, the researcher studied documents and research studies relevant to counseling for enhancing flow and found the following: Scott-Hamilton et al. (2016) studied effects of a mindfulness –based intervention on sports-anxiety, pessimism, and flow in competitive cyclists and found that changes in mindfulness experienced by the intervention participants were positively associated with changes in flow. A systematic review by Goddard et al. (2021) found that mindfulness was employed to enhance athletes’ flow the most, accounted for 31%, since mindfulness is associated with flow and helps increase concentration on present moment. However, according to the review of relevant literature, the researcher has not found any program that shall help directly enhance flow among musicians but found a research study that employed mindfulness-based stress reduction (MBSR) to integrate with Mindfulness-Based Cognitive Therapy (MBCT) to design a program to reduce musicians’ anxiety. It was indicated that after participating in the program for 8 weeks, musicians became more mindful and mindfulness had a positive effect on their performance as changes occurred to their perception of time and creativity that appeared to be increased on the stages (Czajkowski et al., 2022).

Therefore, the researcher was interested in studying whether or not the Group Counseling Program Based on Mindfulness Based Cognitive Therapy would enhance flow in playing music of music students. If music students achieve flow, their negative emotions shall be decreased (Fritz & Avsec, 2007), leading to creativity and learning skills shall be passed down to music playing.

Mindfulness Based Cognitive Therapy (MBCT)

Mindfulness based cognitive therapy was started in 1990 by integrating cognitive behavior therapy (CBT) and mindfulness-based stress reduction (MBSR) through mindfulness practice to enable counselees to be aware of their thoughts and feelings associated with a neutral point of view. The principles of mindfulness practice are 1) Doing Mode is how lives are spent without mindfulness in automatic thoughts. Persons find obstacles and try to get away from the problems they are facing. They think about the same things habitually. They perceive a situation the way they would like it to be. Their past experiences and future expectations are the process that occurs unintentionally. A lack of awareness leads to anxiety, dissatisfaction, etc., and 2) Being Mode is accepting a situation the way it is. There is no pressure from a changing situation. The mind is focused on present moment and accepting things the way they are. Persons are able to live with experience in each period substantially (Felder et al., 2012; Segal et al., 2002).

Method

Participants

Population were 61 persons of the 3rd year undergraduate students majoring in western music program, Faculty of Humanities and Social Sciences, Chandrakasem Rajabhat University (Office of academic promotion and registration, 2022).

The sample consisted of 24 persons of the 3rd year undergraduate students majoring in western music program, Faculty of Humanities and Social Sciences, Chandrakasem Rajabhat University, divided into 12 persons in the experimental group and 12 persons in the control group who passed the ensemble course, had flow score in playing music at the 50th percentile or below, and were willing to participate in the mindfulness- based cognitive therapy group counseling program. The size of sample was cited from a study conducted by Syeda and Andrews (2021). The effect size was 0.8 and alpha level was 0.05.

Measurements

The research instruments are 1) the flow in playing music measurement developed and improved from The Flow State Scale of Jackson & Marsh (1996). Questions were improved by the researcher to be consistent with the context of the study and operational definition of flow in playing music in each component, in the form of a 5-point rating scale, i.e. absolutely untrue (1), untrue (2), uncertain (3), true (4), and absolutely true (5), 35 question items. Music students who have higher scores are those with higher flow in playing music than music students who have lower scores, and 2) the mindfulness-based cognitive therapy group counseling program of Segal et al. (2018) to develop 3 components leading to the flow in playing music of music students, i.e. 1) challenge-skill balance, 2) clear goal, 3) unambiguous feedback. The counseling program was provided for 8 sessions, 120 minutes per time, once a week, 8 weeks in total.

Procedures

The research was conducted on the basis of quasi-experimental design and granted ethical approval for research conducted in humans, number SWUEC-G-421/2565. The procedures for conducting the research are as follow: A letter was submitted to Chandrakasem Rajabhat University to ask for cooperation in collection research data. Next, the flow in playing music measurement was used to select the sample. The scores obtained from the flow in playing music measurement at the 50th percentile or below were arranged and drew lots to select 12 persons for the control group and 12 persons for the experimental group. After that the experiment was conducted in the experimental group according to the mindfulness based cognitive therapy group counseling program to enhance flow in playing music of music students. The flow in playing music was measured in the experimental group and the control group using the flow in playing music measurement.

Basic statistics were used for analysis, i.e. percentage, mean, standard deviation and t-test was used for hypothesis testing.

Results

The research aimed to compare the flow in playing music of music students before and after participating in the mindfulness based cognitive therapy group counseling program to enhance flow in playing music of music students between the experimental group attending the group counseling program and the control group not attending the group counseling program. Research results are divided into 2 parts as per the following details:

Part 1 Demographic of the participants

The mean age of research participants is 21 years, 75% are men and 25% are women, 44% are music students majoring in electric guitar and 24% are music students major in vocal performance.

Part 2 Data analysis results for hypothesis testing

Table 1. Flow score in playing music of music students in experimental group

	Flow in playing music				
	Mean	SD	df	t	p-value
Pretest	128.17	15.213	11	-2.863	.015*
Posttest	147.92	17.354			

*p < .05

Table 2. Flow score in playing music of music students after participating the program

	Flow in playing music				
	Mean	SD	df	t	p-value
Experimental Group	147.92	17.354	22	2.461	.022*
Control Group	133.00	11.824			

*p < .05

Table 1 presents the hypothesis 1 – The mean flow score in playing music of music students in the experimental group before attending the program was 128.17 and after attending the program the mean flow score was 147.92. There was statistically significant difference of the mean flow score in playing music of music students after the experiment at 0.05. The flow score in playing music after the experiment was higher than the flow score in playing music before the experiment.

Table 2 presents the hypothesis 2 – The mean flow score in playing music of music students in the experimental group attending the program was 147.92 and that of music students in the control group not attending the program was 133.00. After the experiment, there was statistically significance difference of the mean flow score in playing music between the experimental group and the control group at 0.05. The flow score of the experimental group was higher than the flow score of the control group.

Conclusions

The study results revealed that Mindfulness Based Cognitive Therapy Group Counseling Program can enhance the flow in playing music of music students, consistent with a study conducted by Scott-Hamilton et al. (2016) showing that Mindfulness-based intervention enabled to promote flow in athletes and a study conducted by Czajkowski et al. (2022) using mindfulness-based stress reduction integrated with mindfulness based cognitive therapy that enabled musicians to be more mindful, giving positive effects on music performance.

The program has an explicit structure that enhance program participants to have higher flow in playing music according to the components leading to the flow, i.e. 1) challenge-skill balance 2) clear goals and 3) unambiguous feedback (Cohen & Bodner, 2019;

Csikszentmihalyi, 1990, 1997), based on MBCT introduced by Segal et al. (2018) to encourage program participants to be aware of Doing Mode that makes them to be unable to perceive skills and challenges in music playing in a balanced manner. Program participants concentrate on breathing and the body as a spiritual anchor, such as breathing exercise, instead of paying attention to automatic thoughts and feelings, leading to Being Mode through accepting a situation that arises and seeking optional perspectives, such as evaluating thoughts activity and thoughts are not facts activity, etc. In this regard, music students are able to concentrate on thoughts, feelings, and physical reactions that arise while playing music, making them perceive skill-challenge balance. Furthermore, program participants attend mindfulness practice regularly in the group counseling process and in their everyday life, enabling them to control their attention and be aware of their goals more clearly and perceive unambiguous feedback of music playing. Therefore, the flow in playing music is enhanced. Previous studies found mindfulness is associated with self-regulation of attention which is related to setting a clear goal (Bishop et al., 2004; Aherne et al., 2011; Cohen et al., 2019).

Limitations & Future Research

The first limitation of this research is the measurement was provided before and after the experiment only, causing limitations in the measurement of 6 attributes of the flow. 6 attributes are momentary experiences and consequences of flow that occur after participants achieve the flow in playing music. In future research, a period after the experiment should be studied as the follow-up. The second one is the program was designed in accordance with the concept introduced by Segal et al. (2018), which enhances 3 components of pre-conditions of flow only and does not cover other components being the flow attributes, i.e. concentration on the task at hand, sense of control, loss of self-consciousness, action-awareness merging, transformation of time, and autotelic experience. Thus, a program covering all attributes of the flow should be designed in future research.

Research Exploitation

School counselors can be administering the Mindfulness Based Cognitive Therapy Group Counseling Program. However, counselors should be trained in mindfulness practices and should experience the practice of mindfulness by oneself.

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Does a Positive Suggestion Work Better in Encouraging Positive Eating Behavior?

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Abstract

Due to the increasing problem of diabetes caused by unhealthy food consumption behavior, countless behavioral science has paid attention to encouraging people to eat healthier foods. Previous studies suggested that framing messages with low and high-construal influences people's food choices, and a sense of power is also found to motivate individuals to change their behavior. Thus, the current study aimed to investigate the effects of healthy messages framed with low and high construal levels combined with a sense of power on people's healthy food choices. In doing so, four-hundred participants were randomly assigned to one of five conditions in the laboratory experiment: i. low-construal level message, ii. the high-construal level message, iii. a low-construal level message with a high sense of power, iv. a high-construal message with a high sense of power, and v. control group (no message frame). Each message was presented in the "thank you" card, given to participants in each condition after completing the activity that did not relate to food. Afterward, participants were asked to choose either healthy brownies or regular ones as a reward for participating in the experiment. The result showed that a low-construal healthy message influenced participants to choose healthy brownies ($p < 0.05$). Unexpectedly, messages with a high construal level and a high sense of power were not shown the effects.

Keywords: Construal Level Theory, Message Framing, Sense of Power, Healthy Eating Behavior, and Laboratory Experiment

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1. Introduction

In Southeast Asia, Thailand currently has the second highest level of obesity, behind Malaysia in the first place (Taylor, 2021). Research has shown that the number of diabetic patients in Thailand has grown over the years (Hunsa, 2021) and that deaths from this disease account for nearly 70% of all deaths (Hunsa, 2021). Additionally, high sugar consumption is associated with diabetes risks (Hunsa, 2021) and can result in a number of non-communicable diseases (NCDs), for example, liver cancer, diabetes, and obesity. The Thai Health Promotion Foundation declared that the average Thai person consumes about 6 teaspoons of sugar per day, and this puts them at a five times greater risk of developing a fatal disease than COVID-19. According to ThaiHealth Watch, Thai people eat food that tastes extremely sweet, which not only causes these diseases but also affects blood vessels, the heart, and kidneys (Thai PBS World, 2021).

According to such statistics, throughout the past decades, there have been countless behavioral science initiatives aimed at encouraging people to reduce their risk of developing these diseases by eating healthy food. For example, Segovia et al. (2020) conducted a laboratory experiment focusing on the association between food decision-making and episodic future thinking (EFT). EFT defined as efficacy to project self into the future, has proved that it productive for pre experiencing in future aftereffect of going actions. Besides, substantial studies in domain of food choice rely on the proximity effect; the phenomenon that human are more likely to make a decision on most proximally option that present to them. Gestel et al. (2020) examined the affect of proximity nudge on food choice in a realistic circumstances with multiple choices in the present surroundings of the target choice and was found that people tend to choose the proximity one.

Furthermore, psychological distance is another factor that influences human behavior. Psychological distance refers to a demarcation between instances, for example persons, events, or times (Baltatescu, 2014). Trope et al. (2005) has clarified the relationship between psychological distance and mental construal. They found that distant objects are construed at a further level. High level construal reminds people of more distant objects. For example, a forest might be seen from a distance, however, as it is viewed from a closer point, the individual trees become more visible. The reverse is also true; to see the forest instead of the trees, it must be viewed from further away. This indicates that more psychological distance, the interpretation becomes further abstract. Also, the more level of abstraction, the further psychological distance is envisaged.

Soderberg (2015) issued two meta-analyses of 106 papers consisting of a total 267 research experiments on the effects of psychological distance on abstraction and its consequences. The results showed a dependable and middle size affect of psychological distance on both levels (low and high) of abstraction in psychical representation and the consequences. To illustrate, in one study, individuals were asked to think of himself/herself perform the activities neither tomorrow nor next year. Participants showed a higher relative bias on high level versus low level explanation when they were thinking of doing activities in the distant future. Accordingly, as temporal distance increases, people construe events more abstractly.

Most studies on psychological distance have been grounded in construal level theory (CLT); a social psychology theory that interprets the relationship between psychological distance and the scope of what a person is contemplating (object or event for example) as abstract or concrete. Where psychological factors have been applied together with message framing,

CLT has garnered excessive attentiveness from the psychology and marketing fields (Soderberg et al., 2015). Most analyses from published research state that low construal levels can motivate a participant's decision when they have to deal with proximal decisions. This is also the case when they face the how message that are concrete or psychologically proximate. On the other hand, high construal levels will directly motivate participants' decisions when they have to deal with distant decisions, and are faced with why messages that are abstract or psychologically distant.

The current study aimed to investigate how to persuade people to consume less sugar by framing messages based on CLT. Specifically, the present study expected that low construal messages would directly lead subjects to choose a healthy option. This is in accordance with Trope et al. (2010), whose major findings were that for psychological proximity people think at a concrete and detailed level (low CLT or 'how'), and when psychologically distant in more broad and abstract terms (high CLT or 'why'). In addition, the current study examined the effects of sense of power on the relationship between psychological distance and behavior. Smith & Trope (2006) insisted that consumers with high power tend to associate in high-level construal and more abstract cogitation. Concurring, previous findings introduce that long term goals is liable to be more outstanding when consumer has higher level of power. To illustrate, Magee et al. (2010) stated that people with higher positional power interpret incidences more abstractly than those who has less positional power. A higher sense of power stimulates consumers to engage in high-level versus low-level construal. It can also stimulate consumers to put more emphasis on long-term consequences of a decision. Previous research has suggested that consumers with high power have a tendency to seek a target that they regard as salient (Wang et al., 2020).

Thus, to satisfy the research objectives, a lab experiment was conducted to test four treatments: messages with low construal level (how an individual should eat), high construal level (why or reason to eat), low construal level (how) together with sense of power (high power), and high construal level together with sense of power (high power), and 1 control group (no message). Based on previous research, the researcher expected that a message with low (how) together with sense of power would have a higher impact on consumers to choose a healthy option than other treatments.

To develop sustainable healthy eating behavior amongst customers, messages should be framed with an appropriate construal level together with a high sense of power. The current study is expected to benefit agencies, entrepreneurs and people who need to stimulate their loved ones or customers to change their behavior to healthy eating for their good health and to reduce unnecessary costs.

2. Methodology

Experimental Design and Sample

To test the research question of whether the positive suggestion works better in encouraging positive eating behavior. A between-subject design with four experiment conditions and a control group was employed in a laboratory experiment, which was conducted at Khon Kaen University, from August to October 2022, the sample was a graduate student at Khon Kaen University who was not *allergic to milk, butter, peanuts, or sugar and was also able to read and write Thai*. A total of four hundred participants were recruited through an online invitation poster. The online poster also informed that participants must complete two sets of

questionnaires: *i. personal eating behavior and ii. carefully reading and rating the given messages*. If so, they will receive one piece of brownie and fifty baht as compensation at the end of the activity. A student who is interested in joining the experiment can be registered through the online form. Our team will opt for the qualified student and randomly define them into one of five conditions (forty rounds: ten people each). The confirmation message will be directly sent to them and provided with the date and round of an experiment.

Procedure:

Experiment stage

Registered who truly meet all the trial qualifications will receive the confirmation date and round of the experiment and were randomly assigned to one of five conditions.

Four were treatment groups:

- ***treatment group I.*** received a LOW-construal healthy message.
(HOW to choose the healthy option)
- ***treatment group II.*** received a HIGH-construal healthy message.
(WHY choose the healthy option).
- ***treatment group III.*** received a LOW-construal healthy message.
(HOW to choose the healthy option)
together with a *high sense of power*.
- ***treatment group IV.*** received a HIGH-construal healthy message.
(WHY choose the healthy option)
together with a *high sense of power*.

Whilst one was the control group

- ***control group*** received *no persuading message*.

The experiment will be conducted with a total of forty rounds, with ten participants each, meaning out of 400, eighty participants will be in each trial group.

On that day, the researcher showed them to the room in which participants sat at individual tables and announce the two activities: firstly, complete the eating behavior questionnaire, at this stage, the researcher emphasized to the participants that the collected data will only be published as per-capita averages, not personal. So that the participants can fill out the information accurately and truthfully. Subjects were asked to provide information regarding their demographics and eating behavior by completing a questionnaire. Demographic questions included: gender, age in years, height, weight, and salary. Behavioral questions included: Currently, do you have a grievous health issue? Do you usually eat healthy foods? Are you currently on a diet?

Moreover, participants need to fill out how hungry do they felt right now with the ranking 1 (not at all) to 5 (extremely hungry) to assess their current hunger. This was to prevent participants' hunger levels from affecting the discrepancies in the experimental results. The reason being that if the participants had high hunger levels, it could bias brownie selection.

The Dutch Eating Behavior Questionnaire by van Strien et al. (1986) was used to check whether participants could be classified as emotional eaters, restrained eaters, or external eaters. The question was translated into Thai by the double translation method. Such a questionnaire contains 33 questions. A total of 10 questions are used to assess whether

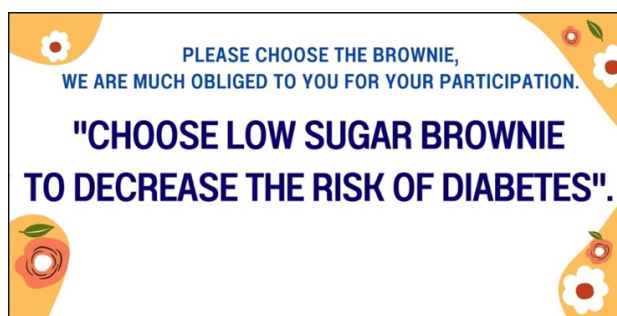
participants are restrained eaters. Another 10 questions assess whether participants are emotional eaters whilst the rest 13 questions were external eaters. Response ranges are used to classify participants according to their emotional or restrained eating habits (Hussain et al., 2020).

After the participants completed the personal and background information, the researcher introduced the following activities of that day, and an information sheet was provided.

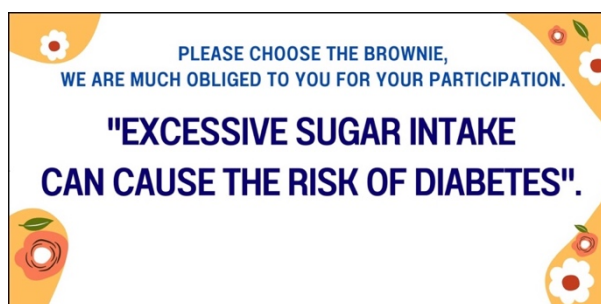
The second important stage comes, participants were distracted from the actual experimental purpose by the score rating activity. A narration by the researcher about the corruption in 'attendance check', which arises from the sympathy of the teacher was occur. Such activity helps gain participants' intention to concentrate on solving the corruption problem and mind carefully reading the entire message. After the narration stage, participants immediately read the second set of questionnaires carefully: the seven corruptions in attendance check's messages and were asked to rate on a scale of one (not at all) to seven (definitely agree). On the same questionnaire, which, of course, contained a message touting healthy brownies at the end. Participants will continue to focus on question number eight which was no longer the rating score, yet our *target question*.

The target question provided two substances: firstly, start with the 'THANK YOU' message which led them to choose brownies as compensation, followed by the different four persuading healthy brownie messages which were shown as follows:

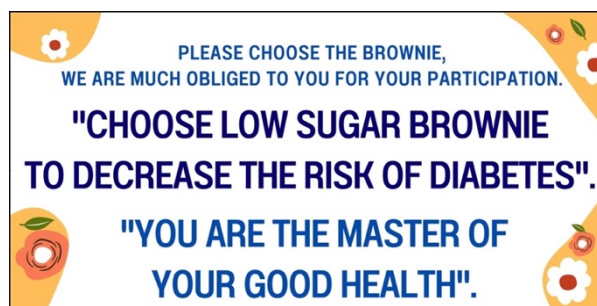
Treatment group I : LOW construal level message (HOW)



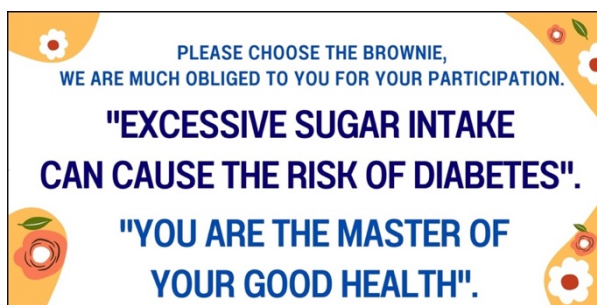
Treatment group II : HIGH construal level message (WHY)



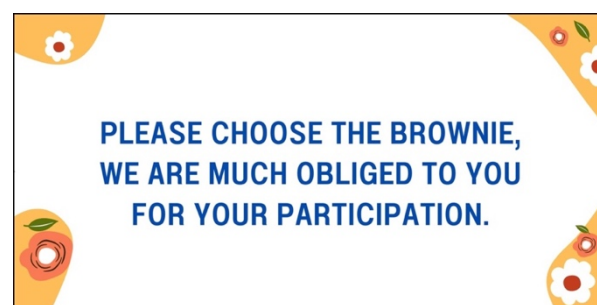
Treatment group III: LOW construal level message (HOW)
+ (HIGH) sense of power.



Treatment group IV : HIGH construal level message (WHY)
+ (HIGH) sense of power.



Whilst, in *the control group*, participants will receive a ‘THANK YOU’ message *only*.



Afterward, participants had to mark their choice either receive a ‘*healthy brownie*’ or an ‘*unhealthy brownie*’ on the last question provided in the sheet. The trials’ entire activities take approximately thirty minutes. In the final stage, the researcher checked for the completeness of all responses and speech the participants a sincere thank you. Then, they were invited to the space in front of the room and picked one piece of a ‘*healthy brownie*’ or an ‘*unhealthy brownie*’ that they consider at the end of the questionnaire and the amount of fifty baht.

Manipulation Check

We verify if the subjects truly read all messages including manipulated ones by providing them with the square box: placed below the target picture. The box mentions them to carefully read all the messages, especially on the last page. If participants truly read all the

messages, they were asked to mark the correct (ü) symbol in the box. In the case that participants do not mark the correct symbol in the square box, the responses will be sorted out.

Statistical method

A binary outcome is a common term implying it only has two possible outcomes (yes or no) for a definite situation. Binary outcomes are implemented in several fields. For example, in computer science, a 'bit' is a binary outcome with a value of either zero or one, and a series of bits are combined to create data. Also, many statistical and math applications use binary outcomes (Motley Fool Staff, 2016).

In the current study, a model of binary outcomes was introduced as follows:

$$HT_i = \beta_0 + \beta_1 LC_i + \beta_2 HC_i + \beta_3 LCP_i + \beta_4 HCP_i + \beta_5 BMI_i + \beta_6 PI_i + \beta_7 EB_i + ER_i$$

where participants choosing the healthy brownie is the dependent variable. The variables LC_i , HC_i , LCP_i and HCP_i are treatment dummies while the control is excluded. - BMI_i is a measurement of body fat based on height and weight. PI_i is the participant's general information (e.g., gender, age, and faculty). HNG_i is the level of participants' hungeriness. EB_i is the eating behavior and ER_i is a logistic distribution error. The standard errors are a group at an individual level.

- HT_i is the dependent variable coded as 1 if participants chose the healthy brownie and 0 if participants did not. Where its unit is individual. The researcher expected that each participant in the four treatment conditions would have a higher probability of choosing the healthy brownie after they read the construal level message compared to the control group.

- LC_i , HC_i , LCP_i and HCP_i refer to the treatment:

LC_i refers to treatment i: the low construal level message.

HC_i refers to treatment ii: the high construal level message.

LCP_i refers to treatment iii: the low construal level message together with high sense of power.

HCP_i refers to treatment iv: the high construal level message together with high sense of power.

The four treatments were coded as 1 if participants chose the healthy brownie and 0 if participants did not. The researcher expected treatment group iii to have the highest number of participants to choose the healthy brownie.

- BMI_i is Body Mass Index: the standard formula of BMI is "kg/m²". BMI is also used to classify subjects as either normal weight with BMI less or equal to 24.9, overweight with 25-29.9, or obese with more or equal to 30. According to Segovia (2020) following the National Institute of Health guidelines to categorize subjects by BMI. The researcher expected that participants in the overweight and obese groups would be more likely to choose the healthy brownie in the case of the treatment groups i, ii, iii, and iv.

- PI_i is the personal information (e.g., age, gender, and diet). This was used to confirm there was no bias in the experiment.

- EB_i refers to eating behavior. According to The Dutch Eating Behavior Questionnaire by van Strien et al. (1986), the range is from 1 (never) to 5 (very often). Responses with higher scores refer to an increase in emotional or restrained eating (Hussain et al., 2020). The researcher expected that the participants with restrained behavior would choose the healthy brownie more than people classified as emotional eaters.

- ER_i is the logistic distributed error term.

- The range of 1 to 5 (not at all to very often) will be present as mean, standard deviations (sd), standard error (se), minimum, and maximum values.

3. Results

Descriptive

The experiment was conducted and went successfully as planned. By the consists of five experimental groups: I. low CLT (HOW), II. high CLT (WHY), III. low CLT (HOW) with High sense of power, IV. high CLT (WHY) with High sense of power and V. the control group. All Four-hundred participants were randomly assigned to one of five groups and were organized into 40 rounds of an experiment. Each round contains 10 participants. Whereas its consequence reveals as a statistic in Table I. and Table II.

Table 1 Descriptive statistic: Demographic and Eating Behavior
Dutch Eating Behaviour
Questionnaire

		Age	Salary	BMI	Hungriness	Restrain	Emotional	External	
CONDITION	CONTROL	Min	18.00	1,000.00	14.20	1.00	1.00	1.00	2.10
		Max	24.00	20,000.00	36.89	5.00	4.60	4.54	4.80
		Means	20.40	8,481.25	21.25	2.4	2.60	2.39	3.76
		Standard deviation	1.70	3,640.01	4.26	1.24	0.90	0.75	0.54
	TREATMENT I.	Min	18.00	1,000.00	16.53	1.00	1.00	1.00	2.30
		Max	26.00	100,000.00	35.75	5.00	4.50	5.00	4.80
		Means	19.55	7,918.75	21.88	2.39	2.77	2.12	3.51
		Standard deviation	2.18	3,797.50	3.76	1.37	0.86	0.78	0.58
	TREATMENT II.	Min	18.00	2,500.00	15.94	1.00	1.00	1.00	2.40
		Max	22.00	60,000.00	40.29	5.00	4.60	4.23	4.80
		Means	18.50	9,143.75	21.94	2.79	2.85	2.27	3.63
		Standard deviation	0.98	7,721.31	4.97	1.52	0.89	0.86	0.51
	TREATMENT III.	Min	18.00	3,000.00	16.23	1.00	1.30	1.00	2.10
		Max	26.00	60,000.00	34.96	5.00	4.80	4.54	4.60
		Means	21.23	12,531.25	21.52	2.98	2.79	2.11	3.50
		Standard deviation	2.59	9,420.669	3.78	1.15	0.81	0.83	0.59
TREATMENT IV.	Min	18.00	2,800.00	13.89	1.00	1.00	1.00	1.90	
	Max	26.00	16,000.00	32.41	5.00	4.70	4.46	4.70	
	Means	19.53	7,372.5	21.28	2.53	2.62	2.36	3.55	
	Standard deviation	2.04	3,328.967	3.93	1.32	0.95	0.86	0.68	

Table 1 reveals the minimum, maximum, means, and standard deviation from the five conditions.

Table 2 Descriptive statistic: The randomization checks for demographic and Eating Behavior.

Characteristic	CONDITION				
	CONTROL (N=80)	TREATMENT I. (N=80)	TREATMENT II. (N=80)	TREATMENT III. (N=80)	TREATMENT IV. (N=80)
Gender (%(n))					
Male	16.25 (13)	22.5 (18)	28.75 (23)	35 (28)	35 (28)
Female	83.75 (67)	77.5 (62)	71.25 (57)	65 (52)	65 (52)
Gender	0.838 ^{B*/C**} (0.042)	0.775 ^{F*/G*} (0.047)	0.713 (0.051)	0.650 (0.054)	0.065 ^{D***} (0.054)
Age	20.40 ^{A***/B***} (0.190)	19.55 ^{E***/F***} (0.244)	18.50 ^{H***/J***} (0.110)	21.23 ^{C***/I***} (0.290)	19.53 ^{D***} (0.228)
Salary	8481.250 ^{C***/D**} (406.965)	7918.750 ^{E***} (424.574)	9144.750 ^{H**/I*} (863.269)	12531.250 ^{A***} (1053.263)	7372.500 (372.190)
BMI	21.25 (0.477)	21.88 (0.420)	21.94 (0.556)	21.51 (0.423)	21.28 (0.439)
Healthy	0.125 ^{D*} (0.037)	0.188 (0.044)	0.200 ^{H*} (0.045)	0.100 ^{I*} (0.034)	0.225 (0.470)
Loose weight	0.263 ^{A*} (0.050)	0.386 (0.059)	0.325 (0.053)	0.388 ^{C*} (0.055)	0.313 (0.052)
Hungriness	2.400 ^{B*/C**} (0.138)	2.388 ^{E*/F*} (0.154)	2.788 (0.170)	2.975 ^{A**} (0.128)	2.525 (0.148)
Dutch Eating Behavior Questionnaire					
Restrain eating	2.599 (0.101)	2.766 ^{B*} (0.961)	2.848 (0.099)	2.788 (0.090)	2.621 (0.106)
Emotional eating	2.388 ^{C*/A**} (0.084)	2.118 ^{G*} (0.087)	2.265 (0.096)	2.109 ^{I*} (0.093)	2.363 (0.096)
External eating	3.759 ^{A***} (0.061)	3.514 (0.065)	3.633 (0.057)	3.503 ^{C***} (0.066)	3.548 ^{D***} (0.076)

Note: Standard errors are in parentheses. ***, **, and * are significant level at 15 and 10%, respectively. The comparison among the two experimental conditions is "A" for Control and Treatment I, "B" for Control and Treatment II, "C" for Control and Treatment III, "D" for Control and Treatment IV, "E" for Treatment I and Treatment II, "F" for Treatment I and Treatment III, "G" for Treatment I and Treatment IV, "H" for Treatment II and Treatment III, "I" for Treatment II and Treatment IV, "J" for Treatment III and Treatment IV.

Table 2 reveals four-hundred participants' demographics divided by the experimental groups. Such samples are 72.5 percent female, with a statistically significant difference in control and treatment III ($p < 0.01$), treatment IV ($p < 0.05$), and treatment II ($p < 0.1$). Moreover, treatment I have a statistically significant difference from treatment III and Treatment IV ($p < 0.1$). The average age of participants is 20 years. In the case of treatment I and treatment IV found no statistically significant difference ($P\text{-value} > 0.1$), yet the other pair are, and as $p < 0.01$, the reason is that participants are a student and have near age. The body mass index is not significantly different, with an average of 21.57. For the salary, ($M_{\text{salary}} = 9,090$) statistically significant difference in treatment III with the control, treatment I, treatment IV as $p < 0.01$. And as the $p < 0.05$, in control and treatment IV, treatment II and treatment III found a statistically significant difference. Whilst treatment I and treatment V also found significant differences as $p < 0.1$. Eating healthy, in control and treatment IV, treatment II and treatment III, treatment II and treatment IV found a statistically significant difference as $p < 0.1$. Furthermore, in loose weight, found a barely significant difference in control and treatment III as $p < 0.1$. The hungriness with a significant difference in control and treatment III, treatment III and IV as $p < 0.05$. Also found a barely significant difference between treatment II and control, II, III as $p < 0.1$. In the Dutch Eating Behavior Questionnaires', we found a barely significant difference $p < 0.01$ in restrain: as in control and treatment II, in emotional eating: as in treatment I and IV, treatment III and IV. Whilst barring pair in case of emotional

eating that found a statistically significant difference in <0.05 : control and treatment I, III. The external eating found a statistically significant difference in the pairing of control and treatment I,III,IV ($p\text{-value}<0.01$). Nevertheless, the form probit regression model (*See III.Data in-depth*) was formed to reduce the biases caused by the differences in variables.

Proceed to such study, the certain aim was to gather data about a number of brownie selections: between less sweet and normal brownies. The brownie selection proportions will be discussed in the next section.

Data analysis

Satisfactorily, experimental findings point us out at a highly different number between healthy brownie selection in the case of ‘do message framing’ and ‘no message framing’. To prove that the effectiveness of adding healthy (Low CLT and High CLT) messages is more efficient than no messages, results are presented in figures 1 and 2.

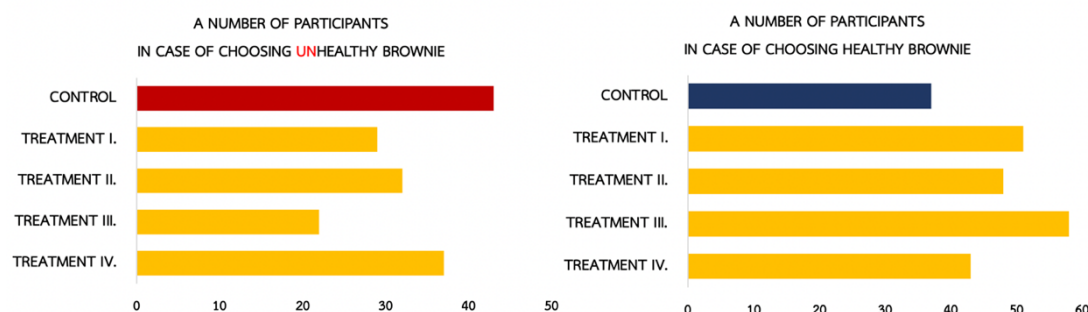


Figure 1 A number of unhealthy brownies. **Figure 2** A number of healthy brownies.

In the left case, Figure 1.: control condition (red bar), the number of unhealthy brownie choices was more than half (43 from the total of 80) or was calculated as 53.8%. Whilst ‘do healthy message framing’ were no more than half: in treatment I: Low CLT (HOW), unhealthy brownie choices tend to decrease and were calculated as 36.25%, treatment II: High CLT (WHY) was 40%, treatment III: Low CLT (HOW) combined with High sense of power was 27.5% and treatment IV: High CLT (WHY) combined with High sense of power was at 46.25%.

Accordingly, loading the message framing can lower the rate of choosing unhealthy brownies.

On the right hand (figure 2), in the case of the control condition (navy bar), the number of healthy brownie choices was no more than half or was calculated as (37) 46%. Whilst ‘do healthy message framing’ were more than half: in treatment I: Low CLT (HOW) the number of healthy brownie choices was at (51) 63.75% (+ 17.45% compared to control condition), treatment II: High CLT (WHY) (48) 60% (+13.7% comparing to control condition), treatment III: Low CLT (HOW) combined with High sense of power (58) 72.5% (+26.2% compared to control condition) and treatment IV: High CLT (WHY) combined with High sense of power was (43) 53.75% (+7.45% comparing to control condition).

To recapitulate the number of healthy brownie choices’ results, either framing with a Low or High construal level message can highly increase the rate of choosing healthy brownies. In

other words, framing with ‘HOW’ and ‘WHY’ messages can decrease the rate of choosing unhealthy brownies.

Data In-depth

However, human behavior is one of a kind. Such could lead them to select the target brownie themselves. For this reason, framing message has no repercussions to them. Aiming to avoid error, individual data on a number of brownie selections ought to consider in depth. In doing so, the researcher formulates the two-probit regression:

I. Probit regression on brownie selection and the IV treatment.

$$HTbrownie_i = \beta_0 + \beta_1 LC_i + \beta_2 HC_i + \beta_3 LCP_i + \beta_4 HCP_i + ER_i$$

Such an equation is a probit regression where the control condition performs as a reference group. Further variables were excluded. Exclusively I,II,II, and IV treatment were considered: LC refers to I. Low CLT (HOW), HC is II. High CLT (WHY), LCP is III. Low CLT with a High sense of power and HCP IV. is High CLT with a High sense of power.

Proceed to equation II.

II. Probit regression on brownie selection with all factors.

$$HTbrownie_i = \beta_0 + \beta_1 LC_i + \beta_2 HC_i + \beta_3 LCP_i + \beta_4 HCP_i + \beta_5 BMI_i + \beta_6 PI_i + \beta_7 EB_i + ER_i$$

The equation II has an identical reference group as I. To point out the dissimilar up, all variable was included: where BMI is the body mass index, PI is the personal information, EB is (DUTCH) eating behavior and ER is a logistic distributed error term.

The regressions’ result reveals in Table III. The comparison between equation I and II was intriguingly different as follow.

Table 3 The influence of reference-dependent on healthy brownie selection and its marginal effect.

	HTbrownie _i					HTbrownie _i		
	I	marginal effect	II	marginal effect		I	II	marginal effect
Treatment I.	0.450**	0.173**	0.446**	0.172**	Age	-	0.023	0.009
	(0.201)	(0.078)	(0.212)	(0.082)			(0.035)	(0.062)
Treatment II.	0.347*	0.135*	0.319	0.123	Salary	-	0.000*	0.000*
	(0.199)	(0.077)	(0.219)	(0.084)			(0.000)	(0.000)
Treatment III.	0.692***	0.268***	0.606***	0.233***	BMI	-	0.035**	0.014**
	(0.205)	(0.079)	(0.224)	(0.086)			(0.178)	(0.007)
Treatment IV.	0.188	0.073	0.244	0.094	Disease	-	-0.001	-0.001
	(0.198)	(0.077)	(0.214)	(0.082)			(0.066)	(0.025)
Restraining eating	-		0.392***	0.151	Loose weight	-	-0.124	-0.048
			(0.092)	(0.035)			(0.171)	(0.066)
Emotional eating	-		0.097	0.038	Healthy	-	-0.062	-0.024
			(0.088)	(0.034)			(0.185)	(0.071)
External eating	-		-0.178	-0.069	Hungriness	-	-0.052	-0.020
			(0.130)	(0.050)			(0.053)	(0.020)
Gender (female=1)	-		0.070	0.027				
			(0.160)	(0.062)				
N					400	400		
Log likelihood					-263.745	-241.553		
Pseudo R²					0.025	0.107		

Note: Standard errors are in parentheses. ***, **, and * are significant level at 1,5 and 10%, respectively.

According to Table 3, the bold highlighted was referred to as Equation I. (treatment only) whilst the rest was equation II. (All factors). Firstly, considering closely the bold space, the interpretation of healthy brownie selection is significantly greater in treatment I. Low CLT (HOW) (63.75%; p<0.05) yet slightly significant in treatment II. High CLT (WHY) (60%; p<0.1). In addition, the uppermost significance goes to treatment III. Low CLT with a High sense of power as it is significant as (72.5%; p<0.01). Unexpectedly, there is no significance in treatment IV. High CLT with a High sense of power (53.75%; p>0.1).

Emphasizing in equation II(all factor), such make certain that the selection of healthy brownie was truly affected by the message framing. The rest area, in the case of the treatment I. (HOW) and III. (HOW with a High sense of power) were still significantly considerable at an entirely high level (p<0.05 and p<0.01, respectively) causing the hypothesis I. and III. to be supported.

Nevertheless, there is no longer significance in treatment II. (WHY) (60% ;p>0.1) causing not to support Hypothesis II (WHY). As a consequence of an increase in the relevant variable: demographic. Data shows that the decision on selecting a healthy brownie depends on ‘restrained eating’ with significantly greater (p<0.01), lower in ‘BMI’ and ‘salary’ (p<0.05, p<0.1) respectively.

Henceforth, the steady significant treatment (I. HOW and III. HOW with a High sense of power) will be considered in-depth. Due to this, we form pairwise comparisons across

treatment I. and treatment III. to verify whether, LOW CLT power itself, or the addition of ‘High sense of power’ that influence greatly the number of healthy brownie selections. In doing so, the researcher tested if the effect of treatment I. was equal to the effect of treatment III. by using the statistical test and found that there is no significant ($\text{Chi}^2=0.49$, $F\text{-test}=1$, $p>0.1$) between treatment I and treatment III. This statistic affirmation that these two groups have no difference.

Accordingly, adding ‘YOU’RE POWERFUL’ did not lead higher rate of choosing healthy brownies yet the power of ‘HOW MESSAGE’. Therefore, Hypothesis IV was not supported ($p>0.1$).

4. Conclusion, discussion, and implication

Conclusion and discussion

Diabetes prevention is better safe than sorry. At a young age, people do not feel close to home with such a disease. For this reason, in addition to educating them: try message framing, and as a matter of fact, convincing someone is extremely difficult. Hence, this study aimed to consider the effectiveness of ‘low-construal healthy messages’ and ‘high-construal healthy messages’ in increasing the number of healthy food choices. Moreover, previous studies also found interesting results in human behavior changing by the ‘sense of power’. For this reason, the low and high construal healthy message and a high sense of power were combined to change human behavior into long-term healthy.

In doing so, we experimented with four-hundred participants which were randomly assigned into five groups (*I. Low CLT, II. High CLT, III. Low CLT+High sense of power, IV. High CLT+High sense of power, and V. the control*).

Psychological Distance

The consequences of such experiments spotlight the psychological distance theory. In recap, two parts of psychological distance are *proximity* and *distance*.

- Psychological proximity: *HOW*

When humans quickly make decisions, for instance, in line for ordering food. At the moment, system 1 (an emotional decision) in their brain automatically works and goes very well flow seeking tasty and delicious food, with no concern for long-term health goals or reason to eat. Similarly, such participants who decide on unhealthy brownies sometimes are taken in an emotional decision. Thus, the hero goes to the ‘choose the low sugar brownie to decrease the risk of diabetes’ or ‘HOW’ message, which plays a salient role in the case of psychological proximity. Even 3-4 seconds, after reading this, people can perfectly understand and be able to conclude what I would like to communicate and be able to decide which one they should make a decision on. So on, as reported in the current result, I discovered that only low-construal healthy messages (HOW) increase the number of healthy food choices (72.5%; $p<0.01$) compared with no message (46%: $p>0.1$). This is in accordance with the study by Grazzini et al. (2018). Grazzini found a rising of about 22% ($p<0.01$) authentic in recycling behavior in the case of the hotel guest’ getting the message ‘HOW’ together with ‘losses’ compared with no message.

- Psychological distance: *WHY*

As I mentioned that system 1 quickly occurs. Exactly, conflictingly to system 2, such uses reason to make decisions, considering things deeply. Causing this part of the brain to *always* work slower than another. 3-4 Minutes may not be sufficient for humans to evaluate. For that reason, I do not discover a statistically significant in increasing the number of healthy food choices ($p>0.1$) in the case of giving the participant an 'Excessive sugar intake can cause the risk of diabetes' or 'WHY' message. According to the psychological distance, people think about now rather than the future, for this reason, imagine about diabetes may sound inordinately distant to such participants.

Sense of power

The study by Wang et al. (2020) stated a high sense of power could increase healthy food purchases. Also, previously studied found that the sense of power could change human behavior. This is in accordance with my long-term goal of changing behavior into healthy eating. Due to this, annexing a high sense of power together with message framing may show a positive effect on the result. Yet, Surprisingly, in the current study, I do not discover a statistically significant in the high sense of power that enhances the effect of construal healthy eating choices ($p>0.1$). The reason behind this may as be reported by Wang et al. (2020) that a high sense of power has a greater beneficial impact effect on low socioeconomic Potentially, the target of the current study is the student from an urban area. Studying in an urban area may not be a key, students feel powerful themselves.

In conclusion, leading them with 'YOU'RE POWERFUL' to help them a healthy eating decision may affect nothing if they already feel the power.

Reasonably, a high sense of power did not lead higher rate of choosing healthy brownies. Try providing one with a short sentence of 'HOW MESSAGE', which was powerful enough. Instead of letting them imagine what the giver wants to communicate. Let system 1 have a chance! Lead the persuaded to know exactly 'how they should do.'

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Consequences of Friendship at the Workplace, Psychological Safety, and Thriving at Work Towards Innovative Work Behavior Among Personnel of Telecommunication and Communication Service Provider in Thailand

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Abstract

At present, technological advancement is an important instrument in measuring the advantages of business competition. The personnel of each organization is a pivotal key to organizational development. Promoting innovative behaviors in the workplace is conducive to creativity and driving ideas to reality. It is an important strategy leading to the designated goals of the organization. This research aims to study the consequences of workplace friendship, psychological safety, and thriving at work towards innovative working behaviors among personnel of telecommunication and communication service provider in Thailand. The samples were full-time employees who had been working for more than 2 years. The data were collected by proportional stratified random sampling from 240 personnel. The data were analyzed using a multiple regression analysis system. The results of this study are consistent with the research hypothesis. Friendship at the workplace, psychological safety, and thriving at work together explained innovative behaviors at work 66.20%. Thriving at work variables influencing innovative behavior at work at a high level. statistically significant influence on innovative behavior in work ($\beta=.52, p <.05$) It was shown that the Thriving at work variable was the strongest predictor of innovative behavior at work. This research can be applied in policy formulation, planning, and personnel development of organizations to have more innovative behaviors at work. Increasing the level of workplace friendship among personnel within the organization creates psychological safety and thriving at work.

Keywords: Workplace Friendship, Psychological Safety, Thriving at Work, Innovative Work Behavior, Telecommunication, Communication Service Provider

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Introduction

At present, the business world has entered a digital age which increases business competition (Spanuth & Wald, 2017). Particularly, in the telecommunication industry, a new telecommunication industry has emerged (New Telco Market) i.e. communications market comprised of digital service providers from various countries that change communication behavior. In 2021, communication behavior has changed from using mobile networks to using Applications Line up to 32% (Manager Online 2022). This makes telecommunication and communication service providers in Thailand shift to become innovative organizations to create more business competitiveness. In order to be an innovative organization, the organization should encourage its personnel to develop their working behaviors that can produce creativity and be able to drive those ideas into reality until they become innovative organizations. This is another important strategy that will lead the organization to achieve the goal. Therefore, work behavior plays an important role in helping the organization to be filled with creativity and innovation which is named as an “Innovative Work Behavior: IWB”. When people have creative behavior in workplace personnel then exhibits their creativity and innovation (Abid et al, 2015). The innovative work behavior that occurs will be a personal action which leads to innovation, introducing new things, or the application of new things in a working (De Jong & Den Hartog 2007).

However, from the study of the past research, there are not many research that describe the factors that influence innovative work behavior in the field of the telecommunications and communications industry in Thailand. Also, there is no information that can explain the factors affecting innovative work behavior. For this reason, the research aims to analyze the influence of workplace friendships, psychological safety and thriving at work that affect innovative work behavior of personnel of a telecommunication service provider to find ways to develop and encourage personnel to have more innovative behaviors.

In past research, innovative work behavior in work was explained by using the concept of Social Cognitive Theory (SCT). This is a concept related to the relationship between factors that determine the expression of behavior that influence each other, such as environmental factors and personal factors. In which one behavior of a person that occurs does not occur and changes due to environmental factors alone. But there are personal factors as well and the combination of individual factors must be mutually exclusive in a manner that fundamentally defines each other (Bandura, 1997). For example, research that uses the concept of social cognitive theory to develop a research framework, such as the research of Rahmaningtyas et al., (2022) explains the influence of environmental factors like workplace friendships and personal factors such as psychological safety affect the innovative work behavior of personnel. Or in the research of Cao & Zhang, (2020) describes the influence of environmental factors such as workplace friendships, and personal factors such as psychological safety affecting the innovative work behavior of personnel details as shown in Figure 1.

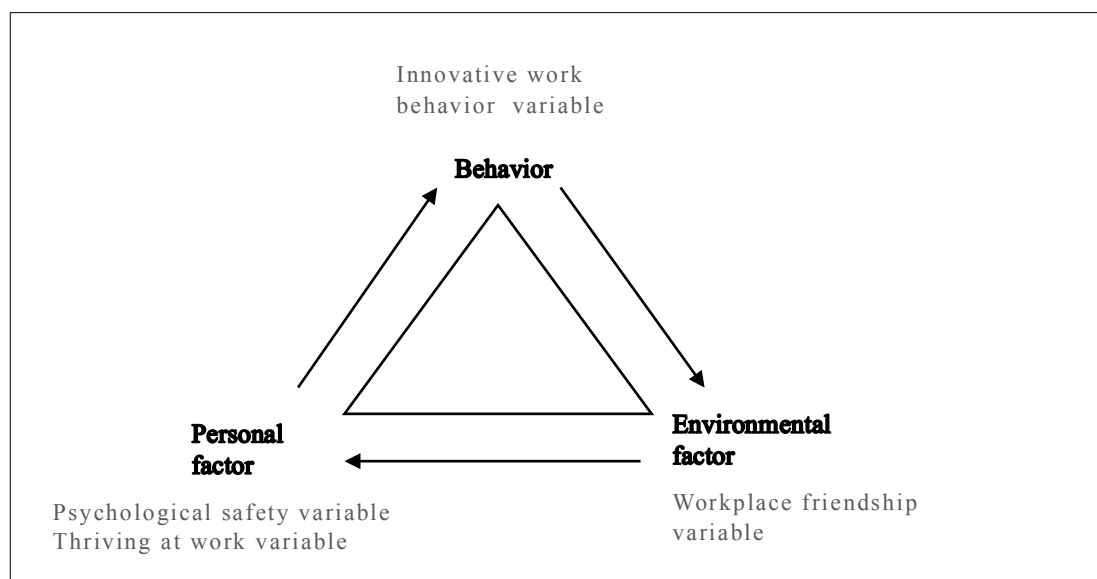


Figure 1 Research Conceptual Framework
Source: Bandura, 1997

From the concepts of the social cognitive theory presented above, the researcher determined 3 variables used to explain the causal relationship of innovative work behavior, workplace friendship, psychological safety, and thriving at work. In other words, workplace friendship is a variable that is consistent with environmental factors. If the working environment context is friendly, it is more likely to foster innovative work behaviors (Shadur et al., 1999; West & Berman, 1997). While psychological safety and thriving at work were variables that were consistent with personal factors in the ever-changing situation in the workplace. If a person feels psychologically safe at work the person is more likely to be innovative and explore new methods (Hirak et al., 2012; Huang et al., 2016). As a result, a person is filled with a sense of energy, liveliness, and a sense of learning in the workplace, or call these positive states of mind thriving at work (Zeng et al., 2020). Thriving at work will result in the display of innovative work behavior of a person (Jaiswal & Dhar, 2015; Porath et al., 2012; Wallace et al., 2016).

Methodology

Participants

The research sample is Personnel of a private company in a telecommunication organization in Bangkok who is a regular employees with a working period of more than 2 years. the researcher has determined the method of sampling by the proportional stratified random sampling method (Proportional Stratified Random Sampling (Hair et al., 1998) a total of 240 people the samples were females more than males LGBTQ+, and those who do not want to specify gender 78.3% (n=188), 15.0 (n=36), 5.0 (n=12) and 1.7 (n=4). Respectively, the age group are from 22-59 years (M=3.32, SD =0.59). Employees who are working in support work 35.8% (n=86) and customer service department 64.2% (n=154). Most personnel's education level is at bachelor's level 87.5% (n=210). Most personnel are in the position of CM Representation and Senior officer 43.3% (n=104) and 17.1% (n=41). most personnel work in the department operation contact center followed by department Collection management 40.4% (n=97) and 15.4% (n=37). Most personnel have been working for 11-15 years, followed by 6-10 years 27.5% (n=66) and 22.5% (n=54) respectively.

Research Tool

Measuring Psychological safety

Measuring Psychological safety is adapted from Edmondson's (1999) measurements. There are 6 questions such as "I feel safe and brave to speak up" The scale is a 5-point Rating Scale, where 5 points means agreed very much till 1 point means least agreed. The measurement has good internal consistency Cronbach's alpha coefficient=0.87.

Measuring Thriving at work

Measuring Thriving at work is adapted from Porath et al., (2012). There are 10 questions such as "I see myself constantly improving." The measure is an estimation scale (Rating Scale) 5 levels, where 5 points means agreed very much up to 1 point means least agreed. The measurement has good internal consistency Cronbach's alpha coefficient=0.90.

Measuring Workplace friendship

Measuring Workplace friendship is adapted from Nielsen et al., (2000). There are 11 questions such as "I had the opportunity to meet my colleague." The scale is a 5-point Rating Scale, where 5 points means agreed very much, and 1 point means least agreed. The measurement has good internal consistency Cronbach's alpha coefficient=0.92.

Measuring Innovative working behavior

Measuring Innovative working behavior is adapted from Chaiyut Kleebbua and Amaraporn Surakarn which was developed from the measurement model of De Jong & Den Hartog (2010). There are 16 questions such as: "He looks for important points that can improve the way of working to be better than the present." The scale is a 5-point Rating Scale, where 5 points means agreed very much up to 1 point which means least agreed. The measurement has good internal consistency. Cronbach's alpha coefficient=0.97.

As these measurements have developed originally from abroad, the researcher has translated its meaning into the Thai language and re-checked the quality of the aforementioned questionnaires from 3 experts for cultural equality in terms of language, content, and concepts.

Data Analysis

In preliminary data analysis, the researcher used descriptive statistics to characterize the distribution of baseline data of the sample, including the mean, standard deviation, and data analysis using multiple regression to meet the objectives of the research.

Results of data analysis

The purpose of this research is to analyze the influence of friendships in workplace, psychological safety, and thriving at work affecting innovative behavior at work, the results of the analysis were divided into 2 parts as follows:

Part1 The results of the basic statistical analysis of all 4 variables found that the observed variables in the model had the mean values, standard deviation, and correlation coefficient as shown in Table 1.

Table 1: Correlation coefficient, mean, and standard deviation of the observed variables in the model. (N=240)

Variable	Psychological safety	Thriving at work	Workplace friendship	Innovative work behavior
Psychological safety	1			
Thriving at work	.75**	1		
Workplace friendship	.66**	.64**	1	
Innovative work behavior	.70**	.78**	.64**	1
Mean	3.76	3.69	3.89	3.75
S.D.	.82	.73	.72	.73

*p<0.05

Part 2 The results of the analysis of the influence of variables on the model when considering the influence of factors affecting innovative work behavior, it is found that all 3 variables had an influence on innovative work behavior. The thriving at work variable was the factor that had the highest influence on innovative work behavior ($\beta=.52$, $p <.05$), followed by psychological safety influences ($\beta=.19$, $p <.05$), and workplace friendships ($\beta= .18$, $p <.05$) and, respectively as it is represented in Table 2.

Table 2: Showing the coefficients of the observed variables.

Variable	Unstandardized Coefficients b(SE)	Standardized Coefficients β	t	P-value
(Constant)	.442 (.163)		2.709*	.007
Psychological safety	.172 (.054)	.192	3.155*	.002
Thriving at work	.529 (.060)	.524	8.783*	.000
Workplace friendship	.184 (.054)	.181	3.419*	.001
$R^2 = .66$, $F = 153.764$, $DF = 239$				

*P< 0.05

Discussion and suggestions

The research findings are consistent with the conceptual framework and research hypothesis. The research also found that the results of the analysis of the causal influence of workplace friendships, psychological safety, and thriving at work that affect innovative work behavior of personnel of a telecommunications and communications company are consistent with empirical data. Some of the interesting issues that the researcher will bring to discuss are as follows.

The role of friendships in workplace for innovative behaviors

From the results of the analysis of the influence of workplace friendship on innovative work behavior, it was found that workplace friendship of personnel has a statistically significant influence on innovative work behavior ($\beta=.18$, $p <.05$). This goes according to the hypothesis. When people have workplace friendships will recognize the opportunity of having workplace friendships. This gives us the opportunity to work together and get to know each other better. (Riordan & Griffeth,1995; Nielsen et al., 2000) When personnel can feel the feeling of having a strong friendship between employees in the organization with mutual trust there will be mutual assistance (Hackman & Lawler,1971; Nielsen et al.,2000). Perception of such feelings may give that person the courage to express their opinions. Express their creativity with ease which is consistent with the research results of Cao&Zhang (2019), Rahmaningtyas et al.,(2022), and Helmya et al., (2020) which studied the influence of workplace friendship on innovative work behavior. The results of the study found that workplace friendships had a direct influence on innovative work behaviors.

The role of psychological safety in innovative work behavior

From the analysis of the influence of psychological safety on innovative work behavior, it is found that the psychological safety of personnel has a statistically significant influence on innovative work behavior ($\beta=.19$, $p <.05$). This goes according to the assumption that when personnel in the company are psychologically safe, the personnel will feel at ease and dare to show their abilities or feelings. Not afraid that it will affect the image or affect the work, or even when facing a constantly changing work environment dare to explore problems in work to find solutions to work problems. This is consistent with the research results of Cao & Zhang (2019), Xu et al.,(2022), and Ali et al., (2022) in studying the influence of psychological safety on innovative work behavior.

The role of thriving at work in innovative work behavior

From the results of the analysis of the influence of thriving at work on innovative work behavior, it is found that thriving at work of personnel statistically significant influence on innovative work behavior ($\beta=.52$, $p <.05$) which has a higher influence value than other variables in the research, thus accepting the hypothesis that when personnel in the company progress in their work Personnel it will have an emotional state of mind that feels alive. Stay active and feel like learning. Improvement may lead to new concepts or work processes in order to work more efficiently consistent with the research of Sidra et al.,(2018), Yanjun et al.,(2019), and Irfan Helmy (2022) in studying the influence of thriving at work on innovative work behavior.

Research recommendations

The recommendations for this research were divided into 2 topics presented as follows:

Suggestions for the use of research results

From the research results, it is found that the variable that plays the most important role in innovative work behavior is thriving at work shows that personnel with an attitude like to always learn things. Continuous self-improvement with a feeling of vigor and vitality. Personnel with these attitudes will tend to encourage more innovative work behaviors which

relevant agencies can take into account in planning organize training to encourage personnel to have more thriving at work to create value and benefit to the organization in creating business competitive advantages. In this research, the results can be classified by age range. in order to organize programs to promote learning to meet more target groups.

Suggestions for further research

This research is a quantitative study. According to the results of the research, there are variables in the causal influence model on workplace friendship. Psychological safety and thriving at work affect innovative work behavior. Each variable had a positive influence on innovative work behavior, but the workplace friendship variable and psychological safety still have relatively little influence on innovative work behavior therefore, further study of other variables that may have an indirect effect should be studied. So that the model can explain more causal influences such as corporate culture, etc.

Conclusion

Personnel in telecommunications and communications organizations have high innovative work behavior provided there are workplace friendships, psychological safety and thriving at work. They are positively correlated with innovative work behaviors. It has also been confirmed that thriving at work is the strongest predictor of innovative work behavior. Therefore, in order to promote innovative work behaviors, it is important to encourage individuals to have an attitude of learning on the job and continue developing themselves with a sense of vitality.

Limitation

This study looked at a limited number of participants from 8 departments of a telecommunication organization in Bangkok, which could not reflect a true perception of the overall attitude and behavior of all telecommunications and communications organizations. Therefore, further research is needed in other contexts to expand the sample further.

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***The Vergence-Accommodation Conflict in Stereoscopic Environments:
A Comparison of Theoretical and Gaze-Based Vergence Angle***

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Abstract

The utilization of 3D displays has become significant in various fields such as vision research, medical imaging, surgical training, scientific visualization, virtual prototyping, and other related applications. In many of these applications, it is necessary for the graphic image to accurately depict the 3D structure of the portrayed object. Unfortunately, the perception of 3D structures in 3D displays is often distorted by the reality depicted in the displays. The effects of these conflicts may affect binocular fusion and may cause visual fatigue. The extensive study of the vergence-accommodation conflict has shed light on the distortion in 3D structure. In this study, the aim was to investigate this phenomenon by comparing the theoretical eye vergence angle with the gaze-based eye vergence angle using eye tracker gaze data. The findings showed that the gaze-based eye vergence angle was largest at the greatest parallax, indicating a correlation between parallax and vergence angle. Furthermore, the results revealed that the accuracy of the eye vergence angle was highest at the nearest parallax, suggesting that virtual objects placed closer to the screen and in the middle generally exhibited improved accuracy. These findings contribute to a better understanding of the vergence-accommodation conflict in stereoscopic environments, providing insights that can inform the design and development of virtual reality systems.

Keywords: Stereoscopic Environment, Parallax, Vergence Angle, Vergence-Accommodation Conflict

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Introduction

Virtual Reality (VR) has emerged as a significant technological advancement, facilitating numerous applications across diverse industries including retail, healthcare, education, entertainment, architecture, tourism, real estate, and more. The proliferation of VR is evident in the growing number of users, with a current estimated global user base of 171 million, and a projected trajectory of rapid growth. Notably, the latest developments in VR technology have introduced stand-alone headsets, immersive experiences, realistic graphics, and interactivity, enhancing the overall quality of VR experiences. Despite advancements in stereoscopic 3D technology, consumer skepticism persists due to concerns about appearance, naturalness, and convenience. Generating high-quality stereoscopic 3D images from two images is challenging due to potential fixation errors in binocular fixation (Zilly et al., 2011). However, prolonged exposure to virtual environments (VEs) can have negative effects on users, resulting in symptoms of visual fatigue. These symptoms may include headaches, dizziness, nausea, eye strain, and diplopia (double vision) (Brunnström et al., 2017; Hua, 2017; Iskander et al., 2019; Kuze & Ukai, 2008). These adverse effects can impact the user experience and limit the practicality and comfort of extended VR sessions.

In 1989, Finke proposed that the mental imageability inherent in humans has the potential to improve their ability to concentrate on objects in their surroundings. However, when objects are displayed on a flat screen in the form of a series of shots, the eye can easily lose track of the object's intended focal point due to unforeseen alterations in location or camera angle. This is due to the fact that changes in the disparity of the object's visual presentation eliminate binocular vision, resulting in diplopia or double vision, which can be disorienting and confusing. The eye's response to changes in depth, which affects its vergence (eye alignment) and accommodation (lens focusing), typically work together to create a clear image. However, when immersed in a virtual environment, a conflict arises between vergence and accommodation, known as vergence-accommodation conflict (VAC) (Hoffman et al., 2008). This conflict occurs when a 3D object is displayed on a flat screen, as a 3D display provides depth cues like shading, size, occlusion, and binocular disparity, while a flat display is associated with focus and blurring cues. This discrepancy between what the eyes perceive and how the lens focuses poses a challenge in the development of stereoscopic 3D technology (Hoffman et al., 2008).

Evaluating the performance of the vergence system on a stereoscopic display is essential, as depth perception relies on the vergence response. Previous research has examined the conflict between vergence and accommodation in the visual system, particularly in the vergence eye movement system, by analyzing changes in vergence and accommodation using techniques such as ocular biomechanics and eye-tracking (Hoffman et al., 2008; Vienne et al., 2014). To compare vergence angles in matching (theoretical) and conflicting (actual) viewing conditions, this study utilized a combination of eye-tracking, 3D stereoscopic displays, and trigonometric computations. Simulating eye-head coordination requires a sophisticated model of eye-head-neck biomechanics, which can be embedded in a virtual reality device, such as the latest version of a head-mounted display (Iskander et al., 2019).

The use of eye trackers enables the collection of eye gaze data, which can be used to calculate eye vergence angle. However, in situations where the eye tracker output does not provide the required information, additional computations may be necessary. Difficulties in perceiving depth or maintaining focus on objects can adversely affect eye-gaze interaction performance, leading to increased visual fatigue and frustration among users. Therefore, our

study specifically investigated the influence of virtual object parallax and position on the vergence response. The findings of this study can serve as a foundation for future research on the vergence-accommodation conflict in virtual environments. By understanding how virtual object parallax and position affect the vergence response, researchers and practitioners can further improve the design and implementation of virtual reality experiences to minimize visual discomfort and optimize user performance.

Method

The study sought to deepen the comprehension of vergence accommodation conflict in stereoscopic environments. The research compared theoretical vergence angles with gaze-based vergence angles to gain insight into this phenomenon. Twelve graduate students (four males and eight females) aged 22 to 31 years old ($M \pm SD = 24.5 \pm 3.0$) from Taiwan Tech participated. All participants had normal or corrected visual acuity and underwent a stereo vision test to confirm their eligibility based on maximum stereo vision. The participants did not receive any form of compensation, such as payment or academic credit, for their participation in this study. Prior to the commencement of the experiment, the participants gave informed consent for their participation in the study, as well as for the publication of their identifiable information or images.

Experiment procedure

In preparation for the experiment, all participants underwent a Tumbling E visual acuity test. Those whose visual acuity was greater than 20/20 were considered to have optimal vision. We also determined the parallax threshold for each participant to assess their maximum stereo vision. After confirming eligibility for adequate 3D vision, participants had their interpupillary distance (IPD) measured and provided written consent. They were thoroughly briefed on the study's objectives and procedures before volunteering for the virtual reality environment. To ensure precise eye gaze data, the Tobii eye tracker was calibrated prior to parallax adjustment. The default calibration setting of Tobii studio, utilizing nine points and medium speed, was employed to capture binocular eye movements of participants (Fig. 1).

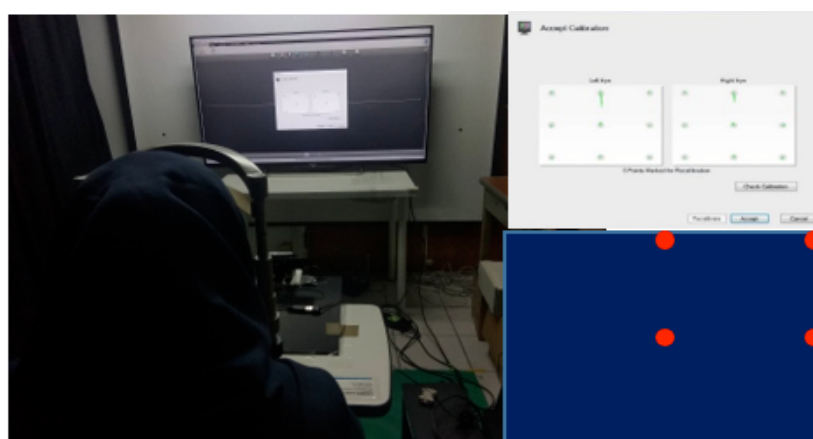


Figure 1. An illustration depicting a participant during the experiment.

Experimental design

During the experiment, participants were presented with stereoscopic targets that were projected in front of a 3D TV. These targets were positioned at various egocentric distances

- J : The distance between S_p and S_m
 O_R : The center of the object on screen plane for right eye
 O_L : The center of the object on screen plane for left eye
 y : The distance between O_R and O_L
 S_p : The orthogonal projection of F_p (the fixation point) on the screen plane
 F_p : The fixation point
 S_R : The projection on-screen plane of the right eye line of gaze in the primary position
 F_R : The projection on-parallax plane of the right eye line of gaze in the primary position
 a_p : Vergence angle
 a_R : Right eye angle
 a_L : Left eye angle

Based on Fig. 2, we know that:

$$a_p = a_L - a_R \quad (1)$$

$$a_p = \text{ArcTan} \left[\frac{\text{PD} + \frac{\left(O_R - \left(S_m + \frac{\text{PD}}{2}\right)\right) \left(d - \frac{dy}{\text{PD} + y}\right)}{d}}{d - \frac{dy}{\text{PD} + y}} \right] - \text{ArcTan} \left[\frac{\left(O_R - \left(S_m + \frac{\text{PD}}{2}\right)\right)}{d} \right] \quad (2)$$

In the present study, eye vergence angle accuracy was another dependent variable considered. The accuracy of the eye vergence angle, which reflects the proximity to the theoretical eye vergence angle, was calculated using a formula previously employed in studies conducted by Dey et al., (2010) and Chiuhsiang JoeLin et al., (2019):

$$\text{Accuracy} = \left(1 - \left| \frac{a_p \text{ gaze based} - a_p \text{ theoretical}}{a_p \text{ theoretical}} \right| \right) \quad (3)$$

Results

The main objective of this study was to compare and contrast the theoretical vergence angle (response vergence) with the gaze-based vergence angle (stimulus-response) as proposed by (Jaschinski, 2001). Additionally, the study aimed to investigate the potential impact of parallax and virtual object position on eye vergence angle. To achieve this, the study manipulated three different parallax levels (on the screen, 30 cm in front of the screen, and 60 cm in front of the screen) and four object positions (middle, middle right, top right, and top). Eye-tracking data was collected and analyzed, and an equation based on trigonometric computation was developed to accurately measure the vergence angle.

The eye movements of the participants were recorded using a Tobii eye-tracker with a framerate of 60 Hz. Each participant generated approximately 4778 gaze data points for 12 different experiment combinations. These data were classified into three types: fixation, saccade, and unclassified. In this study, only the fixation point coordinates were used to calculate the eye vergence angle. The results of the one-way repeated measures ANOVA for

three levels of parallax on each dependent variable, namely eye vergence angle and accuracy, are presented in this section. In cases where significant effects were observed, Tukey's HSD post hoc tests were conducted at a significance level of $p = 0.05$.

Source	<i>F</i> -value	<i>p</i> -value
Parallax	28.501 _(2,22)	.000
Position	.961 _(3,33)	.423
Parallax*Position	.695 _(6,66)	.654

Table 1. A summary of the results from the repeated measures ANOVA for the gaze-based vergence angle is presented, with non-significant interactions omitted from the ANOVA table.

A detailed summary of the results obtained from the repeated measures ANOVA (Table 1) reveals that there is a significant impact of parallax on the gaze-based vergence angle ($F_{(2,22)} = 28.501$, $p < .000$). The average gaze-based vergence angles, based on the eye tracker's gaze point, were 1.800 degrees (SD = 0.109), 3.270 degrees (SD = 1.017), and 4.478 degrees (SD = 2.104) for 0 cm, 30 cm, and 60 cm parallax levels, respectively. In comparison, the theoretical vergence angles were 1.751 degrees (SD = 0.086), 3.173 degrees (SD = 1.275), and 4.005 (SD = 1.646) for 0 cm, 30 cm, and 60 cm parallax levels, respectively. Notably, the gaze-based vergence angle exceeded the theoretical vergence angle for each parallax level, as shown in Fig. 3. All pair-wise differences were statistically significant, as determined by the grouping information obtained from the Tukey method.

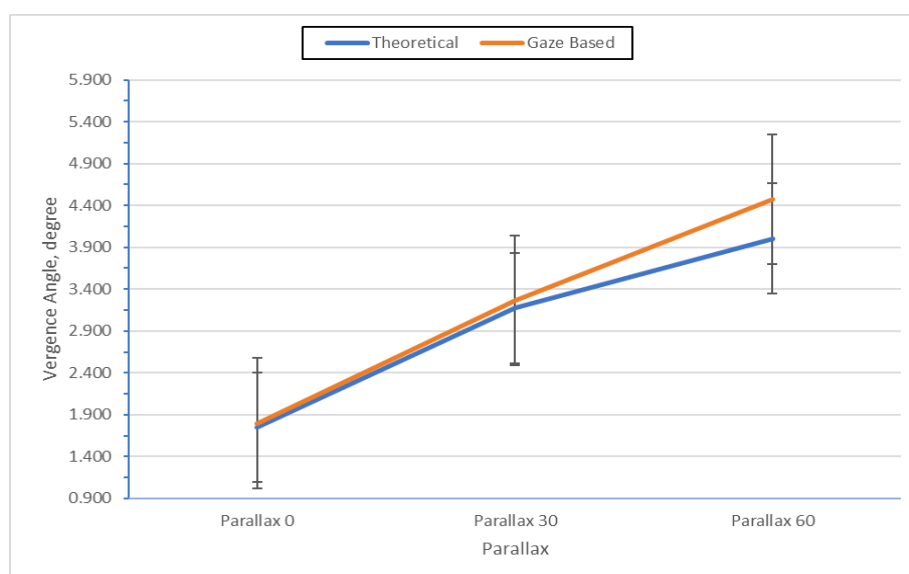


Figure 3. Eye vergence angle compared using gaze point and theoretical data for parallax.

The outcomes of the repeated measures ANOVA (Table 2) revealed significant effects of parallax ($F_{(2,22)} = 36.908$, $p < .000$) on the accuracy of the vergence angle (Fig. 4a). The overall accuracy of the vergence angles varied for different parallax levels, with average accuracies of 0.966 (SD = 0.013), 0.774 (SD = 0.145), and 0.755 (SD = 0.165) for zero, 30 cm, and 60 cm parallax, respectively. Post hoc analysis using Tukey's method identified two groups of independent variables with statistically significant differences in the accuracy of the vergence angle at 30 - 0 ($p = .000$) and 60 - 0 ($p = .000$) parallaxes. Among the four object positions (middle, top middle, middle right, top right), the middle position resulted in the highest accuracy (0.863 ± 0.168) followed by top middle (0.833 ± 0.160), middle right (0.819 ± 0.156), and top right (0.812 ± 0.151) (Fig. 4b).

Source	<i>F</i> -value	<i>p</i> -value
Parallax	36.908 _(2,22)	.000
Position	.993 _(3,33)	.408
Parallax*Position	.319 _(6,66)	.925

Table 2. Summary of repeated measures ANOVA outcomes for accuracy of vergence angle, excluding non-significant interactions from the ANOVA table.

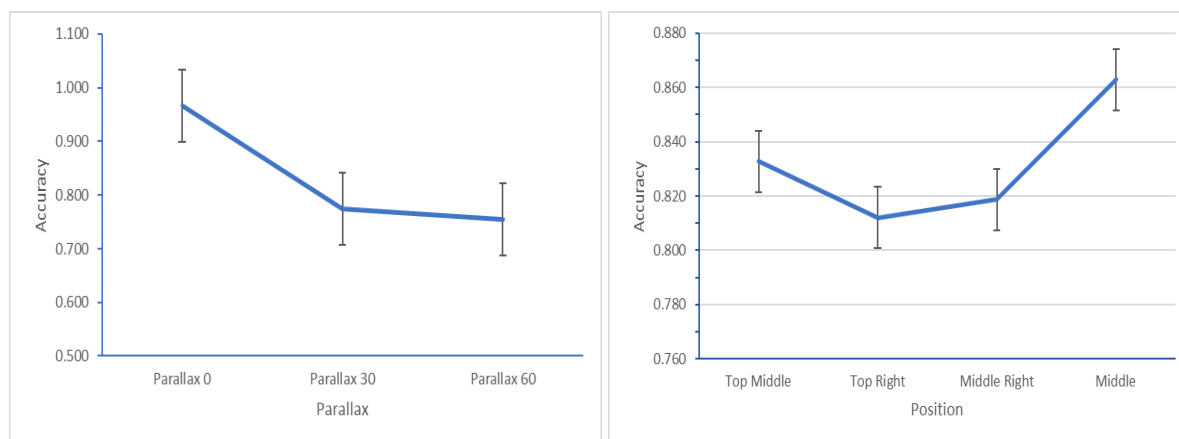


Figure 4. (a) Accuracy concerning parallax, (b) Accuracy with respect to position. The error bar shows the standard error of the mean.

Discussion

The study revealed that the gaze-based vergence angle consistently showed an overestimation compared to the theoretical vergence angle, suggesting an overestimation of convergence. This finding supports the idea of a conflict between vergence and accommodation in virtual 3D environments, where constant accommodation without clear depth cues can create conflicts with the vergence movement induced by simulated depth changes (Hoffman et al., 2008; Vienne et al., 2014). The results of this study are consistent with prior research (Chiuhsiang J.Lin & Woldegiorgis, 2017; Woldegiorgis & Lin, 2017), which found that virtual environments exhibit space compression in all three dimensions, affecting object positions and making virtual objects appear smaller and closer. The study also revealed that participants tended to overestimate the vergence angle, with greater overestimation observed as the parallax increased from 0 to 60 cm. It is noteworthy that the majority of studies on virtual vergence angles have reported overestimation, indicating that this phenomenon is commonly observed in virtual environments (Iskander et al., 2019; Luca et al., 2009).

The results of this study demonstrated a significant association between simulated parallax and eye gaze points, influencing the accuracy of vergence angle measurements. As simulated parallax increased, participants experienced difficulty maintaining gaze fixation on the virtual object, resulting in decreased accuracy and increased visual fatigue. These findings align with previous research that has shown a decrease in vergence angle accuracy as virtual objects approach the eye (Chiuhsiang J.Lin & Woldegiorgis, 2017; Chiuhsiang JoeLin et al., 2019). The observed conflict between vergence and accommodation further reduces accuracy in virtual environments, particularly for objects displayed closer to the participant. This study contributes to the existing body of knowledge in this area and highlights the importance of carefully considering parallax and other factors when designing virtual environments for research and practical applications.

The study observed that the accuracy of vergence angle was highest when the virtual object was positioned near the center of the display. It is hypothesized that systemic effects, such as dextrolevation, which can impact pupil size and eye tracking accuracy, may influence the direction of gaze in virtual environments. Previous research has also shown that judging the vertical position of virtual objects displayed at the bottom of the screen is challenging. In contrast, our findings suggest that virtual objects displayed on the right side of the screen are more affected in the horizontal position compared to objects in the center. This indicates that participants' performance in judging virtual object positions is not uniform and can vary based on the object's location on the screen, which should be considered when designing virtual environments for accurate spatial perception. Additionally, the use of a 3D glasses emitter may interfere with the infrared light of the Tobii eye tracker, which highlights a potential limitation of simultaneous instrument use. Further research is needed to investigate the effects of these factors on eye-tracking accuracy in virtual environments.

The conflict between vergence and accommodation, which can lead to eye strain, was identified as a primary factor in the present study. The findings indicate that excessive eye movements during convergence may not decelerate or stabilize when focusing on a specific parallax, impacting the ocular system. Additionally, when immersion occurs, the median value of the vergence angle increases, suggesting a difference in perception of depth. This inaccurate depth perception makes it challenging to maintain focus on objects at different depths.

Future research should prioritize conducting additional studies to better understand the influence of virtual object height on the resulting vergence angle. Adjusting the trigonometric calculation by incorporating a height variable, representing the height difference between the eyes and objects, could provide more detailed insights into the factors contributing to the vergence-accommodation conflict. Exploring the effects of virtual object height on the ocular system in immersive environments could yield valuable information, with the goal of developing strategies to mitigate or manage visual fatigue.

Conclusion

This study examined how parallax and virtual object position impact the eye vergence angle in a virtual environment. The study used trigonometric computations to measure vergence angles from gaze positions and emphasized the importance of accurately computing vergence angles. The study found that increasing parallax decreased the ability to properly fixate on virtual object surfaces, significantly affecting gaze-based viewing angles. The largest gaze-based vergence angle was found with a 60 parallax. The study found that parallax significantly impacted the accuracy of vergence angle, with reduced accuracy when virtual objects were closer to the eyes. This information could be used by VR developers to optimize parallax and target locations to minimize vergence-accommodation conflict. Further research could investigate the influence of virtual object height on vergence angle, providing additional insights for managing the conflict between vergence and accommodation.

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***The Social Roots of Suicide: Theorizing How to Reduce Risk Factors of Depression
Among University Students***

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Abstract

The importance of mental health has become an increasingly popular topic of discussion in South Korea. According to the Organization for Economic Co-operation and Development (OECD), South Korea ranks first in suicide rates as of 2020 at a staggering rate of 24.1 deaths per 100,000 people. College students in South Korea are especially vulnerable, with suicide rates having increased by 60% over the past six years. Since depression is a significant risk factor when predicting suicidal ideation, it is important to look at the factors that put college-age students at risk for depression. Through an examination of existing literature, it has been identified that stress related to future employment is a large contributor to depression in Korean undergraduate students. Using evidence-based methods of reducing stress related to employment, we have created a hypothetical intervention based on the Social Cognitive Theory of Learning. This intervention proposes a series of workshops combining the traditional skills needed to obtain employment with the mental health modalities of Dialectical Behavior Therapy (DBT) to aid in emotion and stress regulation. In addition, career advisors should utilize DBT strategies to cultivate emotional coping skills in students. This hypothetical intervention should serve as a potentially novel method to address depression in college-age students. We expect that if university career centers implement DBT in their services and coaching, then there will be a reduction in stress related to the job searching process, which in theory has the potential to reduce depression rates.

Keywords: Mental Health, Suicide Rates, Depression, DBT, SCCT, South Korea

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INTRODUCTION

Suicide is one of the leading causes of death among young adults in South Korea. Yoon (2022) presented that the suicide rate of people aged 20-29 accounted for 56.8% of deaths in that age group (Statista). Because depression and suicide are closely linked (Koo, 2018), it is necessary to investigate the risk factors related to depression, specifically in college-age students. South Korean college students have been identified as having a higher risk of depression and stress compared to their non-student, same-age counterparts (Yang et al., 2012). The Korean Council for University Education conducted a national survey in 2018 on college students' mental health conditions. The survey showed that 72.5% of Korean college students were at-risk for anxiety disorder symptoms, 43.2% had experienced depression symptoms, and 14.3% were at elevated risk of suicidal onset (Lee & Shin, 2022). Because unemployment is known to negatively affect mental health, these high rates can partially be explained by Korea's high young adult (aged 15-29) unemployment rates and the stress that comes with seeking employment (Lim et al., 2018; Ha & Park, 2022). According to the Ministry of Science, ICT, and Future Planning's report, youth unemployment rates in 2017 were estimated to be as high as 34% (Kim et al., 2022). To combat the impact of unemployment on mental health, Ha and Park (2022) suggested universities play a larger role via the development of programs aimed at assisting students in finding jobs post-graduation (Ha & Park, 2022).

This recommendation has been mirrored in several studies, which have also identified the need for an interconnected career counseling and mental health approach (Pace & Quinn, 2000; Tang et al., 2021; Kim, 2022). This recommendation, however, fails to adequately take attitudes and beliefs on mental health into account. Studies show that Korean students may be more hesitant to seek out mental health resources because of stigma (Kim & Park, 2014; Nam & Lee, 2015). These combined factors indicate the need for a culturally sensitive, integrated intervention of career services and mental health modalities to tackle the issue of depression in Korean students. In addition, creating a program that focuses on developing students' self-efficacy may help to build self-identity which has been reported to increase career decision-making skills. Numerous evidence-based models and mental health modalities exist to address the separate issues of unemployment and depression; however, few interventions utilize these in conjunction, particularly for Korean university students. Through research, the Social Cognitive Career Theory (SCCT), (which is based on the Social Cognitive Theory (SCT)), and Dialectical Behavior Therapy (DBT) have been identified as suitable frameworks that can be used to create a cohesive, long-term intervention to increase students' job preparedness as well as their emotional coping skills. With this in mind, this paper explores the creation of a hypothetical intervention utilizing aspects of SCCT and DBT to increase Korean undergraduate students' self-efficacy related to the job search process and therefore, theoretically, reduce depression and suicide rates in this population.

LITERATURE REVIEW

1.0 Introduction

The purpose of this literature review is to explore the risk factors associated with depression in Korea, gain a better understanding of the current practices of Korean career centers, and compile known strategies to address the joint issues of unemployment and depression in undergraduate students. Based on the following review of literature, we have developed a hypothetical intervention for Korean undergraduate students, a proposal to prepare them for

the life challenges that may lead to depression. Before discussing these factors, it is important to define key terminology and frameworks related to our paper.

1.1 Key Terminology

Social Cognitive Theory (SCT)

The Social Cognitive Theory (SCT) was developed by Albert Bandura in the 1960s and is a landmark model used to understand human motivation and action. The theory outlines what factors influence an individual's behavior (Luszczynska & Schwarzer, 2015). Key components of SCT include self-efficacy, reciprocal determinism, behavioral capability, and observational learning. Self-efficacy refers to the belief in one's ability to perform a desired behavior. Self-efficacy is a key theme throughout this paper and will be frequently referred to in the literature review as well as the intervention. Reciprocal determinism refers to the reciprocal relationship between an individual, their environment, and behavior. Behavioral capability is the actual skills and abilities an individual has to perform a behavior. Lastly, observational learning refers to the social learning component where an individual learns through observation of others (Riley et al., 2016).

Social Cognitive Career Theory (SCCT)

SCCT is a model based on SCT that incorporates SCT's self-efficacy concept with other career development theories to provide a comprehensive understanding of how individuals develop career interests and goals and make career-related decisions (Lent et al., 2002). An individual's background and learning experiences all contribute to their self-efficacy (Kelly, 2009). Self-efficacy is thought to influence the beliefs and expectations an individual has over their career interests which inform their career goals. These goals then help to guide an individual's actions which then lead to actionable items related to their career interests. Formation and completion of career goals can provide a feedback loop for self-efficacy and outcome expectations.

Dialectical Behavior Theory (DBT)

Dialectical Behavior Therapy (DBT) is an evidence-based therapeutic modality that has been utilized to address mental health issues such as Borderline Personality Disorder, depression, and suicidal ideation. DBT was developed by Marsha Linehan in the 1970s and incorporates aspects of Albert Bandura's behavioral and social learning theories (Linehan & Wilks, 2015). DBT is a heavily skill-based therapy that is broken into four modules: mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance. Therapy sessions are conducted in a group setting and participants are encouraged to continue building behavioral capabilities outside of class through the completion of skill-based homework.

2.0 Risk Factors

Depression and suicidal ideation are considered major risk factors leading to suicide. Evaluating risk factors for depression as they pertain to Korean university students are important because risk factors point to potential points of intervention. Risk factors for Korean university students can be divided into three categories: school-related, cultural (family), and individual factors.

2.1 School-Related Factors

In South Korea, the education system demands excessive studies to prepare students for college entrance exams (Lee et al., 2022). Students often concentrate on doing well for these entrance exams and often forgo considering career interests. For this reason, school and the education system play a significant factor in the lack of self-identity. Due to the rigorous academic pressure Korean college students deal with from an early age, students have little preparation for future career planning, career decision-making, or the career preparation process in general. The lack of career preparation has been associated with difficulties exploring careers, setting goals, and executing actions to prepare for careers (Lee et al., 2022). Anxiety over the preparation process and failure to cope with these difficulties have led to psychological and social difficulties like depression (Kim et al., 2022).

In addition, high schools often have organically linked systems between schools, homes, and communities for mental health services. However, this system becomes disconnected once a student enters college increasing their risk for mental health disorders which may exacerbate a number of risk factors for depression (Han & Lee, 2021). Among school-based risk factors, stress related to employment stands out prominently (Han & Lee 2021; Kim et al., 2022). Several contributing reasons include high unemployment, a competitive job market, and economic polarization (Han & Lee, 2021). Having invested in their education, Korean students fear that they will not be able to find quality employment. Without consistent interaction and guidance from the career center, students may feel ill-equipped to manage feelings of stress and depression resulting from the job searching process.

2.2 Cultural Factors

Self-perception of students' own mental health and their willingness to seek treatment are also influenced by cultural risk factors. While there are shifting cultural views, mental health disorders like depression are still stigmatized. According to the Korean Statistics Research Institute, stigma has indirectly prevented mental health services from being widely implemented in Korea (Mun & Ahn, 2020). Addressing mental health before they leave university may be an effective way of getting support while in school. Public perception plays a significant role in developing an individual's help-seeking behaviors. In Korea, they have shown avoidant and anxious behaviors that contribute to their fear of seeking care (Choi et al., 2013; Lee & Shin, 2022). These fears stem from the risk of damaging their reputation. A study by Bathje et al. (2014) found that students who don't seek care avoid it to keep their "face" aka prevent their reputation from being tainted. The unknown risks associated with getting help for their mental health are a reason for the prevalence of these avoidant behaviors (Mun & Ahn, 2020; Nam & Lee 2015). Additionally, this stigma has elevated these avoidant behaviors which have made suicide and mood-based disorders more acceptable among university students (Kim & Park, 2014; Nam & Lee, 2015). As a result, this may prevent them from seeking out care. To address depression, interventions must account for culture-specific factors that help increase feelings of self-efficacy in seeking out mental health services (Kwak & Ickovics, 2019; Ko et al, 2016; Lee et al, 2022).

2.3 Individual Risk Factors

As a result of academic, cultural, and family stressors, students from an early age experience excess anxiety which contributes to low self-esteem and increased negative self-perception. These factors can reduce an individual's self-efficacy. Having low self-efficacy can further

increase the risk of depression by creating self-doubt about one's ability to cope with daily stress (Han & Lee, 2021; Nam & Lee, 2015). Individuals with negative views of mental health services are also less likely to seek them out. These individual factors make it difficult for people to manage the growing anxiety they feel due to other outside influences (school-related and cultural influences). Therefore, building programs in university systems that help students establish their own personal identities and self-efficacy will help students develop as individuals who are able to make stronger career decisions and face fewer career decision difficulties (Lee et al., 2022).

3.0 Known Strategies

Several career interventions exist to prepare students for the job-seeking process and have been found to be highly efficacious in increasing employment rates and building self-efficacy. A 2014 meta-analysis conducted by Liu et al. (2014) found that participation in job interventions increased the odds of employment by 2.67 over those who did not participate. While the structure and delivery of the interventions varied widely, interventions that focused on job search skills, improved self-efficacy, goal-setting, and social support were shown to be more effective than interventions that did not include those components (Liu et al., 2014). Furthermore, a 2019 study completed by Palaez-Fernandez et al. highlighted the connection between emotional intelligence, core self-evaluations, and psychological distress in the unemployed, finding that low levels of emotional intelligence and core self-evaluations were correlated with increased levels of depression, stress, and anxiety. Because emotional intelligence and self-evaluations are directly linked to the regulation of emotions (such as stress and anxiety) and the ability to build self-efficacy and self-esteem, it can be hypothesized that interventions including a focus in this area may increase the effectiveness of the other intervention components (i.e. job search skills or self-presentation).

A number of studies and interventions have evaluated the efficacy of incorporating aspects of mental health modalities in the job search process. One landmark intervention (entitled the JOBS intervention) was conducted in 1989 by Caplan et al. In this study, the researchers conducted a randomized field experiment primarily focused on building self-efficacy in relation to job-searching skills. Their intervention included building the skills that are required to “anticipate situations where setbacks or relapses are likely, generate alternative methods for overcoming the dysfunctional responses to setbacks, and acquire the skills needed to cope with setbacks (Caplan et al., 1989).” Initial results of the study indicated that those who received the intervention saw higher rates of re-employment and increased motivation as compared to those who were in the control group (Caplan et al., 1989). Later evaluations of the intervention found that those in the experimental group obtained better-paying and better-quality jobs, as well as identifying reductions in the incidence and prevalence of severe depressive episodes among those labeled as high-risk (Vinokur et al., 1991; Price et al., 1992). Additionally, the JOBS intervention was used as a model in Finland, where it was also successful at increasing employment and reducing psychological distress, providing further evidence for its efficacy (Vuori et al., 2002).

Similar interventions have been successful when implemented with Korean university students, providing evidence that interventions focused on career development can be generalized to our population of interest. A 2010 study conducted by Lim et al. utilized Cognitive Behavioral Therapy (CBT) to improve the career attitude, maturity, and self-esteem of nursing students at a Korean university. The intervention utilized CBT-based modalities such as the identification of irrational beliefs, monitoring of thoughts and feelings,

and the planning of new behaviors, which resulted in improved self-esteem and career attitude maturity among the nursing students. A 2022 experimental study conducted by Kim found that an online career adaptability program targeted toward Korean undergraduate students successfully increased the career adaptability of those in the experiment group. The intervention consisted of three domains: knowledge and recognition of self and work environment, self-directed coping related to career behavior, and environmental interaction for career decisions and adaptation. The workshop activities included a mix of job-search-related skills (e.g. career skills exploration, learning how to network), as well as skills targeted towards emotion regulation (e.g. coping strategies and crisis skills). The results of the study indicated that those in the experimental group had increased abilities to cope with career-choice crises, coordinate career goals, cope with environmental stressors, and utilize social resources (Kim, 2022). The findings of these studies provide evidence for the efficacy of career interventions incorporating mental health modalities with Korean university students.

Common themes among the interventions reviewed include the method of delivery, emphasis on skill-based learning, and the incorporation of a social aspect. The interventions took place through a limited series of workshops that were led by trained facilitators providing structure and accountability. The development of self-efficacy was emphasized through the teaching and practicing of pre-defined skills. Social support and vicarious learning were encouraged via group settings. The success of these interventions indicates that a similarly structured intervention may be effective with Korean university students.

Interestingly, Lim et al. and Kim both highlighted the need for a broader range of career intervention programs for university students. Lim et al., whose study focused strictly on nursing majors, suggested that career interventions should begin at an earlier stage of a student's life cycle. They discussed the importance of developing continuous career consulting and CBT programs that would span the students' tenure (Lim et al., 2010). Kim, whose study focused on first-year undergraduate students, identified the need for customized interventions based on a student's major and education level (Kim, 2022). These findings suggest that a more comprehensive intervention, spanning the lifecycle of the student may be more advantageous.

3.1 Career Development Frameworks

SCCT will be the primary career development framework for this paper. This framework can be broken down into the Interest Model, Choice Model, and Performance Model. According to Lent et al. (1994), the Interest Model hypothesizes that self-efficacy beliefs are predictive of outcome expectations, and these then inform differing career interests (Lent & Brown, 2019). When exposed to different activities, individuals will receive positive or negative reinforcement. These reinforcements, in turn, influence the individual's confidence in their ability to perform these activities, creating interest. Therefore, self-efficacy and outcome expectations help to inform interest.

The Choice Model takes the interests developed in the Interest Model and maintains that these interests heavily influence the goals people develop for their careers (Lent & Brown, 2019). When goals are completed successfully, there is a positive feedback loop for self-efficacy and outcome expectations. Lastly, the Performance Model hypothesizes that the ability and quality of past performance further predict future performance and persistence. Since the introduction of this model, there is a general consensus of support for the

hypotheses generated by SCCT for self-efficacy and outcome expectations (Lent & Brown, 2019).

SCCT and its associated models have been used to build better career development programs and to identify points of intervention during the transition from school to work. For example, a study by Lee et al. (2022) applied SCCT to Korean university students to analyze the relationship between career decision-making self-efficacy, career preparation behavior, and career decision difficulties within South Korea's cultural contexts. The results showed that there was a positive relationship between students who participated in career preparation activities and their career-making self-efficacy skills. Additionally, students who had poor self-efficacy had greater difficulty in making career-related decisions. These correlations may explain why Korean students struggle to choose careers and have higher rates of failure during career preparation processes (Lee et al., 2022). Lee et al. recommended career centers expand their services to include strategies that help develop a student's career identity and self-efficacy.

This study was also able to show that even if services for career placement and career preparedness are available, Korean students may underutilize them because of low self-efficacy. In addition, depression is also known to be a barrier to developing one's self-efficacy. Considering that Korean career centers lack exploratory and self-efficacy-building resources, interventions that can build a student's identity, address depression, and teach coping strategies early on will be crucial for future career centers.

SCCT has been excellent in identifying gaps in career development in high school students, university students, and during transitions from high school to the work environment. Using SCCT as a framework might guide a comprehensive career development intervention for Korean college students as well.

3.2 Depression Frameworks and Evidence-Based Practices

Among the many evidence-based treatments available for depression, DBT was identified as an effective method for undergraduate students because of its overall efficacy, ease of implementation in groups, and proven effectiveness with university and non-clinical populations. DBT was originally designed to treat Borderline Personality Disorder, but it has since shown success with non-clinical populations (Narimani et al., 2016; Üstündağ-Budak et al., 2019), as well as with university students (Pistorello et al., 2012; Uliaszek et al., 2016; Üstündağ-Budak et al., 2019). A 2019 study conducted in Turkey evaluated if the use of DBT with non-clinical university students could be a successful preventative or resilience-enhancing intervention (Üstündağ-Budak et al., 2019). Results of the study indicated that students enrolled in the intervention experienced improved well-being, with many students expressing the usefulness of the skills in their everyday lives. Based on these findings, the authors of the study suggested that DBT-based programs be implemented in universities in an effort to equip students with lifelong skills (Üstündağ-Budak et al., 2019).

DBT is focused on building a "life worth living" and skills are broken into four modules: mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance. Sessions are generally conducted in group settings, providing the opportunity for observational learning. Each session focuses on a new skill and students are encouraged to complete homework outside of sessions. This allows clients the opportunity to build their self-efficacy in real-world settings. Clients are also provided detailed handouts and worksheets which

provide helpful guidance while working through the skills, further building behavioral capabilities.

Because of DBT's modular format, practitioners can easily focus on the skills that are most relevant to their clients. Linehan has even advocated for this approach, suggesting the inclusion or withdrawal of aspects of protocols based on the disorder (Linehan & Wilks, 2015). This flexibility makes DBT an ideal modality for career centers, as facilitators can focus on the skills that will be most effective in the job market. Furthermore, the DBT core modules (mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance) align with the needs of undergraduate students, particularly those who are searching for employment. Building these skills should, theoretically, increase students' ability to cope with stressors related to school and employment.

3.3 How SCCT and DBT Fill the Gap

A number of studies have identified the need for an interconnected career counseling and mental health approach (Pace & Quinn, 2000; Multon et al., 2001; Hinkelman & Luzzo, 2007; Lim et al., 2010; Üstündağ-Budak et al., 2019; Tang et al., 2021; Kim, 2022). While many studies piloted aspects of a combined intervention, our review of the literature did not identify any fully integrated (mental health and career counseling), long-term approaches that are generalizable to the Korean undergraduate population. Because students have varying needs across their university experience, it is important to incorporate levels for advancement within the program. Since Korean students are less likely to seek mental health support, distress-coping, and emotional regulation skills should be integrated into skills-based workshops, making them more accessible. Students may be more willing to engage with a service that incorporates more than just mental health. Finally, SCCT and DBT suggest emphasis be placed on building self-efficacy in order to increase competency in both the emotional and career-related realms. Based on this, we hypothesize that a long-term intervention utilizing a combination of SCCT and DBT will be a beneficial way to address these gaps.

4.0 Hypothetical Intervention

As identified in the literature review, Korean university students offer an opportunity for a combined intervention that addresses the development of job-searching skills, as well as emotion regulation and stress management. This hypothetical intervention proposes the use of Social Cognitive Career Theory (SCCT) in combination with Dialectical Behavior Theory (DBT) to meet these needs. By combining these two modalities, students will develop skills such as resume building and interviewing while also enhancing their ability to manage the stressful emotions related to the job-search process.

4.1 Intervention Structure

The proposed intervention consists of a three-year, tiered certification program, each year focusing on different components of SCCT and DBT. The intervention is designed to be managed by the career center, with guidance provided by experts trained in DBT. The intervention is intended to be delivered through a series of regular workshops given over three years. Utilizing SCCT as the framework, Year One will focus on the Interest Model, Year Two will focus on the Choice Model, and Year Three will build off years prior, focusing on the Performance Model. DBT components will be integrated similarly, with Year

One focusing on mindfulness, Year Two focusing on emotion regulation and distress tolerance, and Year Three focusing on interpersonal effectiveness.

Students will not be required to complete all three years; however, they will receive differentiated certificates based on the number of years they choose to complete. To motivate students to engage in the program, certification levels will be indicated on their transcript and can be used on resumes to showcase a high level of skill and dedication. To meet certification requirements, students will complete a specific set of deliverables (Table 1). The 3-year intervention is explained in more detail in the following sections.

4.2 Year One - The Interest Model and Mindfulness

Year One seeks to accomplish two goals: 1) to help students develop a deeper understanding of their interests and 2) how these can apply to potential career paths. Additionally, students will learn to become more aware of their emotions and recognize patterns of emotional activity.

SCCT - The Interest Model focuses on developing career interests via exposure to varying activities. By identifying areas of strength, one can build self-efficacy, which then creates interest (Lent & Brown, 2019). Workshops will focus on helping students explore their strengths, weaknesses, and overall interests. Students will identify their career expectations, providing a foundation for identifying jobs of interest. Students will be encouraged to explore available classes and majors and gain first-hand exposure to the job market through informational interviews and job shadowing. Upon completion of the first year, students should have a basic understanding of potential career paths they may be interested in.

DBT - Year One will serve as an introduction to the concept of DBT. Students will be introduced to the components of mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness; however, special emphasis will be placed on mindfulness. In DBT, mindfulness is considered a core skill and is a critical first step in developing emotional awareness (Linehan & Wilks, 2015). Students will be taught DBT mindfulness skills, such as Wise Mind and Observe and Describe, and will be encouraged to practice these skills in connection with their career discovery process. Self-efficacy and observational learning will be enforced through the workshop setting. At the end of Year One, students should be able to recognize feelings of activation and employ basic strategies to regulate these feelings.

4.3 Year Two - Choice Model, Emotion Regulation, and Distress Tolerance

Year Two focuses on three goals: 1) the development of interests identified in Year One, 2) the creation of career-related goals, and 3) an associated action plan. Throughout Year Two, students will learn to recognize and regulate feelings of frustration that may arise during the career planning process.

SCCT - Expanding on Year One, students will begin to develop career goals and create an action plan for achieving them. *SCCT*'s Choice Model posits that career goals are based on an individual's interests, self-efficacy, and outcome expectations (Lent & Brown, 2019). Lent and Brown (2019) also suggest that an individual's support systems and barriers impact career decision-making. As such, workshops in Year Two will focus on career-oriented goal setting and identifying barriers that may inhibit success. Students will learn how to incorporate

problem-identification and solving skills into their career action plans. Upon completing Year Two, students should feel they have a secure yet flexible career action plan.

DBT - Similar to Year One, Year Two will incorporate aspects from all DBT components; with an emphasis placed on emotion regulation and distress tolerance. As students move through the SCCT Choice Model and begin to identify barriers related to career development, feelings of frustration and distress may arise. In order to successfully implement a career action plan, students must possess the skills to regulate these feelings. Emotion regulation focuses on recognizing vulnerability to specific triggers and learning how to downregulate the emotional response (Linehan & Wilks, 2015). Distress tolerance focuses on developing a repository of self-soothing techniques that can be employed when traditional downregulation is unsuccessful (Linehan & Wilks, 2015). As in Year One, skills will be taught in conjunction with the career modules, and students will be encouraged to apply these skills in their career development process. At the end of Year Two, students should be able to identify activation patterns related to specific cues and successfully employ skills to downregulate these emotions.

4.4 Year Three - Performance Model and Interpersonal Effectiveness

Year Three focuses on the end goal: 1) for students to gain confidence in their ability to navigate the job search and application process. Students will gain the interpersonal skills required to advocate for themselves as they apply and interview for jobs.

SCCT - SCCT's Performance Model states that the achievement of performance goals is based on ability and persistence, both of which are heavily influenced by self-efficacy (Lent & Brown, 2019). As such, Year Three will focus on building an individual's self-efficacy related to their career aspirations. Workshops will become more focused on application and interview skills further buoying self-efficacy. At the end of Year Three, students should feel equipped with the skills needed to enter the job market.

DBT - Year Three will place an emphasis on interpersonal effectiveness. As students begin to apply and interview for internships and jobs, communicating effectively becomes critical. Interpersonal effectiveness focuses on building skills related to assertive yet respectful communication (Linehan & Wilks, 2015). Students will learn how to identify their needs and boundaries and clearly communicate them in a healthy manner, as well as how to evaluate situations that may not have gone as planned. Students will be encouraged to practice these skills in conjunction with other DBT skills from the mindfulness, distress tolerance, and emotion regulation modules. The opportunity to develop self-efficacy in these skills will be provided through mentoring responsibilities and mock interviews. At the end of Year Three, students should be able to communicate effectively and advocate for themselves as they navigate the job market.

5.0 Discussion: An Integrated Intervention and Conclusion

While many interventions exist to target career preparedness and depression separately, few attempt to tackle the interconnected nature of the two. Failing to address the overwhelming nature of emotions related to career uncertainty, the application process, and rejection is a notable limitation in many intervention designs. The incorporation of DBT into the intervention serves as a novel approach to help students regulate these emotions. Furthermore, DBT skills are highly applicable to everyday life, and students will likely feel

more equipped to handle non-career-related stressors. A suggested next step would be to pilot this intervention at Korean University, testing its acceptability and effectiveness.

This hypothetical intervention aims to empower students with feelings of confidence and control as they navigate their post-graduation job searches. We hypothesize that through this intervention, rates of both post-graduation employment and depression will be improved, resulting in happier and more productive college-aged students at lower risk for post-graduation suicide. In light of South Korea's high suicide rates, it is evident that an intervention that tangibly addresses risk factors that contribute to high rates of depression and depression-related suicide promise to make this intervention an effective method of reducing suicide attempts among university students suffering from depression.

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Appendix

Table 1.
Framework for Certificate Program

Year	Goals & Focus Area	Example Workshop	Deliverables
Year 1 (Interests Model)	1. Develop deeper understanding of interests & how these apply to potential career paths 2. Begin to explore emotional patterns & develop understanding of DBT components 3. Mindfulness skills emphasized	1. Use Myers-Briggs test to determine personality types and explore career paths that may be a good fit 2. Utilize test to also explore how it relates to different stressors and emotions to explore concepts of Wise Mind, Emotional Mind, & Rational Mind	1. Entrance interview w/ career center 2. One informational interview w/ job of interest 3. Reflection paper from informational interview
Year 2 (Choice Model)	1. Develop attainable goals related to interest areas from Year 1 2. Develop relationships w/ mentors & introduce skills needed to successfully obtain a job 3. Develop deeper understanding of DBT components, emphasis on emotion regulation & distress tolerance 4. Learn how to apply skills in stressful situations	1. Students practice interview skills and evaluate their performance & how to improve skills through utilization of DBT Chain Analysis skills 2. Students learn importance of goal setting & organization through the DBT Goal Setting skill	1. Meet w/ mentor at least three times 2. Complete mock interview 3. Have resume & cover letter
Year 3 (Performance Model)	1. Develop expertise in skills needed to obtain a job, & put into practice through internships & peer mentorship 2. Create plan of action for post-	Learn how to handle salary conversations using interpersonal effectiveness skills of <i>DEAR MAN</i> & <i>Observing & Describing Interpersonal</i>	1. Have internship (either external, w/ a faculty member, or as a peer mentor in the career center program) 2. Final portfolio containing

	graduation 3.Exhibit high competency of all DBT components 4.Interpersonal effectiveness skills are emphasized	<i>Situations</i> are utilized to help students articulate their needs	deliverables from throughout certification program 3.Final mock interview
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Note. This is a hypothetical framework that can be used to design a certificate program that targets early intervention starting ideally at a student's first year in college. Students receive recognition on their transcript upon completion of each year.

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Transpersonal Creative Writing Assistance as a Solution to Improve the Psychological Independence Among Santriwati in Indonesia

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Abstract

One of the crucial criteria for Islamic boarding schools in understanding the dynamics of psychological independence among *santriwati* (female students) is the presence of companions who can help them recognize their abilities and self-awareness in every moment they experience, and thus making them master the transpersonal field. This study focuses on achieving the quality of independence among *santriwati* as a result of transpersonal assistance using creative writing media so that each *santriwati* will be able to independently overcome the problems they face while living at Islamic boarding schools. The research method is a qualitative method with a Participatory Action Research design. There are five stages of PAR used in this study based on Gerald Susman's PAR Model, comprising diagnosis, action planning, taking action, evaluation, and specifying learning. The data were obtained from preliminary study data (open questionnaires), interviews, and documentation in the form of creative writing in the Mentoring Module which became the main data source. The transpersonal techniques used in the assistance consist of simple meditation, interactive reflection, and creative writing. The data analysis techniques are composed of data reduction, data display, and conclusion drawing. The results of this study confirm a conceptual finding of the dynamics of psychological independence of *santriwati*, comprising the increase in their knowledge on the cognitive aspect, sensitivity sharpening on the emotional aspect, and strength building on the conational aspect.

Keywords: Psychological Independence, Santriwati, Transpersonal Creative Writing Assistance

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Introduction

It had been admittedly accepted that the independence of *santriwati* was obviously reflected in their daily activities at Islamic boarding school. There were some depictions which can be comprehend as the specimens, such as *santriwati* are doing laundry on their own, cleaning their own cupboards and beds, preparing their own school needs, managing their own pocket money or finances, making their own foods and drinks, and the other physical activities. It could be assumed that *santriwati* had done those daily activities independently without needing and asking help from others. The independence of *santriwati* in carrying out the personal responsibility for some physical activities had been being inversely proportional to the psychological independence of those *santriwati*, which was limited by the "dawuh" statement and order of the caregivers at Islamic boarding school. This one-way relationship between the *santriwati* and the Islamic boarding school administrators had left a space for psychological independence that was not yet completely free. The psychological independence in question had become the autonomous ability of *santriwati* in carrying out those activities at Islamic boarding schools, which related to their psychological aspects. Problems were become ordinary thing which are encountered every day for each *santriwati* at Islamic boarding school.

The ability of *santriwati* to solve any problems they had been faced independently and creatively emersely determined the comfort of *santriwati* both in learning process, and in their staying process on viability at Islamic boarding schools. Islamic boarding school data even showed that during the past 6 months (October 2021-March 2022), there were found as much as 57 numbers of *santriwati* who had been transferred or left the Islamic boarding school for some reasons, such as they could not find the comfortable living anymore at the Islamic boarding school. This inconvenience was not caused by demands which require those *santriwati* to be physically independent, however, the inconvenience of *santriwati* was triggered by psychological issues which had not been handled properly. Every issue which had not been handled properly, later could become a trigger of the students' inconvenience at Islamic boarding schools, and the inconvenience will interfere the students' learning process.

As the results of the open questionnaire which had been conducted before, it was explained that among the things which made the *santriwati* facing the inconvenience due to the conflicts with friends, lose some things, face the difficulty in adjusting to the Islamic boarding school activities, being remembered with the parents and family at home, Islamic boarding school facilities which are not distributed equally among all students, certain friends, have to be in queue habit, the density of Islamic boarding school activities, arbitrary seniors, being thought about their parents' burden, and the difficulty of memorizing the Quran. Those answers had been obtained by the authors from 40 numbers of *santriwati* as the participants which have selected randomly. As a result, some of the *santriwati* who did not recognize their abilities, Hotifah & Setyowati (2015), then argued that most of the problems which had been experienced by the *santriwati* were a mismatch between the factors of the teenager *santriwati*' progress tasks and the rules which applied at the Islamic boarding school. Adolescence period was a period when all the individuals begin to understand and develop their social lives. The findings of Oda (2021), believe that coaching-based support from significant others can effectively help adolescents build their self-esteem and can promote their psychological independence. In the same line, Hirano (2022), suggest that older adults can maintain psychological independence using their existing characteristics, such as hobbies and life skills that are useful to others in the community.

Likewise, with *santriwati* at Nurul Quran Islamic Boarding School, East Java, Indonesia, each of them had had various hobbies. In the following, the author had presented various kinds of hobbies from 50 numbers of *santriwati* who were recorded during the distribution of questionnaires II; 62% in literacy (writing and reading), 12% in memorizing the Quran, 8% in culinary, 6% in swimming, 4% in praying, 4% in cooking, and 4% in day dreaming. The limitations of movement and facilities, as well as the density of activities in Islamic boarding school, had make most of those hobbies were impossible to be done. However, there was one hobby which almost all *santriwati* had so far, namely the literacy hobby which consists of reading and writing activities. Writing, drawing, or any other expressive activities could be one of the creative mediators for those *santriwati* to express their emotions or whatever which are inside the hearts of *santriwati*. So that, those *santriwati* could make their favorite activities or hobbies as a shade for them to express their inner energy expressively. Writing was also a therapeutic technique in transpersonal psychology which could help the clients feel better or express his feelings and complaints when he was facing the problems in writing (Firman, 2011). This was in line with the statement of the *santriwati* which said that writing had become a medium of expression which recognized by the *santriwati* as a problem solver to make them feel better, so that writing became a creative medium in assisting those *santriwati* and the transpersonal psychology had become a technique for assisting those *santriwati*.

The author had been assumed that the series of activities in this Participatory Action Research study could increase the achievement of those *santriwati*' psychological independence at Nurul Quran Islamic Boarding School, so that they could give the positive impact on the findings of research problems which the authors had conducted. If the previously problems were disturbing things, then by the recognition of the transpersonal side which those *santriwati* have, problems are no longer identified as something that is suppressing, but problems had become one of the ways of God and the universe to communicate with them. Likewise with the potential literacy which had been possessed by *santriwati*, the literacy results were not only limited to write some short stories, outpourings, poetry, or other prose. However, writing was a potential literacy which had the opportunity to be developed as an expressive, creative, and solutive. In the end, this series of research finally could become a reference or model of solutive assistance for Islamic boarding school in helping and accompanying the growth and development of the psychological independence of their students. The study was guided by the following research questions, as follow:

1. How could the Transpersonal Creative Writing Assistances' Model become a solution for mentoring those *santriwati*?
2. What kind of changes in the psychological independence of *santriwati* which have become the results of the Transpersonal Creative Writing assistance?

Theoretical Framework

Psychological Independence of *Santriwati*

Psychologically, independence according to Kartono (2007), could have been seen when someone had faced some problems. If the problems which had been occurred before could be solved alone without asking for help from others and would be responsible for all decisions which have been taken, then this showed that the person was capable of being independent. Independence was a situation where a person has a willingness and capability to realize his will/desire which is seen in concrete actions/deeds in order to produce something

(goods/services) for the fulfillment of his life needs and the others (Antonius in Wulandari & Nyoman Dantes, 2018). According to Kartono (2007), the process of human psychic life had always been followed by three psychological aspects, there were namely cognitive aspects, emotional or feeling aspects, and willingness or interpersonal relationship aspects. This cognitive aspects had been related to the perception, memory, learning, thinking, and problem solving, whereas some affective aspects had been related to the emotions or feelings, and motives. It was also being considered that the conative aspects are related to the person's behavior which includes interpersonal and intrapersonal relationships (Walgito, 2010). So, the dynamics of the psychological independence of *santriwati* which had been studied in this study was every attitude, characters, behaviors, and the knowledge of *santriwati* who can solve the problems they have been faced before, were able to make their own decisions, have the initiative and creativity, without neglecting the surrounding environment. Where the independence had had some psychological aspects in the form of cognitive, affective, and conative aspects. Psychological independence in this study was full of Islamic boarding school educational values as a social environment for *santriwati*.

Transpersonal Psychological Approach

Transpersonal psychology could have been interpreted as a branch of psychology which had given a concern to the study in deeper and broader conditions, also the processes of human experiences, or a bigger sensation of connectivity to other people and the universe, or being a spiritual dimension, (Jaenudin, 2012). Transpersonal could have been interpreted as an experience of self-identity which related through the individual or personal, and encompass the bigger aspects of humanity, life, soul, and cosmos. Additionally, the transpersonal psychology had given the particular attention to the empirical and responsible scientific study of the relevant findings for the self-actualization, self-transcendence, *cosmic* consciousness, and transcendental phenomena. Transpersonal Psychology had emerged as the fourth school of psychology. To sum up, transpersonal psychology had become a link between psychology and spirituality.

Creative Writing as a Media in Transpersonal Assistance

As a consequence of the thought which had showed that transpersonal psychology was a strategical approach in psychological assistance for *santriwati*, then writing was a medium which could accommodate all forms of *santriwati*' awareness, unconsciousness, abilities, and disabilities expression. As well as being a track record of appreciation in experience which could be learned more. In particular, writing had become a form of expressing something by using the written language, in Karsana (Yarmi, 2014). The writing method had become a method in Participatory Action Research in Mahpur & Subandi (2021), which stated that writing had been a medium for channeling the aspirations of participants and had become an option, so that those participants have the access to create speech (voice). The writing method had become a way of demonstrating the learning process, so that the participants were able to express their opinions and become a facility of communication to surmount the speech impediments.

Method

Research Design

In conducting all of the Participatory Action Research (PAR) activities, it was provided by those five stages, as Gerald Susman's PAR model in (Hasan, 2009) included diagnosis, action planning, taking Action, evaluation, and specifying learning. Rory O'Brien in (Hasan, 2009) described, first, the problem was identified and the data was collected for a more detailed diagnosis. This had been followed by a postulation set of possible solutions, where an action plan emerged and being implemented. The data had become as a result of the intervention which were being collected and analyzed, and the findings were being interpreted in terms of the success of the actions which have been implemented. Finally, the problem was re-measured and this process started the next cycle. This process had been continued until the problem was solved. In the following, the author would have presented the characteristics of Gerald's PAR model (Gerald, n.d.):

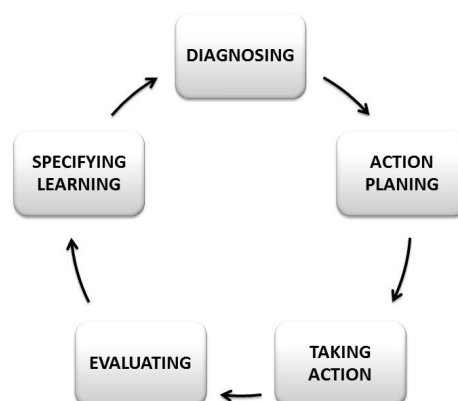


Figure 1. *Characteristics of Participatory Action Research (PAR)*

PAR was being a benchmark for the efforts of the research which has been conducted, so that there were some changes and benefits for the *santriwati* at Nurul Quran Islamic Boarding School. In this research, the authors had to study the ongoing transpersonal assistance actively to bring out about the better change and improvement. Authors had to find some data and describe the events or activities which were closely related to transpersonal mentoring activities for *santriwati* by using the creative writing media. The involvement of authors as the companions in PAR research must had an impact on the changing of research participants in a better direction. By accompanying the writing and observing activities in the process of interactive reflection, authors must had ensured that each research participants were able to participate in every activity in this PAR research stage.

Participants

The participants in this research were *santriwati* at Nurul Quran Kraksaan Islamic Boarding School, Probolinggo Regency, East Java, Indonesia. There were five females' students which had become the number of participants in this research. In general, the authors had wished to add quite a lot of research participants, so that the data which being obtained could bring a lot of information. However, the author's wishes would have not been always fulfilled. The participants in this research had been selected by using the purposive sampling technique. Moreover, the *santriwati* who had been participated in this research have several criteria which are in accordance with the objectives of the research, namely (1) the participant was an

active female student at Nurul Quran Islamic Boarding School; (2) the participant had an interest in the field of writing; (3) the participant was having a willingness to work together and taking part in a series of assistance until the end which have given by the author.

Procedures

Stage of PAR	Activities	Execution Time
1 st Diagnosis	The authors had tried to explore the Islamic boarding school environment, which aimed to explore the facts and problems of <i>santriwati</i> .	September 2021 - February 2022 [pre-eliminary study]
2 nd Action Planning	The authors together with several <i>santriwati</i> had conducted the discussions about planning, goals, and activities that were carried out in transpersonal assistance for <i>santriwati</i>	Wednesday, March 23 rd , 2022, with 5 <i>santriwati</i> were having a willingness
3 rd Taking Action	<ol style="list-style-type: none"> 1. Creative writing: Authors accompanied the <i>santriwati</i> who had become the research participants to write creatively and freely during the implementation of psychological assistance. 2. Exploration of independence experience: The author together with each research participant had explored the experiences of <i>santriwati</i>' independence and had put them into the <i>santriwati</i>' handouts. 3. Interactive reflection: The author had conducted the interactive reflection by inviting each participant to reflect on the events which have been written in the <i>santriwati</i>' handouts, both in individual and groups. 	August, 25 th 2022 – October, 1 st 2022
4 th Evaluation	This stage had become a process of the authors who evaluated a series of creative writing in transpersonal assistance.	October 4 th -10 th , 2022
5 th Specifiying Learning	The data which had been presented, were aimed to explain the extent to which transpersonal-creative writing assistance could improve the quality of student independence.	October 20 th -28 th , 2022

Table 1. *Procedures of Participatory Action Research*

Data Analysis

Multidimensional analysis had become an analytical knife to sharpen the findings in this PAR. In the process of presenting the research data by using the data analysis techniques of Miles and Huberman models (Arikunto, 2011), which had been conducted interactively by the three steps including (1) Data Reduction; was summarizing the data, focusing on the main things, selecting important things, and separating the irrelevant data. The data reduction process was being carried out by selecting data that is relevant to the research focus. Data collected from a series of transpersonal assistance for *santriwati* in the form of interviews,

observations, and documentation. (2) Data Displays; The data in this study were presented in the form of brief exposures, charts and schematics as visualizations. In this study, the author had presented the data by describing the results of the data which were appropriate from the results of the previous data selection, namely data related to transpersonal-creative writing assistance. (3) Conclusion Drawing, also known as the conclusion of the selected data which will be presented in the form of a description of the research process and results. Thus, the conclusion drawing had become the authors' attempt to describe the focus of the research which was presented by involving the authors' understanding.

Findings

The authors then described the theoretical findings into two sub-sections. The first sub-section presents how transpersonal psychology is used as a technique in assisting *santriwati* and how writing becomes a creative medium in accompanying *santriwati*. The second one describes the increase in the results of achieving psychological independence as a result of mentoring *santriwati*.

Creative Writing Transpersonal Assistance Model

The first step to realizing this agreement was to develop a Transpersonal Assistance Module for Creative Writing (April-July 2022). The authors examined the transpersonal approach in psychotherapy and adjusted the transpersonal techniques according to the needs of *santriwati*' mentoring. Simple meditation was conducted to start each activity and mentoring. The meditation in this module was designed by the authors as a simple meditation to be used by *santriwati*. The simple points in this meditation are intentional setting, breathing exercises, specific goal focus, and praying. The companion plays a vital role in guiding the *santriwati* so that they can experience how simple meditation can build self-worth within themselves that has not been actualized to date. The transpersonal atmosphere presented in transpersonal assistance began with meditation performed by each *santriwati*. All instructions in meditation had been systematically described by the authors in the Mentoring Module. This Mentoring Module is a reference and guide for companions in accompanying the journey of achieving student independence. The module contains a series of activities with a transpersonal nuance using transpersonal techniques in the form of creative writing, exploration of independence experience, and interactive reflection.

Creative Writing

The root of the female students' problem is the existence of psychological independence that has not been recognized yet. On the other hand, there was the potential for literacy in the form of a penchant for writing which can become a creative media for *santriwati* in expressing their psychological dynamics. Therefore, the authors and the *santriwati* had a plan on what things to do to assist the students in solving their problems independently. The results of the mutually agreed planning led to a transpersonal mentoring model using creative writing as a mentoring medium. In fact, the results of the writings could be used as raw materials to better recognize themselves. Even the writings are part of creativity and field of expression that can be explored broadly. Creative writing activities will become one of the solutive media that can accommodate *santriwati* in expressing their complaints while facing various problems. It is created and contemplated to accommodate every story and become a track record as well as a struggle for *santriwati* to increasingly recognize their potentials. Creative writing is one medium for *santriwati* to gather unmanaged energy into an

independent decision-making power to overcome any problem while staying at Islamic boarding school.

Exploration of Independence Experience

The companions accompanied the *santriwati* in meditation practice that let the *santriwati* to explore their inner self as well as guiding the availability of space for the *santriwati* to access any experience regarding their independence while living at the Islamic Boarding School. Therefore, the presence of transpersonal assistance for *santriwati* will ignite and process their transpersonal awareness by using creative writing media. The transpersonal assistance performed by the *santriwati* helped presenting a spiritual field in the creative-narrative essays through their writings. The role of the companions in transpersonal assistance for *santriwati* is to fully present themselves as a companion (authors) to help, listen to, and provide feedback on complaints or anything experienced by the *santriwati* without judging. The responses given by the companions were provided in verbal responses that guided each *santriwati* to recognize and find the answers to their respective problem independently. Transpersonal assistance for *santriwati* aims at reconnecting themselves personally with the source of virtue within the transpersonal self among *santriwati*. While the transpersonal techniques used by the authors in this assistance consist of simple meditation, writing, and interactive reflection. Simple meditation and interactive reflection as a transpersonal technique and writing as a medium accommodating creativity are combinations that can evoke the transpersonal side in *santriwati*.

Interactive Reflection

The next transpersonal technique is interactive reflection during mentoring which was divided into two sessions consisting of individual interactive reflection and group interactive reflection. Reflection is a thought, interpretation, or comments about what is observed, and thus, the results of writing became the main material in individual reflection activities. The goal of the companions is to guide the *santriwati* to express what they have written. This assistance provides an opportunity for *santriwati* to convey what is written and recapture it as a new transpersonal energy within the individual reflection activity. This activity also has multidimensional analysis techniques intended to make the *santriwati* recognize and actualize the three dimensions of independence. Multidimensional analysis was carried out after the *santriwati* finished writing about their experiences of independence. This analysis technique was performed during individual reflection activities that focused on the results of joint analysis (between the chaperone and each *santriwati*) in terms of thought, feeling, and conation in the experience of the independence among *santriwati* written on Writing Sheet. Figure 2 shows a theoretical findings of psychological independence among *santriwati*.

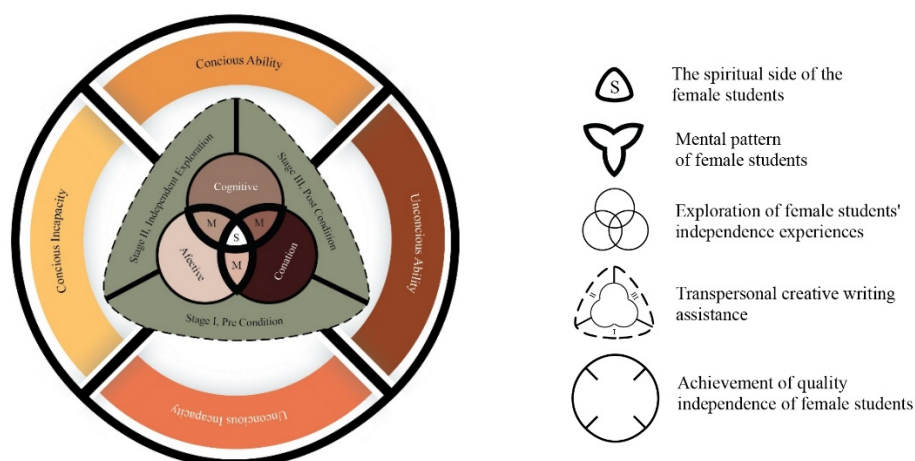


Figure 2. Theoretical Findings of Psychological Independence among Santriwati (female students)

Field of Thoughts, Feelings, and Conations in the Psychological Independence among Santriwati

The exploration on the experiences of independence among *Santriwati* conducted in transpersonal assistance presents three areas or dimensions. The dimensions consist of thoughts, feelings, and conations. Each dimension has a psychological function that drives the daily behavior of *santriwati*, either as a person or as part of social and cultural actors at the Islamic boarding school. The narrative of the results of experience exploration on psychological independence has created a field of independence among *santriwati* with mutual access in interactive reflections both individually and in groups. The psychological functions initially found in this study overlapped with one another. The companions and *santriwati* collect every psychological function to be identified and categorized based on its similarity. Therefore, they would be able to understand each psychological function which is divided into three areas or dimensions. These areas include cognitive area, affective area, and conation area. Therefore, the discovery of psychological functions in the post-condition stage was more easily recognized and disclosed. This confirms that the independence route taken together becomes a space for *santriwati* to recognize and manage their psychological functions so that they can grow and develop into independent individuals.

The ability to map the psychological functions became a new skill learned by *santriwati* during the transpersonal creative writing assistance, and thus, they were not confused about what to do or whom to tell when they were faced with some problems. As a result, the *santriwati* had finally had self-awareness that had been activated by their transpersonal awareness. Having provided with an identified route and self-reliance map, the companions and *santriwati* could perform a multidimensional analysis together. The results of the multidimensional analysis had led the authors to the important point that the combination of transpersonal self-esteem of *santriwati*, consisting of psychological functions, the independent travel route in assistance, and the agreement on the categorization of the area of independence, can form a reflective theoretical finding scheme. Therefore, it depicts the results of the transpersonal awareness of the *santriwati* in experiencing the field of independence while staying at the Islamic boarding school. The following figure shows a map of the psychological independence among *Santriwati* that had been found and analyzed accordingly.



Figure 3. Map of the Psychological Independence among Santriwati (Santriwati)

The achievement of the quality of independence among *santriwati* was found, as it could be seen from the progress of psychological function in the dimensions of cognition, affection, and conation the *santriwati* had. The encounter of the three psychological functions had shaped the mental and spiritual patterns of *santriwati* through interactive reflection activities, such as transpersonal techniques in mentoring, which indicated an achievement in the experience of self-reliance that had been well actualized. The achievement of independence among *santriwati* was not at the peak because what had been achieved was always recognized, trained, and processed in order to sharpen the quality of their independence. The ability to capture the knowledge possessed by *santriwati* had encouraged the advancement of self-awareness, which was initially unable to become capable, from “not realize” to “realized.” The development of the abilities and self-awareness among *santriwati* was obtained after the transpersonal creative writing assistance was performed. Therefore, the findings on the achievement of the quality of independence among *santriwati* who had participated in transpersonal assistance could be captured from the progress in psychological functions through the experience dimensions of their independence.

Discussion

Islamic boarding schools, commonly called *Pondok Pesantren*, are a big place for *santriwati* to study sciences and explore experiences with some opportunities to achieve quality selfhood. It is a social, cultural, and religious environment that plays a vital role in shaping the pattern of interpersonal and intrapersonal life of *santriwati*. A study conducted by Setyawan (2018) showed that Islamic counseling services are able to increase the learning independence among students at Ngunut Tulungagung Islamic boarding school, East Java. Hence, Islamic counseling services need to be carried out regularly so that the students can adjust to and recognize how to learn formal education based on Islamic boarding schools' provisions. If the question is “What kind of counseling model can really benefit even though the counseling session is over?” then the answer is the Transpersonal Creative Writing Assistance Model. Transpersonal techniques can be trained to overcome problems in Islamic boarding schools and creative writing can become a voice record and trace of the experiences they can use as self-reflection at any time. Supposedly, every *santriwati* has the same opportunity to seize it and explore the field of Islamic boarding schools in accordance with their respective potentials. Islamic boarding schools are obliged to assist *santriwati* in

identifying opportunities for their psychological life, and the Islamic boarding schools do not have any power to unilaterally determine the direction of their life.

Several thematic studies on Islamic boarding schools had begun to attract the attention of many authors. An overview of various aspects of Islamic boarding schools, such as management development, was conducted by Rinawati (2021); Hassan (2015); and (Mustafa, 2015), showing an application of learning methods. Also, Afif (2019) mentioned an implementation of digital-based information systems. Whereas Setiawan & Sulaksono (2019) conducted a quantitative study using a scale as a measuring tool that has been performed by Thahir & Hidriyanti (2014) and Sabiq & Djalali (2012). Several scientific studies related to the independence of *santriwati* have also been conducted by Arianti (2022); Hairani et al. (2020); Maria (2012); Mustafida (2021); Saefuddin (2015); Tagela (2021); and Haikal (2019). One of them is a study on gender-based independence at Islamic boarding schools conducted by Maria (2012). The gap between educational institutions and the surrounding community is shown in a study conducted by Maria (2012). The results of her study further support the facts found by the authors, indicating that the growth and development of independence among *santriwati* is supported by the collaboration of teaching staff at Islamic boarding schools who play the key role of companions.

The purpose of writing is to convey a message to the readers, as in Karsana's study (Yarmi, 2014) which defined writing as media for expressing ideas using written language. Expressing something in question is declaring, conveying, describing, telling, explaining, incarnating, convincing, and so on for the reader to understand what happened in an activity or an event. Conversely, in the transpersonal mentoring model used in creative writing, the writer and the reader are the same person since the results of the creative writing are not only intended to other people but also themselves as the writer as well as the reader who must put much attention to the quality of the narrative in every stroke of their creativities. Finally, the benefit of creative writing media in transpersonal assistance has been and is being felt by each *santriwati* since her first letter. Studies conducted by Mumtaazah (2021), Dewojati (2018), and Mostofa (2015) confirmed that the presence of transpersonal creative writing media breaks the boundaries of *santriwati* writing forms. Hence, the function of writing turns into a creative and solutive medium of expression.

The atmosphere established after the transpersonal assistance was performed had strengthened the relationship between fellow *santriwati* as the participants. For them, transpersonal assistance is an experience that leads them to a new form of transpersonal self-esteem and self-awareness. Recognizing the abilities, they just realized had increased their gratitude and hopes for further transpersonal assistance. The increase in knowledge after individual and group reflection led to a broadening of the perspectives of *santriwati* when carrying out their roles as *santriwati* and when solving a problem at Islamic boarding schools. The feeling of such achievement had sharpened their self-sensitivity to learning and seizing potential opportunities at Islamic boarding schools. The growth of inner strength became a provision for the *santriwati* when they were struggling to play their role and carrying out their obligations. The depth and breadth of self-identity among *santriwati* that had been recognized is a form of transpersonal self-esteem of *santriwati*, as stated by Assagioli in Rueffler (1995), that the "Transpersonal Self" is a deeper and broader source of identity, one that stretches through and beyond the soul of each individual. Problem is neither an obstacle nor a complaint for *santriwati*, but rather an opportunity, even a gift from God to grow into better and wiser individuals and to be able to spread goodness to those around them.

Conclusion

In fact, when the administrators had become more responsive through the process of accompanying the *santriwati* in recognizing their own potential to solve the problems they have faced, then in fact, the presence of space and time for *santriwati* have become the foundation for the growth of *santriwati*' psychological independence. The psychological function which had accompanied the development in the *santriwati*' independence map was being categorized into three aspects or dimensions, namely the Mind Dimension, the Feeling Dimension, and the Conation Dimension. There had been a progress in quality achievement in the dynamics of *santriwati*' independence at Nurul Quran Islamic Boarding School after the implementation of Transpersonal Creative Writing Assistance, supports the researchers' statement, which currently Islamic Boarding Schools needed a mentoring technique that really contributed to the long-term goodness of each *santriwati*. Among the results of the research, it was the quality improvement in independence of *santriwati* after the transpersonal creative writing assistance was being conducted in the form of knowledge improvement through the dimension of thought, was being honed the sensitivity on the dimension of feeling, and was being grown some strength in the dimension of conation.

Recommendations

This research could not slip without those limitations, namely the research participants only focused on *santriwati*. This deficiency could have become a great suggestion for further researchers to focus on the same scope, but the participants should have expanded, so that the results of the research can be compared across the subjects or even across the Islamic boarding school. The mentoring theme could have also been adapted to the needs of Islamic boarding school, so that, the words of *santriwati* independence can be changed into psychological themes, such as wishing to know the mental health of *santriwati*, the learning styles of *santriwati*, the subjective well-being of *santriwati*, and several other psychological themes. Thus, the scientific studies which have been related to Islamic boarding school would be richer with the practical studies, which could have a real positive impact on every individual at Islamic boarding school.

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Content Analysis of Augmented Reality in Viral Video Advertising

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Abstract

In the digital era, networking hardware is mature and stable, and various new media have been derived, driving the trend of AR advertising. The advertising industry gradually regards AR as an important communication tool for advertisers to launch marketing campaigns (Craig, 2018). The advertising campaigns combine new AR technology that allows customers to participate in the offline experience directly. In addition, the advertiser can upload videos of AR activities process on social media (such as YouTube). They use secondary information dissemination, and viral marketing to captivate the attention of consumers. However, there are few relevant studies on the advertising design of AR, and this issue is worth exploring. The purpose of this study is to explore the AR video ads for brand marketing. Through content analysis, we will explore the performance of AR video ads with a high number of views, their content information and creative strategies. To understand how the brand affects the viewer's potential psychological cognition, and then generate positive communication, form viral spread, and gain word of mouth and free publicity for the brand. The result can be a reference for the design of AR video ads in the industry and academia.

Keywords: Creative Advertising, Marketing Technology, Viral Advertising, Advertising Design

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Introduction

Pokémon Go, a mobile game developed by Japanese video game company Nintendo, became an instant success upon its release in 2016 (Chan, 2017). The success of the game contributed greatly to the rapid advancement of extended reality, which includes augmented reality (AR) and virtual reality (VR; Chen, 2019). According to Deyan (2021), AR is typically used by young people (aged 16–34 years) and has a market value of US\$3.5 billion. The number of AR users is expected to reach 1.73 billion by 2024; 70% of consumers recognize the benefits brought about by AR applications, and 67% of media planners and buyers have reported an intention to include AR advertising in digital marketing activities to encourage consumer participation. A survey indicated that 90% of American enterprises that reported a midyear revenue between US\$100 million and 1 billion have been using AR (Huberman, 2017). The COVID-19 pandemic of 2020 forced many industries to introduce preventive measures, such as remote working, contactless service, contactless conference rooms, and virtual social events, and these measures accelerated the development of AR and VR. A news agency reported that this increased expenditures on AR and VR solutions in 2020 to US\$10.67 billion, a 35.3% increase compared with 2019, and predicted that the 2020–2024 compound annual growth of such expenditures would reach 76.9% (MoneyDJ, 2020). AR is increasingly recognized as a new means for marketing manipulation in the advertising industry (Craig, 2018). For this reason, the influence of AR on the advertising industry warrants further investigation.

Baeck et al. (2018) examined how sportswear brands affect consumer purchase intention through AR try-on technology, and they discovered that when consumers sharing their experiences with AR on social media results in a word-of-mouth advertising effect (Heller et al., 2019). New and innovative technologies provide brands with new ideas for marketing strategies. Brands and awareness campaigns have learned to leverage the interdisciplinary and transmedia online and offline experiences. Most studies on AR applications in marketing have focused on how offline AR technologies and interactive experiences affect consumers' attitudes toward advertisements; how brands use video AR advertisements to subconsciously affect viewers' perceptions of and identification with them; and viral advertising, and free word-of-mouth has been largely neglected. Video advertisements are a category of digital advertising that has witnessed the greatest growth in this field. According to InsightXplorer, a market research agency, Taiwanese Internet users have the highest exposure to video advertisements in Asia (InsightXplorer, 2016). How AR advertising affects viewers and create a ripple effect through secondary dissemination is worthy of in-depth investigation.

A video advertisement can draw viewers' attention from other video advertisements if it clearly conveys its brand philosophy through sound, timing, movement, and image and if its message appeals to the audience. The content of an advertisement and how it is expressed must correspond to each other, and the value of the message of an advertisement determines whether the advertisement can draw consumers' attention. As a purely visual form of advertising, AR advertising cannot offer immersive experiences. For this reason, this study investigated how AR advertising maintains viewer attention. In addition, this study investigated how such advertisements affect viewers' attitudes and thereby facilitate positive communication with viewers that generates a ripple effect for brands. Content analysis was conducted to compare AR advertising manipulation strategies in terms of number of views, product type, and region of origin. The results of this study may provide reference for brands seeking to engage in marketing manipulation through AR advertising.

Literature review

Considerations for creative expression in AR technology

Papagiannis (2017) suggested that the design of an AR application must account for the fact that the use of AR requires focus; a successful AR design does not isolate the user from their surroundings or other individuals but creates a human-centric experience in which the technology assumes a secondary position, enabling users to focus on the experience. AR requires attention and time and is integrated into physical world, which can enable users to develop strong impressions. Scholz and Smith (2016) identified four routes through which individuals can engage with AR: (1) active print and packaging, whereby users activate AR content in magazines, signs, product packaging, and printed materials; (2) a bogus window, whereby a digital screen disguised as a normal glass window is used to augment the objects visible to users, who cannot see themselves in the augmentation; (3) geo-layers, in which users activate AR content based on their geographic location by using a global positioning system; and (4) magic mirrors, whereby a digital screen disguised as a normal mirror (or not) is used in a manner opposite the bogus window, enabling users to see themselves as part of the augmentation.

Feng and Mueller (2019) identified a fifth route, projection mapping, which involves projecting images or video content onto a building, billboard, or any surface. The user experiences the AR content projected in front of them without touching or operating a device. Rauschnabel (2018) observed that new technologies such as AR, VR, and artificial intelligence have fundamentally changed the marketing and advertising industries. The widespread use of smartphones and tablets has made AR almost omnipresent in daily life. Through graphic visualization and object detection, AR technologies enhance aspects of the physical world (Flavián, et al., 2019; Georgiou & Kyza, 2017). Thus, AR technologies augment reality rather than cause detachment from it (Craig, 2013).

Viral advertising and advertising strategies

Lance and Golan (2006) identified viral advertising as a form of viral marketing and defined it as a form of point-to-point communication free of charge, made by marketers who use provocative content to affect the audience on the Internet, and shared voluntarily among friends. Whether the audience shares video advertisements depends on whether they find them worthy of sharing. An advertising strategy is a method that marketers employ to achieve a goal; it is closely related to the who, how, where, and what. Moriarty and Robbs (1999) noted that an advertising strategy is the logic that underlies the communication between a brand (or product) and its consumers, which is achieved using nonrational artistic license and by striking a balance between divergent thinking and convergent thinking. Creativity is often discussed in relation to advertising strategies. However, the distinction between advertisement creativity and strategy remains unclear. The purpose of an advertising strategy is to creatively fulfill a marketing objective. Such as strategy can be developed by thoroughly studying the product, market, consumers, and competitors; creativity is then employed on the basis of the implemented strategy. Therefore, advertisement creativity and advertising strategies complement each other and are inseparable.

Most researchers have indicated that advertising strategies consist of two components. The first is the creative strategy, which primarily involve determining the content, themes, and positioning of an advertisement. The other component is the creative tactic, which is also

known as “creative execution.” It relates to how the content of an advertisement is expressed through copywriting, graphics, format, color scheme, and layout (Hsiao, Chang, & Cho, 2020). Aaker and Donald (1982) indicated that creative strategies can be related to information and transformation. Laskey, Day, and Crask (1989) demonstrated that creative strategies should be rational, cognitive, utilitarian, and functional to convey the benefits, characteristics, and purpose of a product. Informational creative strategies affect consumers’ perceptions of brands; advertisements that employ this type of strategy may directly manipulate consumers’ attitudes and purchase intention (Lee et al., 2016). Transformational creative strategies, which involve the use of sensationalism to establish brand image, are also known as emotional, feeling, or value-expressive creative strategies.

Advertising strategies are used to present products and services, and their effectiveness is evaluated using indices such as consumer satisfaction (Haida & Rahim, 2015). Gao and Koufaris (2006) noted that consumers subjectively evaluate the value and utility of an advertised product or brand on the basis of the informativeness and entertainment value of the advertisement. Informativeness depends on the amount of information related to the product and its benefits; high informativeness can help convey brands’ propositions and image. Entertainment value depends on how surprising, exciting, and amusing an advertisement is (Ducoffe, 1996). Advertisements can attract consumers’ attention by being entertaining. Because entertainment can result in pleasure, it is an effective approach to ensuring brand favorability (Mitchell & Olson, 1981). Entertainment has also positively affects advertisement effectiveness and consumer attitudes (Papacharissi & Rubin, 2000).

On this basis, this study investigated the following topics:

RQ1: Differences in viral AR advertising attributable to number of views.

RQ2: Differences in viral AR advertising attributable to product type.

RQ3: Differences in viral AR advertising attributable to region of origin.

Methods

Sample

YouTube, the largest multimedia search engine and sharing platform worldwide, allows users to upload, view, and rate videos. This makes it an ideal platform to study the effectiveness of AR advertising. The following phrases were used to search for videos about AR advertising on YouTube: “augmented reality advertising,” “augmented reality marketing,” “augmented reality campaign,” “augmented reality outdoor advertising,” “augmented reality live event,” and “projection mapping.” Because this study focused on AR-based viral advertising, tutorials on AR advertising were not included. A total of 85 videos were collected, 73 of which were retained for analysis after irrelevant videos and videos with poor video quality were excluded.

Coding scheme

This study examines the content message and creative strategies of viral AR video advertisements. The categories analyzed include: views, video length, product category, region, creative strategy, and creative execution.

1. Views

As indicated by Feed (2008), videos that accumulate more than 1 million views are considered successful, and those with more than 100,000, 250,000, or 500,000 are considered worth sharing. The videos were distinguished into five categories based on views: (1) >1,000,001, (2) 1,000,000–500,001, (3) 500,000–250,001, (4) 250,000–100,001, and (5) <100,000.

2. Video length

This study divides video length into four types: (1) short video: the video duration is between 0-30 seconds, (2) TV commercial: the video duration is between 31-60 seconds, (3) microfilm: the video duration is between 61-300 seconds, (4) feature film: the video duration is above 301 seconds (Zihai, 2015).

3. Product category

Scholz & Smith (2016) argue that AR can provide an immersive brand experience and offer consumers a novel way of learning about brands. Therefore, examining the product types in AR ads is crucial. This study refers to the categories of products in the studies of Golan & Zaidner (2008) and Feng & Mueller (2019), which includes 19 types: (1) automobiles: four-wheeled car brands, (2) food/beverage: edible food and non-alcoholic water, juice, and beverages, (3) travel/leisure: brands related to airlines, travel, vacation, and leisure, (4) electronics: brands related to 3C electronics, (5) banking/credit card/insurance: brands related to finance, banking, or insurance, (6) apparel and accessories: fashionable clothing, accessories, and cosmetics, (7) media and entertainment: including movies, TV, games, amusement parks, etc., (8) home Goods: kitchen supplies, cleaning supplies, etc., (9) pharmaceuticals: brands related to medicine, (10) sporting goods: sports-related brands, (11) cosmetics/Bath Products, (12) books/magazines, (13) video/music, (14) furniture, (15) real Estate, (16) software, (17) alcohol: brands of alcoholic beverages, (18) advocacy Issues: non-profit organizations advocating for a particular issue such as conservation, ecology, environment, gender, religion, human rights, education, etc., (19) services: advertising agencies, technology companies, and other advertising design service industries.

4. Region

In this study, following the research of Feng & Mueller (2019), the countries of advertisers who uploaded the video ads were divided into four regions: (1) Europe, (2) Asia, and (3) North America, to understand the regions where AR video ads were distributed.

5. Creative strategies

The creative strategies examined in this study relate to AR content and AR trigger forms. With reference to Ducoffe (1996), AR content was examined in terms of (1) informativeness and (2) entertainment value. As described by Feng and Mueller (2019), the trigger forms were (1) print /packaging, (2) bogus windows, (3) geo-layers, (4) magic mirrors, (5) projection mapping, and (6) mixed methods.

6. Creative execution

Creative execution was evaluated in terms of user-AR interaction, emotion, and copywriting. On the basis of Feng and Mueller (2019), user-AR interactions were categorized as (1) perceptive, where users passively perceive the AR experience and are not part of the augmentation; (2) manipulative, where users can change the AR

experience but are not part of the augmentation; (3) integrative, where users are part of the augmentation but cannot manipulate it; and (4) interactive, where users are part of the augmentation and interact with it. On the basis of Dafonte-Gómez et al. (2020), emotions were categorized as (1) surprise, including amazement and astonishment; (2) joy, including delight and happiness; (3) sadness, including upset, sadness, and depression; (4) anger, including frustration and indignance; (5) fear, including worry and nervousness; and (6) disgust, including repulsiveness and dislike. In terms of copywriting, advertisements were categorized as either (1) narrated and captioned; (2) narrated only; (3) narrated with background music; (4) having background music only; or (5) not having copywriting.

Coding procedures

In communication design, not all phenomena of interest can be analyzed directly. Content analysis is an objective method used to quantitatively and comprehensively examine itemized messages (Cheng, 2015). This study performed content analysis to examine messages and to determine factors that make AR advertising viral (Wimmer & Dominick, 2007).

Coding was performed by three coders with a background in design and more than 5 years of experience. To ensure consistency, the coding procedure proposed by Kolbe and Burnett (1991) was followed. The coders were first trained by the researchers, who explained the guidelines and operational definitions for the coding and categorization process. Subsequently, they were asked to code 10 AR videos. When a disagreement occurred, the coders explained their thoughts to each other and reached a consensus after deliberation. This training process continued until all three coders were familiar with the operational definitions for each category and felt satisfied with the performance of their fellow coders. The benchmark for the reliability coefficient was 0.85 (Wang, 1991); a high reliability coefficient indicates high cognitive consistency between coders. The reliability coefficient was 0.91 between Coder A and Coder B, 0.92 between Coder A and Coder C, and 0.96 between Coder B and Coder C. This yielded a consistency of 0.94, which is greater than the 0.85 benchmark, suggesting reliability.

Results

The majority of the videos had fewer than 100,000 views (67.12%). The group with the second largest number of videos was the worth sharing category (1,000,000–100,001 views) (24.66%); only five videos were in the successful category (>1,000,001 views) (8.22%). The result of a cross analysis, most advertisements with fewer than 100,000 used the active print/package strategy (36.99%). Most of the worth sharing advertisements used the bogus window strategy (8.22%), with many others using the projection mapping strategy (6.84%); the difference in number of videos between these categories was extremely small, with both strategies being characterized by contactless experience. The successful (viral) videos were mainly triggered through bogus windows (5.48%).

The advertisements with fewer than 100,000 views were mainly informative (21.92%) and involved magazines, outdoor signs, product packaging, catalogues, and other printed materials. Advertisements of this type are mostly promotions for brands and are less likely to be shared because by audiences. The majority of videos in the worth sharing (17.81%) and successful categories (6.84%) were entertainment based and attempted to instill joy in the viewer (Dafonte-Gomez, 2014), which facilitates viral circulation.

In modern society, the length of an advertisement determines audience engagement. Therefore, advertisements must be interesting and creative to stand out. Most AR advertisements were microfilm (61–300 sec) (68.50%), followed by television commercials (31–60 sec) (19.17%) and short videos (<30 sec) (12.33%); none were longer than 301 sec. feature film are more effective in promoting brands by conveying their philosophies (Kang, 2011). However, extremely long videos can cause the audience to lose patience.

The cross analysis revealed that most videos with fewer than 100,000 views (31.51%) were manipulative and that most worth sharing videos were manipulative (9.59%) or perceptive (8.22%) (small difference). Most of the successful videos were perceptive (4.12%). The majority of the videos across all categories had only background music. Most videos with fewer than 100,000 views elicited joy (36.99%), whereas most worth sharing (16.44%) and successful videos (6.84%) elicited surprise.

Of the 19 product categories investigated, six (electronics, home appliances, drugs, videos and music, real estate, and software) did not have AR advertisements. The type of product with the most AR advertisements was services (advertising agencies and high-tech companies) (36.99%), followed by food and beverages (23.28%), tourism and recreation (12.33%), apparel and accessories (6.84%), publications (5.48%), and media and entertainment (4.12%). The cross analysis revealed that among videos for services, the most used strategy was bogus windows (12.33%), followed by active print/packaging (9.59%), projection mapping (6.84%), mixed methods (4.12%), geo-layers (2.74%), and magic mirrors (1.37%), in that order. Most videos for food and beverages used active print/packaging (16.44%). Most of the videos for services were entertainment (20.55%), with some being informative (13.70%). Similarly, most videos for food and beverages (20.55%) and tourism and recreation (8.22%) were entertainment.

The cross analysis also revealed that among the videos for services, the most common pattern was perceptive (16.44%), followed by manipulative (15.07%) and integrative (5.48%). For the food and beverages and tourism and recreation videos, the most used pattern was manipulative, followed by perceptive. Videos for apparel and accessories predominantly used the interactive pattern, enabling users to become a part of the augmentation. All videos for services (23.29%), food and beverages (16.44%), tourism and recreation (5.48%), media and entertainment (4.12%), and publications (4.12%) had only background music. Most of the videos elicited surprise (53.42%), with some eliciting joy (46.58%), and none elicited negative emotions. Videos for services elicited either joy (19.18%) or surprise (17.81%), but most videos for automobiles, food and beverages, tourism and recreation, media and entertainment, and publications elicited surprise rather than joy.

The majority of the advertisers that made the videos were located in North America (45.21%), with some in Asia (34.25%) and Europe (20.54%). The cross analysis revealed that most European advertisers used projection mapping (9.59%), whereas most North American advertisers used bogus windows (16.44%), with some using active print/packaging (13.70%). European (19.18%) and North American (32.88%) videos were mostly entertainment, whereas Asia videos were mostly informative (16.44%), followed by entertainment (13.70%).

The cross analysis revealed that the majority of Asian (19.18%) and North American (17.81%) videos used the manipulative pattern, whereas the European videos mostly used the perceptive pattern. All videos across regions only had background music. The European

(16.44%) and North American (23.29%) videos tended to elicit surprise rather than joy, whereas the Asian (20.55%) videos tended toward joy.

Conclusion

AR is a new tool for brand marketing. However, offline AR experiences are only effective for a short period. To increase consumers' exposure to brands, many advertisers have begun to use video records of consumer-AR interactions and upload them to online platforms for secondary dissemination. This study analyzed 73 AR advertisements and determined that AR manipulation models differed by number of views, product type, and region of origin. According to the results, various challenges must be overcome for AR videos to be considered worth sharing, and few videos accumulate more than 1,000,000 views and are deemed successful. Creative strategies that embed emotions in the video and the tasteful use of AR's virtual features to augment physical objects can create surprising and positive experiences for viewers. AR content should be more entertaining than informative to draw consumers' attention and increase the likelihood of it being shared.

AR has been widely applied to brand advertising. In this study, the AR videos with fewer than 100,000 views mostly used active print and packaging. In Asia, this method is mostly employed in food and beverage brands; consumers scan an image offline to activate a brand's AR experience and learn about products. However, when this type of AR is used in advertising, the likelihood of it being viewed and shared online is low, possibly because viewers may quickly recognize it as an advertisement and thus doubt its entertainment value. The AR videos with more than 100,000 (worth sharing) and 1,000,000 (successful) views were mostly from Europe and North America, where advertising agencies and companies specializing in AR services often upload their work to online platforms to promote their brands. These videos mostly used bogus windows or projection mapping, eliminating the need for a handheld device. In addition, because projection mapping involves images displayed on a digital screen disguised as a normal glass window or projected onto the façade of a building, a large number of individuals can view the content. For this reason, projection mapping, especially content that elicits joy and surprise, is an efficient advertising method for brands.

Methods of creative execution for user-AR interactions differ by product type and region (Feng & Mueller, 2019). All four patterns of user-AR interactions were used in the videos in this study. However, brands should use manipulative, integrative, and interactive patterns to enhance users' experience. For online AR advertising, however, the perceptive pattern should be used because it enables storytelling, which often results in sharing and even viral circulation. AR involves overlapping virtual and physical objects to augment users' imagination and vision. Successful AR presentation should also elicit surprising and joyful feelings, which increase the likelihood of viral circulation (Dafonte-Gómez et al., 2020; Eckler & Bolls, 2011).

AR technology for marketing and advertising is still in its infancy. With the maturation of fifth- and sixth-generation technology, the marketing and advertising industries have high expectations for AR technology. This study performed content analysis to examine AR advertising strategies in videos with different numbers of views, products, and regions of origin. Future researchers are recommended to examine the advertising effect of AR video content or the communication effectiveness of experiential scenarios with different triggering methods, thereby supplementing the limitations of this study.

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Are Teachers Willing to Change? Teachers' Beliefs About Practice Change in Vietnam

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Abstract

Teacher belief is an essential element that guide teachers to deal with challenges in teaching, shape the classroom environment, and influence student's motivation and in-class achievement. However, teacher belief may be influenced by various factors inside and outside of classroom, particularly the pressure that makes them comply with their colleagues, with curriculum, and with student performances. Teacher beliefs may be also shaped and changed contextually which lead to an incomplete portraits of teacher beliefs, particularly regarding to their classroom practice in different levels of teachers. Thus, this qualitative study aims to explore how teachers' beliefs are constructed in the Vietnamese context. Five participants include three in-service teachers and two pre-service teachers across disciplines and school levels in Vietnam with different stages of experiences. The analysis of semi-structured interviews investigated the Vietnamese teachers' beliefs based on differences between pre-service and in-service teachers through five case studies. Findings revealed that levels of instruction and differences in experiences and school types influenced how participants conducted their classroom practices and their outcome emphasis, students' engagement or students' academic performance. Moreover, the findings also highlighted factors contributing to participants' practice changes, mainly their strong beliefs in the relationship between theory-practice and "achievement syndrome." The study provides some suggestions concerning the influences of social and political factors inside classrooms.

Keywords: Teachers' Beliefs, Practice Change, In-Service Teachers, Pre-service Teachers, Vietnam

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Introduction

Teachers play crucial roles in the whole education system as enactors of practice (Fullan, 2003). Teachers' beliefs directly guide their management of teaching challenges, shape the classroom environments, influence students' motivation, achievement, and development (Li, 2012), and even impact students' beliefs (Gilakjani & Sabouri, 2017). Thus, understanding teachers' beliefs greatly improves teachers' training and practice (Pajares, 1992; McCarty et al., 2001). Teachers' practice development occurs across different stages over years, first focusing on themselves and then moving to students (Hargreaves, 2005). Teacher belief also can be influenced by various factors such as colleague peer-pressure, curriculum standards, and student performances (Pelletier et al., 2002). For example, pre-service teachers tend to believe that education is telling information and encouraging students, rather than purposefully guiding students' learning.

Despite efforts to research teachers' beliefs, an incomplete portrait remains because the teacher's context shapes the teacher's beliefs (Mansour, 2009), particularly teachers' classroom level (Fives & Buehl, 2012). In Vietnam, the government leads the administrative structure, policy making, and implementation of K-12 education, although a multi-tiered system provides some autonomy for local governments (Le, 2009). However, institutional pressures for 'performance' from the ministries do not allow teachers to have autonomy, thus influencing a lack of autonomy in classroom practices (Rust, 1994; Pelletier et al., 2002). For example, curriculum and textbooks have remained under the control and regulation of the Vietnam Ministry of Education and Training (MOET) (UNESCO, 2017). In 2019, MOET approved maintaining the standardized curriculum with multiple textbooks that teachers and learners could select from; yet schools still decided on the textbooks for the teachers. Such external factors make teachers' professional knowledge, beliefs, and vision remain rather stable and resistant to change (Meschede et al., 2017; Samfira, 2019).

Some studies in Vietnam have explored teachers' beliefs (e.g., Nguyen et al., 2019) or provided interventions to improve teacher training (e.g., Vu, 2020). Yet no study paid particular attention or attributed beliefs in the context of Vietnam's political system and communities. Thus, this study aims to explore the formation of different teachers' beliefs that form between pre-service teachers and in-service teachers, revealing how teachers constructed their beliefs regarding classroom practice. The study provides some suggestions concerning the influences of social and political factors inside classrooms. The following research questions guided this study:

1. How do pre-service and in-service teachers construct their beliefs about classroom practice in Vietnam?
2. How do teachers change their practice?

Literature Review

Teacher belief

Teachers' belief is a complicated and challenging to define concept in educational research (Pajares, 1992). Dewey described that teachers' beliefs consisted of two fundamental components: traditional and progressive beliefs possessing contradictory ideas. However, Dewey's definition could not address the nuances of teachers' beliefs and overly simplified a complex concept (Bunting, 1984). Previous studies exhibited that individual belief could be

presented in a belief system with interactive components (Pajares, 1992, Mansour, 2009). Beliefs may be presented in self-beliefs (self-concepts and self-efficacy), beliefs about personal knowledge, motivation, and the nature of intelligence (Pajares, 1992). Kagan (1992) included teachers' professional knowledge into their belief systems. Similarly, Mansour (2009) emphasized the interaction between knowledge and beliefs, where beliefs drive teachers' decisions on how they attain knowledge; this attained knowledge influences beliefs. Teachers' beliefs act as "...an information organizer and priority categorizer, and in turn control the way it could be used" (Mansour, 2009, p.4).

Teachers' beliefs tend to be situated in classroom practice relating to students. Pajares (1992) believed that teachers' beliefs identify and relate with "...their work, their students, their subject matter and their roles and responsibilities" (p.9). Previous studies stated teachers' beliefs possess a multidimensional trait (Wehling & Charters, 1969; Bunting, 1984; Pajares, 1992, Mansour, 2009). Bunting (1984) highlighted teachers' beliefs organize into four main factors which define teacher's praxis: affective, cognitive, directive, and interpretive. Wehling and Charters (1969) proposed eight divergent dimensions of teachers' beliefs, addressing teachers' commitment to their goals and their instructional beliefs of how teachers manage their classroom and construct teacher-student relationships: (1) subject-matter emphasis, (2) personal adjustment ideology, (3) student autonomy vs. teacher direction, (4) emotional disengagement, (5) consideration of student viewpoint, (6) classroom order, (7) students challenge, (8) integrative learning.

Pre-service teachers and in-service teachers' beliefs in relation to changing practice

Teachers develop their beliefs from past learning and contextual understanding, which shapes their approach to solving problems (Decker & Rimm-Kaufman, 2008; Erkmén, 2012). Thus, there may be differences in belief between pre-service teachers and in-service teachers. Pre-service teachers hold a set of beliefs during their training shaped more by how they were taught rather than knowledge learned during in-service training programs (Decker & Rimm-Kaufman, 2008). Pre-service teachers emphasize more affective factors than cognitive factors, demonstrating their self-serving bias of the attributes in their effective teaching (Pajares, 1992). A review by Mansour (2009) noted that pre-service teachers tend to focus more on maintaining discipline and providing activity guidance due to a feeling of being unprepared in classroom management (Decker & Rimm-Kaufman, 2008).

Inexperienced teachers might hold unrealistic expectations regarding classroom management and goal setting with their students (Martin & Baldwin, 1996). Pre-service teachers may believe they will not face the challenges other teachers faced and can successfully execute their own method of teaching (Pajares, 1992). However, pre-service teachers often struggle with classroom management, resorting to an overt reliance on teacher control as a survival skill to keep their students on track (Martin & Baldwin, 1996). Although it is essential to consider teachers' personalities, pre-service teachers with low conscientiousness and high openness may concentrate on disciplinary classroom techniques (Decker & Rimm-Kaufman, 2008).

Meanwhile, experienced or in-service teachers presented better instructional management and communication with their students due to their less-controlling methods; they can provide a more suitable psychological environment for their students (Martin & Baldwin, 1996). In a recent study, pre-service teachers noted that their effective teaching mainly reflected their own teachings, such as being well-behaved, enthusiastic, and fair (Tajeddin & Alemi, 2019).

Conversely, in-service teachers focused more on criteria directly related to their students, such as a positive and energetic classroom climate, students' needs, motivation, and management skills (Tajeddin & Alemi, 2019). However, both in-service teachers and pre-service teachers possess stable structures of professional vision and belief, implying they consistently hold their respective beliefs regarding practice (Meschede et al., 2017). Despite adulthood beliefs' rarely changing, researchers have described teachers' beliefs as a developmental concept from learning and teaching (e.i., Pajares, 1992). Teachers' beliefs may exhibit differences over the years due to interactions with factors in their working environment, chiefly their interactions with students (Decker & Rimm-Kaufman, 2008; Erkmen, 2012).

Previous studies noted that teachers' beliefs establish a precedent for teachers' practice (e.g., Pajares, 1992; Buehl & Beck, 2015). Teachers' beliefs about the subject matter directly influence their teaching strategies, classroom behaviors, and perception of students' abilities (Kuzborska, 2011). Teachers' beliefs may function as information organizers which drive teachers' practice (Mansour, 2009). Teachers' beliefs and practices are context-dependent, in the "nested social context" (Mansour, 2009). Although teachers' beliefs may seldom change (Mansour, 2009 p.37), professional growth for novice teachers and the classroom reality will challenge their initial beliefs. Clarke and Hollingsworth (2002) proposed six reasons teachers' beliefs may change: (1) training, (2) adaption, (3) personal development, (4) local reform, (5) systemic restructuring, and (6) professional growth. Richardson (1990) focused on individual drivers: (1) *teacher autonomy*, referring to teachers' autonomous decision to select appropriate, and (2) *learning to teach*, indicating teachers' cognition and beliefs. However, teachers need years to change based on their ages and career experiences (Hargreaves, 2005).

This study will explore how teachers constructed their beliefs by looking at the perception development of practice changes in pre-service teachers' and in-service teachers' beliefs to understand how teachers shape their classroom practice under the social and political factors of the Vietnam context.

Methodology

Participants

This study utilizes qualitative data derived from semi-structured interviews with participants. The author invited teachers via network connections to participate in this study. The participants include three in-service female teachers and two pre-service female teachers across disciplines and school levels in Vietnam. In-service teacher participants are either working in public schools or semi-public schools under the MOET guidance of teaching and curriculum. Pre-service teacher participants are looking for an official position as a teacher. Thus, their school type and teacher type are unidentified. The pre-service teacher participants' discipline remains unidentified because elementary teachers tend to teach most subject matters. The author wanted to interview those who are (1) pre-service teachers who finished their training and had little experience in the classroom to compare beliefs and practices learned in teacher education to (2) in-service teachers who have been teaching for at least five years as they can provide more detailed information on how the reality of the classroom has altered their beliefs.

Pseudo	Level of school	Types of school	Discipline	Experience	Types of teacher
Nguyet	Senior High	Public	Chemistry	18 years	Experienced teacher
Linh	Senior High	Semi-public	Math	5 years	Experienced young teacher
Huong	Elementary	Public	Grade 2	7 years	Experienced young teacher
An	Senior High	Public	English	2 months	Pre-service teacher
Lien	Elementary	Public	All	3 months	Preservice teacher
Total					5

Table 1: Participants Demographics

Data collection

Participants were contacted and provided the necessary information to consent to participate in the study. Anonymity was guaranteed, and participants' real names were not revealed. The first author, a Vietnamese national, is studying in Taiwan; thus, the interviews were conducted through Zoom in the Vietnamese language and lasted one hour on average. The interviews were video-recorded and transcribed. The researcher conducted an in-depth and semi-structured interview with the following questions:

1. Can you describe what is considered as effective teaching in your classroom?
2. What factors influence your teaching?
3. In what conditions will you change your practice?
4. What do you expect from your teaching? And your students?

Analyzing the Data

After transcribing the interviews, the interviewer sent the scripts back to the participants to ensure the internal reliability of the data (Merriam and Tisdell, 2019). The authors used conventional content analysis to identify the key categories, contextual and draw meaning from the teachers' responses (Bazeley, 2013; Hsieh & Shannon, 2005; Merriam & Tisdell, 2019). The researchers analyzed the data following Merriam and Tisdell's (2019) five steps of procedural guideline to maintain analytical focus on the research questions: (1) categorizing and identifying the valuable data, (2) sorting categories, (3) naming the categories, (4) merging the categories, and (5) becoming more theoretical. After identifying data fragments related to the purpose of the study, the researchers sorted and categorized those data, then merged them into main themes.

Findings

1. How do pre-service and in-service teachers construct their beliefs about practice changes in Vietnam?

The participants in this study showed differences in years of experience, level of instruction, and school type (semi-public and public schools); differences which influence their

classroom practices and outcome emphasis. The teachers emphasized that student engagement, whether students enjoyed the classroom, or students' academic performance shaped their beliefs regarding goal-making in classroom practices.

Levels of instruction

The most remarkable difference appears between elementary and high school teacher participants, regardless whether they are in-service teachers or pre-service teachers. Elementary teacher participants focused on how students engage in their learning, implementing activities to encourage student involvement in their classroom practice. For example, Lien repeatedly expresses that "student engagement" will be the decisive factor, implying teachers should be the ones to design activities to engage students in the classroom, "...students feel engaged with my teaching, they actively participate in classroom activities, presenting 80% of successful classroom... In the story-telling class, I usually ask them to role-play to draw their attraction and engagement... I implement games and some group work activities as well."

The score policy can explain this practice in elementary schools, which may lead to a different teaching focus. Huong accentuated that elementary students need a summative assessment and teachers' evaluation for their whole process, including their academic performance and learning attitude, "I no longer score them [my students]" According to Huong's testimony, assessment policy in elementary school is "flexible" when teachers can base their daily evaluation on students compared to their summative test results. If students cannot perform in examinations as well as in the classroom, teachers can reevaluate them. Elementary teacher participants exhibited autonomy in their classrooms, opting for education without test pressure or focus primarily on students' performance outcomes.

Meanwhile, high-school teacher participants, both pre-service and in-service teachers, focused on students' academic performance, especially testing. An shared that, "No matter whether students like my subject, English is a required subject, thus, students need to acquire some basic ideas of the course, and they can do the test." In a similar way, Linh, an in-service High School Math teacher, described her classroom practice, "I will repeat the important lesson multiple times. And I just required them to understand the lesson to achieve 5 points [out of 10]."

Years of experience

The findings showed that participants' policies adapted along with their years of experience. Pre-service teachers (Lien and An), and in-service teachers (Linh, Huong, and Nguyet), displayed different attitudes towards policy compliance in their classroom practice. When asked to describe their classroom practice, pre-service teacher participants emphasized their teaching methods to engage students in the lessons. Pre-service teacher participants expected their students to achieve "deep learning," "real-life practice," "happy to learn," "identify individual preferences," and "select an appropriate level of task difficulty." Pre-service teacher participants displayed indifference between their classroom practice and policy compliance. An even shared, "If students do not meet my requirements in class, I can punish them or fail them... parent-related issues will be the school's things, not mine."

On the contrary, in-service teacher participants emphasized, "...the principal's requirement, which ensures students pass the national exams" or following "...the registered goal at the

beginning of the semester.” In-service teacher Participants seem to comply with the requirements or policies in their way. High-school teacher Participants, Nguyet and Linh, particularly emphasized this as their students face national exams which directly impact the school’s reputation. A typical example is Nguyet, who has been teaching for 18 years, adjusting her classroom policies to ensure her students achieve the required performance to meet “the registered goals.”

I have different requirements for types of students, like social or natural classes. And my subject is also not required for all students [for national exams], and even students and parents only focus on their needed subjects... For some students, I just required them to take note of what I wrote on the board and keep silent in my class; they did not even need to do homework. [Formative] tests are open-book tests, meaning they need to find what they took note of before and put it into their test paper...

In-service teacher participants tended to set up more “flexible” content goals and classroom rules as they were aware of students’ diversity in learning ability and styles in their classrooms. The more experienced teachers become more flexible in their scoring and assignments for students, particularly low-achieving students.

Type of school: Semi-public vs Public schools

There is only one participant, Linh, an in-service teacher participant working in a semi-public high school; high-schools in Vietnam which have low reputations and low-performing students. Thus, parents or the school administrative board do not pressure Linh to ensure students achieve high scores. Students in semi-public high schools simply aim to pass the national exams and obtain a high-school diploma. Linh gave her students “manageable tests” and the ability to “retest” if their performance was low. Comparatively in public schools, students aim for acceptance to a university. Thus, by helping students weak in certain areas within the public high schools, as, “... some of them [students] have nothing [related to Chemistry] in their head...”, Nguyet demonstrated a strategy in formative tests to improve her students’ summative test results.

Overall, external factors guided participants’ classroom practice. Notably, in-service teacher participants displayed “flexibility to assessment,” “situational adaption,” and “sensitivity to policy change” in classroom practice as a result of confronting more variations of policies and classroom situations.

2. How do the teachers change their practice?

The findings signified pre-service teachers are more willing to change their practice due to a lack of experience, exposure to students and exposure to governmental policies. In-service teacher participants (Lien and An) mostly focused on students and the classroom scale. Thus, pre-service teachers are comparatively less aware of external factors influencing their teaching while the in-service teacher participants (Linh, Huong, and Nguyet) are under pressure to change in accordance with the 2018 Educational Reform in Vietnam. This section mainly focusses on how in-service teacher participants change their practice.

Teacher training's gap between theory-practice

To meet the goal of the 2018 Educational Reform in Vietnam, the in-service participants had to participate in training courses for new curriculum implementation, which emphasizes new textbooks and diverse teaching methods in the classroom. Experienced participants remarked on some “interesting” and “employable” methods for their students, exhibiting their positive opinion toward the change. Conversely, Nguyet, the most veteran participant, assumed that training courses did not help her with new curriculum adaption, “I just showed up there, they [Department of Education and Training] required me to listen to the video, okay, I turned it on and did other stuff.” Results show two categories towards change: refusal or adjustment. However, participants preferred lecturing rather than using interactive teaching in their classroom.

For example, Nguyet reflected she refused to use the new methods due to class size, students’ characteristics, amount of content, time limit, and her goal of emphasizing more content:

That stuff [the training courses] comes purely from theory. If you want to employ a new method, and students are not willing to cooperate, you cannot do anything; even those methods seem good, but whether it is fit the context... Students are not autonomous enough to do those activities [new methods]; they prefer doing cram schools.

Linh and Huong, younger but experienced participants, tried to make students learn according to the new teaching methods, but they were afraid students would be bored when they used the same activities. Huong shared, “I usually let my students do 2-3 activities in the classroom, but each activity just last for 3-4 minutes, really simple like pair-check. I also have to catch up with the curriculum.” Linh assumed that new teaching methods [technology-integrated] could motivate her students, but due to “content focus.” Her designed activities, “watching a video,” “playing games”, were usually irrelevant to the content goals and just for students’ fun. She would rather focus on content than engaging activities, what she called “lesson appearance.”

Moreover, in-service participants implied implementing new teaching method is more “time-consuming” than lecturing due to their responsibility for administrative work outside the classroom, referring to teacher assessments that directly influenced participants’ performance in work places, “regular report, document checking, four times a year, lesson plans, student application, all kinds of meetings, those are school levels”, Linh said.

“Achievement syndrome” constraints in-service teachers

As mentioned, in-service participants need to respond to policy change, but policy changes imply “performance syndrome,” the administration pressuring teachers for improved student performance. Participants must meet new goals with different strategies to make students perform better on exams, or to make students’ academic transcript look more “beautiful” for higher school reputation.

Participants emphasized “content objectives” to achieve higher test scores. Nguyet believed that this change was unhelpful because “...it [the new textbook] is such a waste...”, and implied she preferred the old textbook, which focused more on “content” with no extra activities, because she just updated content every year instead of teaching techniques or

student-related issues “I am not like other teachers; I always update what types of exam questions for students every year.” Other participants also implied their content focus which was “lesson objectives” and “basic knowledge” for students to achieve high test performance. Nguyet said, “I just want to have a new textbook and decide which content I should teach my students...”

In-service participants believed that they worked to achieve multiple performance goals. As an elementary school teacher, Huong needed to achieve the “registered goal” only, but high-school teachers need to achieve goals for the principal’s requirements, parents’ pride for their children, and teachers’ empathy for students’ future (i.e., university entrance exams). Linh shared that her principal required her to make students achieve 7.2 [out of 10] because, “when students achieve this threshold, they just need 4-5 [out of 10] to pass the national exams...but usually my students just achieve a 2-3 [out of 10] ...so I have to retest them with manageable test content to make their academic transcripts look better.”

Nguyet, the veteran teacher, made a comparison of students’ title rates between 5 years ago and now:

...you know, students with distinction grades are so common, for example, 51 students in a class, only 4 couldn’t get that title [distinctive student], which means 90% of students can get that...comparing to just 5 years ago, only 10% of students could get that title [distinctive student].

She explained that students need to have “beautiful” transcripts to apply for high-ranking universities as parents also asked teachers for help to make their children’s future easy. Nguyet also assumed that the “other school will do the same”; therefore, “it will be more equal if my students can get the same benefits as other schools’ students.”

Overall, pre-service participants tend to change their practice inside classrooms; in-service participants, on the other hand, tend to adapt to the policy which influences their practice, specifically, participants’ grading and testing plan.

Discussion and Conclusion

This study addressed how teachers constructed beliefs influence teachers’ practice in the Vietnamese context. Although this study aligns with previous research on teachers’ beliefs regarding practice, it is specifically for the Vietnamese-context teachers; therefore, this research contributes to the literature by investigating teachers’ beliefs in a regional social and political context (Mansour, 2009).

Congruent with the literature, teachers’ beliefs may develop differently over years (Decker & Rimm-Kaufman, 2008; Erkmen, 2012). Due to a lack of classroom experience, pre-service teachers hold unrealistic expectations of their designated goals for their students (Martin & Baldwin, 1996). The literature noted that in-service teachers focused more on students’ needs, motivation, and management skills, while pre-service teachers reflected more on their teaching (Tajeddin & Alemi, 2019). However, the findings showed the contrary occurs in the Vietnamese context, as participants displayed that pre-service participants tend to focus more on students’ motivation, engagement, and student needs than in-service participants. In-service participants in this study seemingly appear to be “policy executors” whose teaching focused on how to “balance” students’ performance to meet the “registered goals.”

Participants also suggest problems with administrative work, classroom management, distraction by various activities, and curriculum scheduling prevented changes to their classroom practice.

Pre-service participants presented heightened willingness to change to fill the experience gaps compared to in-service participants. Pre-service participants hold more favorable views on adapting new teaching methods compared to in-service participants. The findings also suggest in-service participants' personal goals interacted with the current policy, school's managerial board needs, and parents' need, which demand for a display of "beautiful images" of education in Vietnam, that is "achievement syndrome."

Student performance has emerged as an influential factor in teacher practices, chiefly in how teachers form their perception of student performance to construct the classroom policy in reaction to meta-policy change. The findings indicated that participants' beliefs were heavily influenced by social norms, particularly in-service experienced participants. "Achievement syndrome" – when teachers focus on examinations as tied to their student future careers (UNESCO, 2017) – directly constrains the in-service participants' perceptions of their students. Participants had to deal with pressure from parents, school leaders, and the local government - who largely invent and fictionalize their district's schools' reputation - limiting participants' opportunities to change their practice. The findings also revealed that due to the tight connection between teachers' and students' performance, experienced participants maintain their beliefs in content-focus lectures to ensure students score highly on tests.

Moreover, this study found that different levels of "achievement syndrome" occur between elementary and high school participants due to the grading policy. Elementary participants tended to emphasize "student engagement" and "content focus," while high school participants focused on teaching the exam content. High school students' performance will be counted as a criterion for university entrance admission. However, due to the authority of scoring and the pressure of "achievement syndrome" from the local government, high school participants demonstrated their practices of "formative tests" as "assisting their students to become successful.", which is contrary to previous studies, policymakers should consider putting more weight on the formative assessment, which evaluates students' working process (Purves, 1992). The findings herein raised inquiries about testing systems and political elements influencing the school system and classrooms.

Overall, it seems that social norms and political elements largely influence teachers' beliefs, constructing teachers' practice. Despite their consideration of relevance to students' future careers, participants seem to take notice more of their performance to school and to the public than students. This study focuses on only five case studies, and a lack of gender diversity but exhibits the difference of educational policy influencing elementary and high school levels, thus urging the government offices to consider policy influences, particularly testing and scoring systems.

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***Research on User Experience Design of Public Warning System:
A Case Study of Earthquake Alert of Mobile Device***

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Abstract

The earthquake alert is a warning message the public will receive when an earthquake occurs in Taiwan. Although the information distribution unit is the central government, the core of the construction lacks a user perspective. Through affinity mapping of user experience investigation, it is found that most users want to receive information about "main earthquake," "warning type," "extended disaster," "refuge instruction," "post-earthquake related information," and "status report." Next, the three designers are asked to follow the above information requirements and design earthquake alert interfaces. Thirdly, the interface will be adjusted after expert interviews, interface evaluation feedback, and testing. Finally, the formal test passed the usability test of 35 participants. The research concluded that the information content could be divided into three types: "disaster information," "user guidance," and "the subsequent current situation and others" and found that the information process should be divided into (1) before and during the earthquake (2) the first half of the earthquake (3) the second half of the earthquake (4) the second half of the earthquake. This study has summarized seven critical points of the design interface, including (1) simple and straightforward important text, (2) color discrimination of earthquake levels, (3) simple images related to information transmission, (4) enlargement of important text and images in crises (5) page flashing display can improve the attractiveness to users (6) the design of buttons should have guiding functions (7) complex information can be simplified through links to reduce the burden of users.

Keywords: Earthquake Alert, Earthquake Warning Page, User Interface, User Experience, Usability, Affinity Diagram

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1. Introduction

Each country has its corresponding measures to address the threat of earthquake disasters. The government provides the earthquake information, the earthquake app, or the device's built-in system so that the public (users) can quickly understand the situation and respond to actions in the face of an earthquake. However, the stressful environment will damage users' information processing ability during a disaster (Stratmann & Boll, 2016). In addition, in the face of such crises as earthquakes, the development of uncertainty in disasters, rapid response actions, and inappropriate actions that cause loss of life and property are often accompanied (Yang, Yang & Plotnick, 2013). Therefore, the disaster-type system's quick earthquake reports design should be based on users. Otherwise, it will cause trouble for users (Tan et al., 2020).

In Taiwan, the government is mainly forced to send earthquake alerts to public action devices as warning messages. Still, the earthquake alert is not created from the user's opinion, and the contents are displayed in plain text. And the built-in system of the disaster prevention brief report app, Google Alert, and Japanese Yahoo! use images to display earthquake information and prompt users to refuge actions. Graphics has become the main body of human-computer interaction in the era of intelligent data. Therefore, this study takes the Taiwan earthquake brief report as the design background and considers that the user uses the device under high risk (Sarshar, Nunavath & Radianti, 2015), providing critical, complete information. Necessary, updated information during the crisis (Harris, 2017) uses the seismic information expected by the user to design the page and finally proposes a new earthquake quick report interface design after passing the usability test. Therefore, the following three questions are raised:

1. What important information do users want to receive from the earthquake warning page when an earthquake occurs?
2. What is the user's use history of the earthquake warning page on the mobile device during the evacuation process?
3. What should be included in the interface design points of the earthquake warning page for users?

2. Literature Review

2.1 Earthquake alert message

When the seismic station near the earthquake's epicenter observes a shallow quake of medium and large scale (more than 4.5) has occurred. It happened on Taiwan islands or offshore areas; the positioning can be completed in 10 to 15 seconds. The time of occurrence, the epicenter's location, the focal point's depth, the earthquake's scale, and the earthquake's size can be obtained (Central weather bureau, 2018). The real-time warning of strong earthquakes means that after an earthquake occurs, before the arrival of destructive seismic waves (S waves) in various regions, the estimated arrival time, and the impact (earthquake intensity) of the S waves from multiple areas will be warned. If the alarm is issued before the arrival of the seismic wave, we can strive for several seconds to ten seconds of early warning (Central weather bureau, 2018). When the scale of the earthquake reaches more than 5.0, and the estimated intensity scale of the earthquake in which any county or city government is located reaches more than intensity scale 4 (intensity scale 3 in Taipei), the earthquake quick report message of strong earthquake instant warning will be released through the public

warning system (PWS) to the mobile phones of the citizens in the county (Taiwan Inc., 2016). The end user will receive the earthquake quick report information displayed in the text, which includes the time of the earthquake, the location of the epicenter, the significant earthquake, the earthquake evacuation action, and the warning words "drop, cover, and hold" (Fig. 1).



Figure 1: 2022 latest earthquake alert mobile message (Ciou, 2022).

In an earthquake, the mobile phone will also emit sound and vibration. According to the third-generation mobile communication terminal's technical specification (National Communications Commission, 2018), the alarm sound and vibration signal can only be used in the disaster prevention alarm cell broadcast message. They cannot be synchronized with each other, nor can they be set and modified by themselves. The alarm sound is mainly composed of 853hz and 960hz of exceptional audio, and the alarm sound and vibration signal have a particular interval form (Fig. 2).

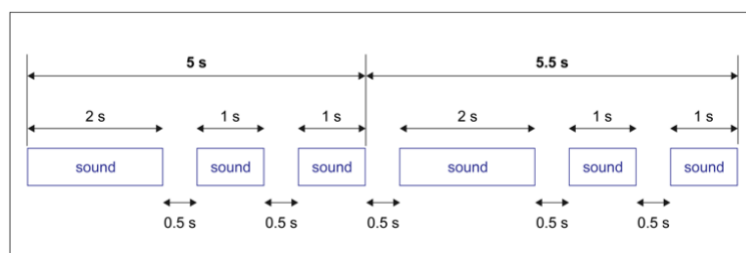


Figure 2: Special interval of alarm sound and vibration signal.

At present, because domestic people are still in the 3G/4G wireless communication environment, and due to factors, such as network stability, hardware performance of handheld devices, wireless push technology, application software development, etc., only fixed earthquake quick report messages can be provided with limited text warnings (Central weather bureau, 2018), however, with the enhancement of 5G technology, more changes can be made to the layout and design of the transmission of earthquake alert messages.

2.2 Earthquake warning page

Facing the threat of earthquake disasters, each country has its corresponding measures. In addition to the earthquake quick report messages sent by the government, there are even some apps that provide earthquake-related information or built-in earthquake warning systems, which enable users to receive nonpure text warning information in the face of earthquake conditions, and have more detailed content, so that users can more quickly interpret and understand the data and improve their self-protection awareness and response. The following will be a further analysis of the earthquake warning pages that jump out of various mobile device apps or built-in systems of an earthquake (Fig. 3).

According to the analysis of the earthquake warning pages of the above devices, it can be found that the information content and version provided by each carrier are different from each other, and the user must select a suitable warning page through multi-party comparison and selection. However, it cannot be directly compared with the general situation in the face of disasters. Users are likely to use it under extremely high-risk conditions (Sarshar, Nunavath & Radianti, 2015). Users' ideas in producing disaster-type products or early warning information must be paid more attention to. If designers or creators only assume and design according to their views, it is likely to hurt users in the event of disasters and thus endanger the personal safety of users.



Figure 3. Example of an earthquake warning page of a mobile device application or built-in system (Chen,2019;9M87,2018; University of California,2019; Yahoo! Japan, 2018; Hongyu and Bianji, 2019; Fakhruddin, 2021).

2.3 User experience design

User experience is only a sub-item of experience, focusing on a specific medium, interactive products (Hassenzahl, et al., 2013). When the situation involves the experience design, it is the question of consciously creating and shaping the experience. The experience is usually caused by direct observation or event participation, and the experience itself is an individual event responding to stimuli (Schmitt, 1999). To create a meaningful user experience, user experience design must be incorporated into the development of the organizational system process, and more attention can be paid to end users and their needs (Erdős, 2019).

Facing the current situation during the disaster, Prasanna and Huggins pointed out that the information system to assist the emergency response technology may save lives and minimize economic losses. When ordinary users use emergency response technology, their behavior may differ from general fields. For the quick earthquake report information system, this environmental disaster management tool aims to enable technology to help users make immediate response measures in an emergency (Prasanna & Huggins, 2016).

Well-designed technology systems can help users make wise decisions in times of crisis. Still, if technologies are not designed according to the end users' situation, they will also hinder users (Tan et al., 2020). The emergency response system must focus on the design of human information processing processes and information systems to keep human cognition in the best state (Hiltz, Van de Walle & Turoff, 2014).

Faced with the occurrence of this type of immediate disaster, Abdelouhab, Idough, and Kolski pointed out that the goal should be set with the end user because the user-centered

design method is more suitable for the early stage of the development process, and the participation of the end user is essential (Abdelouhab, Idoughi& Kolski, 2014). Design thinking (DT), which takes "user-centered design" as the core concept, also continues to emphasize that since the user of the product is the user himself, the essential participant in the design stage is the user (de Paula, Menezes& Araújo, 2014). It can be seen from this that if the design is not aimed at the user's needs, the product used at this time cannot let the user understand its content or use mode in the shortest time, or even misleading, which may turn the product's functionality into a threat and directly cause extremely high threat and harm to life safety.

3. Method and Materials

The experiment first uses Affinity Diagram to investigate the users' needs for the information content and process they want to receive during the earthquake. Collect the obtained data, and analyze the similarities or similarities proposed by the experimental groups in the experimental stage. By integrating the data of the affinity mapping method, we can improve and get the ideas and needs of users. These data can be used as the core basis for the design of earthquake warning pages under earthquake disasters (including "interface process," "customer journey map," "personas," and "situational assumptions") and become the design direction that designers need to follow in the focus body method. The designer will use Figma, the collaborative interface design software, to create the prototype design of the earthquake warning page, and the prototype design will be transformed into an interactive mode. In the expert and user interface pre-test, the iPhone with a 6.1-inch screen will play and operate the interface prototype. The interface's deficiencies created by the designer will be modified through the interview feedback results to optimize the overall interface.

Based on the modified interface, the participants will be tested through the interface operation under three situation simulations: (1) only the earthquake occurs; (2) the earthquake occurs first, and then the aftershock occurs; (3) the earthquake occurs first, and then the aftershock occurs, and finally, the shelter is opened. The first two situation simulations only have a simple interface jump; the participants do not need to operate the interface. The third scenario requires participants to use the interface and participate in the task test because the shelter's opening is a notification of the message and a guidance function. The execution of the task can help researchers understand the performance of the participants' interface operation time in the study of opening the shelter.

After the experiment, fill in three questionnaires: (1) System usability scale (SUS): 5-point scale (from 1 significantly disagree to 5 very agree), a total of 10 questions; (2) User interaction satisfaction questionnaire (QUIS): 10 point scale (from 0 very dissatisfied to 9 very satisfied), a total of 23 questions; (3) Interface perception questionnaire: 10 point scale (10 point scale, each group's opposite feelings are at both ends of the scale), four groups of feeling degree (relaxation vigilance, relief tension, security danger, fearlessness fear) ask questions on nine pages respectively, with a total of 36 questions. The experiment results were analyzed by SPSS software on the system usability scale (SUS), user interaction satisfaction questionnaire (QUIS), the problem of interface feeling, and the task operation time performance of participants. The issue of interface feeling was derived from the feedback induction of the participants in the pretest experiment.

4. Result and Analyses

According to the Affinity Diagram, most of the participants think the information of "the number of earthquakes in the receiver's location," "the location of the earthquake epicenter," "earthquake evacuation action," "earthquake scale," "earthquake occurrence time," and "the nearest shelter" should appear during the earthquake process, and "mandatory display" is required when necessary. However, some information is not presented in the current earthquake alert messages, and the warning and guiding information should extend from before to after the earthquake. Based on the Affinity Diagram of the message summarization, the designer focus group method, and the preliminary test, the formal interface design drawing of the earthquake warning page is shown in Fig. 4.

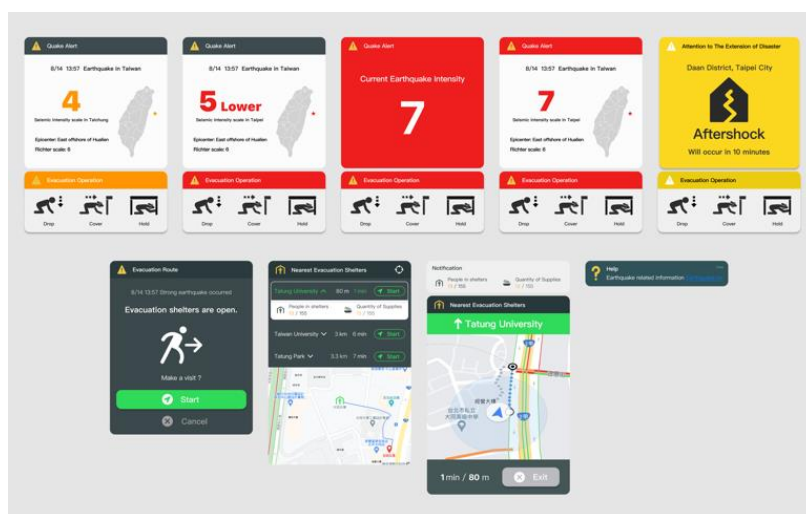


Figure 4: Earthquake warning page design.

According to Nunnally and Bernstein (1978), a Cronbach's alpha coefficient > 0.7 is considered high reliability, and the Cronbach's alpha coefficients of the three questionnaires were all greater than 0.7 (as shown in Table 1), so the questionnaire in this study has good internal consistency.

Table 1. Cronbach's alpha coefficient for each questionnaire.

Questionnaire	Question	Cronbach's α
SUS	10	0.780
QUIS	24	0.922
Interface perception	36	0.927

4.1 System Usability Scale (SUS)

The total ease of use scores of 35 participants was higher than the standard average score of 68 points on the system ease of use scale, and the total average score was 88.1 point. Under 5 is the maximum score, and the average score of each question is higher than 4 points. SUS 8, 4, and 2 were the reverse questions expressing their disagreement. The questions issues all think they are ordinary or agree (Table 2).

Table 2. Descriptive statistics of system usability scale

No.	Question	Mean
SUS 10:	I needed to learn a lot of things before I could get going with this system. (disagreement)	4.77
SUS 8:	I found the system very cumbersome to use. (disagreement)	4.69
SUS 7:	I would imagine that most people would learn to use this system very quickly.	4.66
SUS 1:	I think that I would like to use this system frequently.	4.66
SUS 6:	I thought there was too much inconsistency in this system.	4.51
SUS 3:	I thought the system was easy to use.	4.51
SUS 9:	I felt very confident using the system.	4.46
SUS 5:	I found the various functions in this system were well integrated.	4.43
SUS 4:	I think that I would need the support of a technical person to be able to use this system. (disagreement)	4.29
SUS 2:	I found the system unnecessarily complex. (disagreement)	4.29
Score interval	Number of people (N=35)	Percentage (%)
70-79	9	25.7
80-89	8	22.9
90-100	18	51.4
Total average of scores : 88.1		

4.2 User Interaction Satisfaction Questionnaire (QUIS)

According to the user interaction satisfaction questionnaire score, 9 is the maximum score for each question, the total score of the 35 participants was 216, and the total score of the questionnaire got 198.3. Table 3 shows the results of the questionnaire.

Table 3. A score on the system usability scale of the participants.

No.	Question	Mean
QUIS 4-1	Learn to operate the system (difficult - easy)	8.74
QUIS 4-3	Tasks can be performed easily and quickly (never - always)	8.54
QUIS 6-4	System and system interface (clutter-clear)	8.51
QUIS 5-3	Consider the needs of experienced and inexperienced users (never - always)	8.49
QUIS 3-3	The message provided on the interface (confusing - clear)	8.49
QUIS 4-2	Remember the name and function of the operation command (difficult - easy)	8.46
QUIS 3-4	Systematically lets you know what you're doing (never - always)	8.46
QUIS 3-2	Position of information in the interface (inconsistent - consistent)	8.43
QUIS 3-1	System terminology (inconsistent - consistent)	8.43
QUIS 6-3	System information and reports (shoddy - quality)	8.40
QUIS 5-1	Execution speed (very slow - fast enough)	8.29
QUIS 2-3	Information layout on the interface (Confused - Clear)	8.26
QUIS 2-1	The fonts displayed on the interface (Not easy to read - easy to read)	8.23
QUIS 2-4	Consistency of interface design (Confused - Clear)	8.23
QUIS 2-2	Marking of highlighting function (Useless - Useful)	8.23
QUIS 5-2	System reliability (unreliable - reliable)	8.23
QUIS 1-2	The overall response to the system (Simple - Difficult)	8.20
QUIS 6-1	The use of color and sound (shoddy - quality)	8.17
QUIS 1-3	The overall response to the system (Low performance - High performance)	8.14
QUIS 1-1	The overall response to the system (bad-good)	8.11
QUIS 6-2	System feedback (shoddy - quality)	7.94
QUIS 1-5	The overall response to the system (Inflexible - Flexible)	7.80
QUIS 1-4	The overall response to the system (Uninteresting - Interesting)	7.57
Score interval	Number of people (N=35)	Percentage (%)
150-159	1	2.9
160-169	1	2.9
170-179	2	5.7
180-189	2	5.7

190-199	11	31.4
200-209	10	28.6
210-216	8	22.9
Total average of scores : 198.3		

4.3 Subjective Feelings of Interface

The total average of the four items (A sense of relaxation–alertness; Relief–Tension; Security–Danger; Fearlessness–Fear) in the questionnaire of the subjects' interface perception is shown in Table 4 and Fig.5. From interface 1 to interface 3.1, the subjects' average perception of each item gradually increases. The "sense of relaxation - a sense of vigilance" increased from an average of 6.1 to 8.7, tending progressively to the sense of vigilance. "Ease - tension" increased from an average of 5.6 to 8.7 and progressively became tense. The "sense of security - a sense of danger" increased from an average of 5.6 to 8.3, gradually tending to a sense of danger. "Fearlessness - fear" increased from an average of 5.1 to 8.2 and progressively grew to fear.

Table 4. A score on the system usability scale of the participants.

Interface (10-point scale)	A sense of relaxation - alertness	Relief– Tension	Security– Danger	Fearlessness– Fear
Interface 1	6.1	5.6	5.6	5.1
Interface 2	7.3	7.3	7.4	6.9
Interface 3.1	8.7	8.7	8.3	8.2
Interface 3.2	7.8	7.6	7.5	7.3
Interface 4	6.4	6	5.9	5.3
Interface 5	4.9	4.8	4.1	4.1
Interface 6	4.7	4.4	3.5	3.7
Interface 7	4.1	3.8	3.3	3.3
Interface 8	2.6	2.6	2.9	2.5

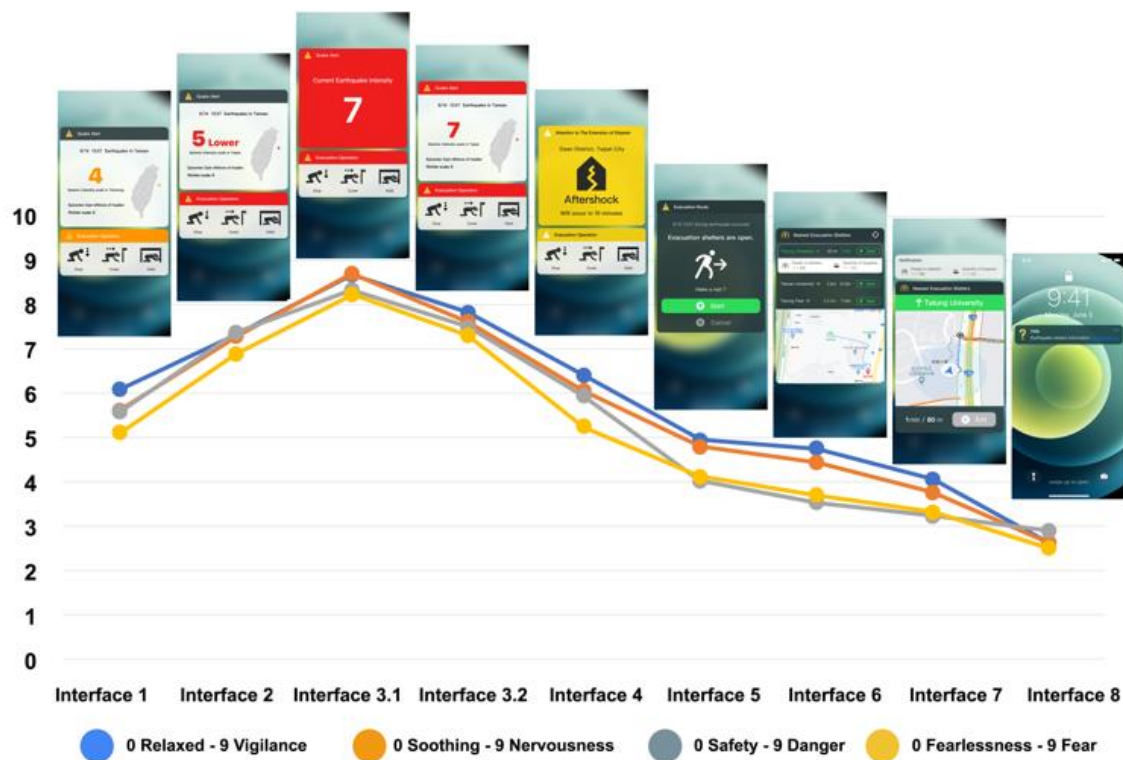


Figure 5: Average curve of the questionnaire for the degree of feeling of each interface.

From interface 3.2 to interface 8, the average feeling of the subjects in each item gradually decreased. "Sense of relaxation - a sense of vigilance" fell from 7.8 to an average of 2.6 and progressively tended to feel relaxed. "Sense of relief - a sense of tension" decreased from 7.6 to an average of 2.6, gradually growing to a sense of relief. "Sense of security - a sense of danger" decreased from an average of 7.5 to an average of 2.9, and gradually tended to feel safe. "Fearlessness - fear" fell from 7.3 to an average of 2.5 and progressively became fearless.

4.4 Discussion

After the formal experiment of the interface evaluation, the final proposal for the design of the earthquake warning page through the usability evaluation is obtained (Fig. 6).

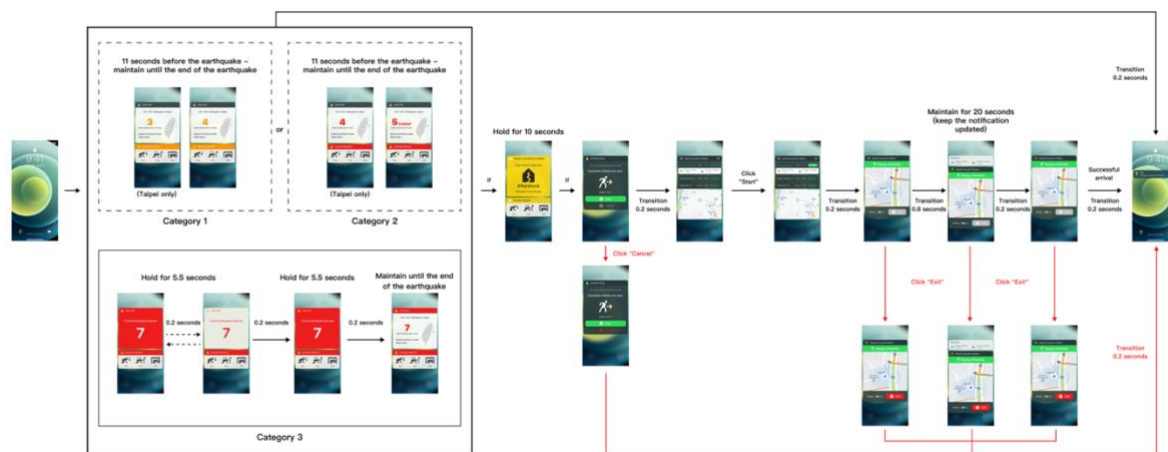


Figure 6. The interface of the earthquake warning page interactive use process final design.

The messages users want to receive on the earthquake warning page extend from before to after the earthquake and must be updated constantly. Most of the information is related to the main quake, and the comprehensive disaster information caused by the earthquake also attracts users' attention. This type of information content is related to "disaster information." Moreover, the information received about the evacuation action and instruction is associated with the safety and maintenance of the user's life. The user needs to receive relevant information on how to protect himself in a crisis, and the content of this information is related to the "user himself." The expectation of receiving relevant information after the earthquake and the status report with the family is associated with the information connectivity between the user and the current situation and the family. Such information belongs to the information linkage of "follow-up status and others."

In the early stage after the quake, users are most likely to face a second disaster caused by the extended disaster, so they need to receive information about the comprehensive disaster and self-protection again. In the next step after the catastrophe, users need relevant information about extending their safety to extend their lives. Finally, when the user is safe, he can learn more about the post-disaster situation and contact his family. Therefore, the information display process of the earthquake warning page should be divided into four stages, which are "before and during the earthquake," "the first part after the earthquake," "the middle part after the earthquake," and "the final part after the earthquake" (Fig. 7). The information that "must be displayed" in the information flow is "before and during the earthquake" and "the final part after the earthquake." Since the announcement of "the first part after the earthquake" and "the middle part after the earthquake" may not occur, these two kinds of information belong to "specific display" information. They will only appear in the process if they happen.

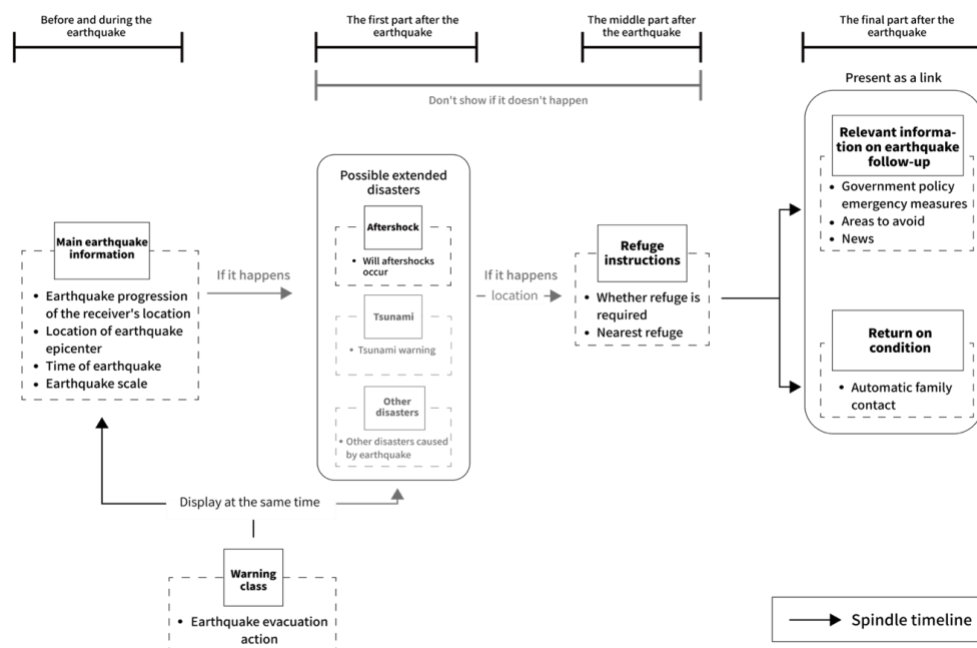


Figure 7. Earthquake warning page information display process.

In addition, the overall interface design is summarized in the following points. (1) All seismic stage designs should include simple but essential text information. (2) The use of color can be distinguished according to the earthquake level. (3) Using images related to the information conveyed on the page can also increase readability. (4) To reduce the reading burden of users in emergencies, the text or image can be enlarged in the design so that the information can be quickly conveyed. (5) The scintillation display used in this study shows that the interface with a design earthquake level more significant than five can attract users. (6) The button shall be designed to guide the user quickly in case of evacuation instruction. (7) The link design needs to appear in a safe state for users to choose to learn more.

5. Conclusion

The conclusion of this study was as follows:

1. The research concluded that the information content could be divided into three types: "disaster information," "user guidance," and "the subsequent current situation and others" and found that the information process should be divided into (1) before and during the earthquake (2) the first half of the earthquake (3) the second half of the earthquake (4) the second half of the earthquake.
2. This study has summarized seven critical points of the design interface, including (1) simple and straightforward important text, (2) color discrimination of earthquake levels, (3) simple images related to information transmission, (4) enlargement of important text and images in crises (5) page flashing display can improve the attractiveness to users (6) the design of buttons should have guiding functions (7) complex information can be simplified through links to reduce the burden of users.
3. The earthquake warning page information display process, interactive mode, and interface design system were proposed. In particular, the design of the entire system has been evaluated for usability, satisfaction, and user experience and has received high

comments. It can be used as a design reference for future research and can be used in practice.

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Psychological Factors Facilitative to Sports Injury Rehabilitation Adherence Among Filipino Injured Athletes: A Basis for Intervention Program

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Abstract

Injury is a detrimental event in an athlete's life that has been happening for years now in Philippine Sports. The way an athlete copes varies from one to another, as they are not just posed with the goal of physical recovery. They also highly face psychological consequences that affect their behavior toward rehabilitation programs. The impact of their rehabilitation adherence determines whether they can be able to successfully return to play or experience re-injury. The purpose of the study was to determine if the psychological factors: Motivation, Social Support, Self-Efficacy and Mental Toughness served as predictors in aiding an athlete's Rehabilitation Adherence. A predictive and non-experimental quantitative research was implemented. Eighty-Seven (87) Filipino Injured Athletes participated in the conduct of study who have been undergoing their rehabilitation programs at Philippine Sports Commission-Sports Rehabilitation Unit. Results showed that the: (1) Identified Regulation in the Motivation Subscale (2) Intrinsic Regulation in the Motivation Subscale (3) Confidence in the Mental Toughness Subscale were positive and significantly correlated with Rehabilitation Adherence. Consequently, the Confidence Subscale of Mental Toughness was the best predictor of Rehabilitation Adherence. Identified Regulation and Amotivation of Motivation Subscale were also predictors. This concluded that when athletes develop a strong sense of these psychological factors, we can ensure a better understanding of their rehabilitation goals, as well as better adherence, would be an expected outcome. The researcher used these results and findings of the study as the basis for a well-facilitated psychological intervention program for Filipino Injured Athletes.

Keywords: Sports, Psychology, Injury

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Introduction

Filipinos have long held sports as a valuable aspect in their lives and culture. The countries' first participation in an international competition was as early as 1913 in the Far Eastern Games. With this huge undertaking, Filipino athletes continue to bring honor, rise above the circumstances, hone their values and learning, and bring this to good influence and responsible citizenship. While it bolsters personal and national competence, it was not an easy journey. One of the most faced challenges in Philippine Sports was the occurrence of injury during play. While these elite athletes had spent over a thousand hours in training, they still had a much higher risk of injury than normal exercisers (Brewer, 2009). Thus, when athletes experienced injury, their sport ethic came in. Evidently, this was the strong identification of the role of athletes which may be difficult, especially in the phase of injury. It pushed them to be tolerant of the possibility of reinjury because they highly believed that this was their sustainable action to continue to play and maintain their part as a Philippine National Athlete. This mentality was somehow challenged by their national coaches, fans, media coverages, who were highly expectant and emphasized the need to play despite the pain or aim for gold. Whether big or small, it did not stop them, as they toughed it out because the strength of the competition hardly matters (Madu, 2014).

Furthermore, Filipino injured athletes tended to be impatient to return to sport because their competitive schedules did not coincide with their recovery schedule. They felt like they had to do it. They competed and took the chance, otherwise, they could have lost their spot to someone who will take the opportunity. This cycle became the major reason for non-adherence, which was a major concern of the Sports Rehabilitation Unit of Philippine Sports Commission (PSC) as it triggered re-injury. More than that, serious psychological implications would come in as it was not properly addressed. This would then become the core reasons why Filipino Injured Athletes seek counseling sessions with the Sports Psychology Unit of the Philippine Sports Commission (PSC) because of their frustration as it had been affecting play.

Purpose

Aligning with the PSC Sports Rehabilitation Unit's goals which were to rehabilitate, put injured athletes back in their pre-injured state, and improve present physical condition, they also intended to promote injury prevention and education. With this, the researcher aimed to overcome the challenges of rehabilitation non-adherence among Filipino Injured Athletes through identified psychological factors that are held valuable in their recovery.

Theoretical Framework

The study was anchored on the Grounded Theory of Psychological Resilience with the integration of Self-Determination Theory and Self-Efficacy Theory which were deemed appropriate in exploring psychological key processes and dimensions on rehabilitation adherence and return to sport after an injury. It uncovered and created a predictive model that would affect rehabilitation adherence among Filipino injured athletes provided with targeted psychological factors such as one's Motivation, Self-Efficacy, Mental Toughness, and Social Support that helped them realize that playing with pain was detrimental but taking care of oneself holistically was a much better way to serve the country through sports.

Method

Given the research objectives, a predictive non - experimental quantitative research design was deemed appropriate for the conduct of study. As explained by Johnson (2001), this type of non-experimental design gathered data in a specific period of time, thus what was collected from the psychological factors aimed at developing and validating a predictive model towards an improved Sports Injury Rehabilitation Adherence, hence a proposed psychological intervention program specific for Filipino injured athletes.

Participants

It focused among the 87 Filipino Injured Athletes aging 16-33, male (49.4%) and female (50.6%) who were having their rehabilitation programs with their respective Physical therapists from Philippine Sports Commissions’ Sports Rehabilitation Unit. Their injuries ranged from mild (28.7%), moderate (65.5%) and sever (5.7%).

Data collection procedure

From there, four sets of questionnaires targeting psychological factors: Behavioral Regulation in Exercise Questionnaire-2 (BREQ-2), General Self-Efficacy Scale (GSE), Mental Toughness Questionnaire (MTQ) and Multidimensional Scale of Perceived Social Support (MDSPSS) were being floated among Filipino Injured Athletes. Afterwards, data analysis was conducted through the use of descriptive statistics, correlation analysis, ANCOVA and enter method regression analysis. More so, it attempted to answer the following two major research questions:

1. What are the Psychological Factors that are predictive of Sports Injury Rehabilitation Adherence?
2. Based on the predictive model of the study, what psychological interventions are recommended to enhance the rehabilitation program of Filipino Injured Athletes?

Results

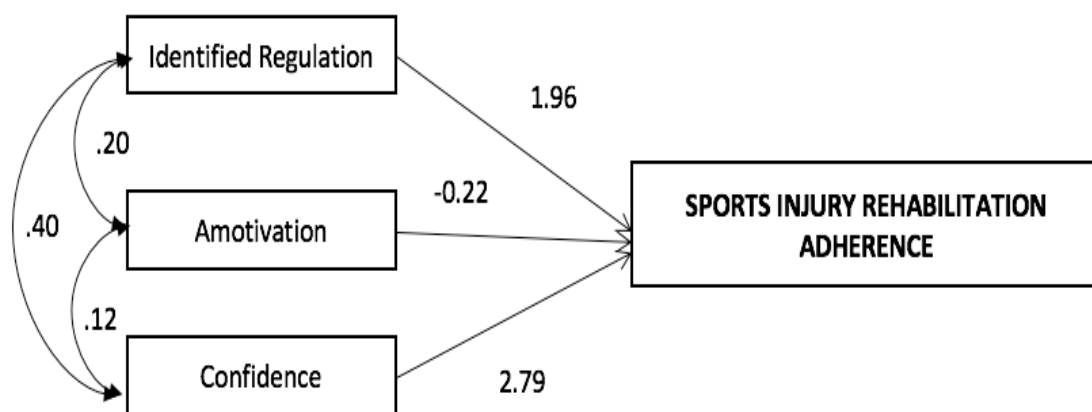


Figure 1. Regression Model of the Predictors of sports injury Rehabilitation Adherence (Rehabilitation Adherence)

Two models were computed. Model 1 computing all the profiles and of the subscales as predictors. Model 2 computing all of the profiles and the total scores as predictors. Model 1

yielded the best results. The coefficient of determination as measured by $R^2(\text{adj}) = 0.68$, showed that 68% of the changes in rehabilitation adherence can be explained by the regression model. However, there may be 3% changes in the variance which can be explained by other factors not included in the model. Anova p-value $<.001$ shows a good model fit. *Confidence Subscale of Mental Toughness* was the best predictor at $\beta=2.79$, $p < 0.05$. Identified Regulation subscale of Motivation was also a significant predictor at $\beta=1.96$, $p < 0.05$. Lastly, *Amotivation subscale of Motivation* was also a significant predictor at $\beta=-0.22$, $p < 0.05$.

The decision was to reject the null hypothesis. The rest of the variables did not significantly predict rehabilitation adherence at $p > 0.05$.

PSYCHOLOGICAL FACTORS	PHASE OF THE PROGRAM	TIME FRAME	OBJECTIVES	PEOPLE INVOLVED	MATERIALS
All Factors: Motivation and Confidence	1. Psychological Assessment	Week 1	Needs Assessment and Future Directions	Psychometrician and Filipino Injured Athletes	Testing Materials and Progress Notes
Amotivation	2. Rebuilding One's Morale	Week 2-3	Address feelings of incompetence	Sports Psychologists, Psychometrician and Filipino Injured Athletes	Pen and Paper
Confidence	3. Confidence Restoration	Week 4-5	Self-belief management in recovery and return to play	Sports Psychologists, Psychometrician and Filipino Injured Athletes	Pen and Paper
Identified Regulation	4. Identifying the Importance of Rehabilitation	Week 6-7	Building strong commitment to rehabilitation	Sports Psychologists, Psychometrician, Physical Therapists and Filipino Injured Athletes	Pen and Paper
Overall Well-being	5. Evaluation of Athlete's Mental Health	Week 8	Identifying the effectiveness of the program and further directions	Sports Psychologists, Psychometrician and Filipino Injured Athletes	Testing Materials and Progress Notes

Table 1. Matrix of the Proposed Mental Recovery Program for Filipino Injured Athletes covers a eight (8) week intervention phase with the predictive variables

Implementing an intervention program specific for Filipino Injured Athletes was important especially if it ensured to 1) target their specific behaviors that needs to be maintained, change or eliminated 2) identify factors that influence their behaviors 3) educate about their problem and goal needed to be accomplished 4) modify current gaps from the previously implemented programs. With these in mind, it can strengthen their recovery phase especially incorporating major psychological factors such as in the aspect of: *Motivation specific to Identified Regulation and handling Amotivation, and Self-Confidence building.*

Conclusion

The Filipino Injured athletes showed an average level of Rehabilitation Adherence, however it was important to put emphasis that the goal of the PSC Rehabilitation Unit and the PSC Sports Psychology Unit was to achieve high levels of Rehabilitation Adherence. Per say,

athletes who do not show up for a few sessions in a 12-week program should not be tolerated as it will only pose the risk of re-injury if there is no completion.

Filipino Injured Athletes need to dedicate their complete compliance for them to be able to achieve an optimal performance in their sport when they return and compete again. Filipino Injured Athletes need to fully understand that missing an appointment with their physical therapists, or not reaching up to the last phase, which was the Function Stage, would only be detrimental and just continuously expose them to more physical pain and limitations. Filipino Injured Athletes should also learn how to reach full acceptance that for some time, they will have to invest so much in recovery, rather than training a certain skill. This would mean being apart from teammates, a change of routine, and most importantly a revisitation of athletic goals. This implementation will be the future directions and goals of the PSC Sports Psychology Unit in terms of handling the psychological implications and preparations of Filipino Injured Athletes.

Moreover, this should also be well coordinated with their respective coaches so as to set elite standards of rehabilitation. With psychological factors identified as Motivation specific to Identified Regulation, Amotivation, and Confidence that were seen to be good predictors, this should be a robust move towards achieving high levels of Rehabilitation Adherence in Philippine Sports which should also be in line with the goal of injury prevention.

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Influence of Speed and Effort on Moral Judgment of Cognitive Enhancement

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Abstract

Previous research suggests that pharmacological cognitive enhancement (PCE) is viewed negatively due to perceived medical uncertainty, coercion, and unfairness and hollowness of the outcome. With the increasing advancement in and use of technology, along with a shift towards machines and gadgets, there seems to exist a need for humans to improve their mental functioning in order to keep up with the developing changes. The unfairness-undeservingness model suggests that the achievements (outcome) gained due to PCEs is considered unfair and therefore morally unacceptable. However, the influence of certain factors such as speed of effect of drug (slow/fast), and amount of effort put in (more/less) on the moral judgment of an outcome, remains unexplored. The purpose of this study is to understand the effect of such factors. We hypothesize that slow/fast (speed of drug) and more/less (effort) will lead to fair/unfair moral judgment of the outcome. This research will help in a fundamental understanding of why people judge outcomes as unfair and how that is modulated by speed of drug (slow/fast) and effort (more/less) required to achieve the desired outcome.

Keywords: Cognitive Enhancement, Moral Judgment, Unfairness, Speed, Effort

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Introduction

Cognitive enhancement is a novel concept that has come up in recent years. Cognitive enhancement is widely characterized as interventions aimed at enhancing mental functioning in people beyond what is required to maintain or regain good health (Dresler et al., 2019). Humans are constantly wanting to improve their mental functioning and evolve, in order to keep up with the rising competition posed by technology as well as others around them. This can be explained by even the most basic example at the level of college students who wish to perform the best at examinations, assignments, etc. Research on the moral judgment of cognitive enhancement is essential to understand how people perceive the use of pharmacological cognitive enhancers. This study aims at investigating the effect of various factors that can explain the moral judgment of the use of such cognitive enhancers.

Literature Review

Moral judgment of pharmacological cognitive enhancers (PCE) is influenced by medical uncertainty (Scheske and Schnall, 2012), coercion (Forlini and Racine, 2009), and unfairness and hollowness of the outcome (Faber et al., 2016). People are concerned about the harm-benefit ratio with the usage of PCEs. They believe that such prescription drugs might have short-term enhancement benefits but will eventually in the long-term produce greater harms for the agent taking such enhancement drugs (Schermer et al., 2009). On the other hand agents who take PCEs might do so because they feel compelled and coerced by the pressures and social situations they find themselves in. Due to the mere availability of PCE's, followed by explicit and implicit pressures, an individual can be forced to use these substances in order to match up to their peers, or participate in competitive environments (for example - workplace, exams at school or college, etc.) (Warren et al., 2009).

Besides the effect of PCEs on agents, the third-party judgments by others is also important. Thus, perceived effort put in by the user and their achievements is related to the judged deservingness or undeservingness of the outcome. One such paper (Faber et al., 2015) compares the judgment between cognitive and motivation enhancement based on the effort put in by the user and the deservingness/undeservingness of their achievements. It was found that the participants generally perceived effort as a huge factor in the deservingness of an achievement, but this was uniform between both groups of participants (cognitive vs motivation enhancement). The more that they viewed effort to be necessary, the more morally wrong they perceived enhancers to be as well as less deserving of achievements. Moreover, it was found that lay persons generally deem users of cognitive enhancement to be slightly more undeserving of their achievements than motivation enhancement. A possible reason they found for this, was that the more advantages that a particular user got, the less deserving their achievement was. Thus, the participants viewed there to be more advantages gained through cognitive enhancement than motivation enhancement.

Apart from PCEs that we have talked about so far, there are also other non-pharmacological cognitive enhancers (NPCE) such as yoga, meditation, etc. Looking at the difference in attitudes towards PCEs and NPCEs would be useful in understanding the reasons that underlie a judgment. This can be seen by a study done by Caviola and Faber (2015). They looked at different PCEs such as methylphenidate, caffeine and modafinil and NPCEs such as physical exercise, computer training and sleep and found that there is no significant difference in the effectiveness between both yet, there tends to be negative attitudes towards PCEs. Most of these concerns arise from the novelty, "unnaturalness" and perceived

unfairness of PCEs. The most important difference between PCEs and NPCEs is that the NPCEs require effort and time for their enhancing effects. The purpose of this study is to understand the effect of these two factors (effort and time). We hypothesize that slow/fast (speed of drug) and more/less (effort) will lead to fair/unfair moral judgment of the outcome. This research will help in a fundamental understanding of why people judge outcomes as unfair and how that is modulated by speed of drug (slow/fast) and effort (more/less) required to achieve the desired outcome.

Methods

Participants

Participant recruitment was conducted online through a call for participants posted on different social media platforms. The sample size of the study included 138 participants totally, split between the 4 conditions (4 groups); speed (fast and slow) and effort (more and less). The speed questionnaire had 36 participants each for fast and slow conditions, while the effort questionnaire had 33 participants each for more and less effort conditions. The age group for the study was 18-60 years of age with an equal number of males and females to see gender differences. There was no other exclusion criteria.

Material

Materials used included an online survey made on google forms. There were 4 surveys sent out to different participants, for each of the conditions - fast speed, slow speed, more effort and less effort. The survey included moral dilemmas in each form, followed by questions (on rating scale). Email ID's of participants were collected to maintain originality and uniqueness of data and to prevent multiple responses. However, once data collection was complete, this information was scrubbed prior to any analysis.

Procedure

All the participants started by giving written consent. This was followed by a moral dilemma based on the condition (speed-fast/slow; effort-more/less) and then answered 3 questions where they rated the morality/immorality of the PCE use, fairness/unfairness of the outcome and deservingness/undeservingness of the outcome on a 7 point rating scale.

Results

In order to test the judged morality, unfairness and undeservingness an independent sample t-test was run to compare the data between each group. One test was run to compare fast speed vs slow speed conditions and another t test was used to compare more effort vs less effort conditions, separately.

For the speed condition, both the independent samples had 36 participants each. The t-test indicated that the participants did not find it more immoral when the speed of the drug was fast ($M = 4$, $SD = 2$), compared to when it was slow ($M = 4.52$, $SD = 1.93$); $t(70) = -1.138$, $p = 0.259$. The participants did not find it unfair when the speed of the drug was fast ($M = 3.8$, $SD = 1.92$) compared to when it was slow ($M = 4.38$, $SD = 1.93$); $t(70) = -1.100$, $p = 0.275$. And the participants did not find the achievements as undeserving when the speed of the drug was fast ($M = 4.4$, $SD = 1.81$), compared to when it was slow ($M = 5$, $SD = 1.72$); $t(70) = -1.33$, $p = 0.187$.

Given the small sample size it is important to look at trends in the averages regardless of the non-significant statistical test results. The average ratings of Group 1 (fast speed) for judged immorality ($M = 4$), unfairness ($M = 3.88$) and undeservingness ($M = 4.44$) was lower than the average ratings of of Group 2 (slow speed) for the judged immorality ($M = 4.53$), unfairness ($M = 4.38$) and undeservingness. Thus, indicating that the participants found the actions more immoral, unfair and undeserving when the effects of the drug could be seen much faster than slower (Figure 1).

Figure 1: Showing average moral, fairness and deservingness rating when the effect of drug (PCE) is fast vs slow.

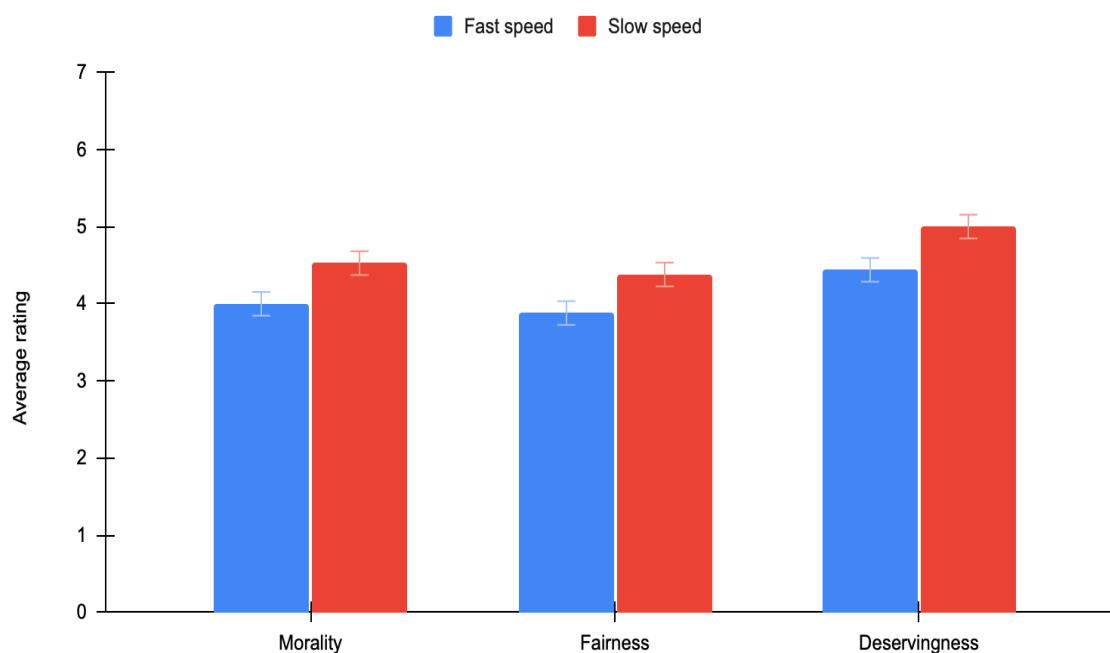


Figure 1: Showing average moral, fairness and deservingness rating when the effect of the drug (PCE) is fast vs slow.

For the effort condition, both the independent samples have around 33 participants each. The results of the t test were not significant. The t-test indicated that the participants did not find it more immoral when the individual put in less effort into their work after the drug was taken; $t(64) = 0.519$, $p = 0.605$. The participants did not find it unfair as well when the individual put in less effort into their work after the drug was taken; $t(64) = 0.684$, $p = 0.496$. And the participants did not find the achievements as undeserving when the individual put in less effort into their work after the drug was taken; $t(64) = 0.675$, $p = 0.502$.

Again given the small sample size it is important to look at trends in the averages regardless of the non-significant statistical test results. The average ratings of Group 1 (more effort) for judged immorality ($M = 3.33$), unfairness ($M = 3.60$) and undeservingness ($M = 3.87$) was higher than the average ratings of Group 4 (less effort) for judged immorality ($M = 3.09$), unfairness ($M = 3.27$) and undeservingness ($M = 3.54$). Thus, indicating that the participants found the actions more immoral, unfair and undeserving when the individual put in less effort in their work after the drug was taken (Figure 2).

Figure 2: Showing average moral, fairness and deservingness ratings when the effect of drug (PCE) has more vs less effort

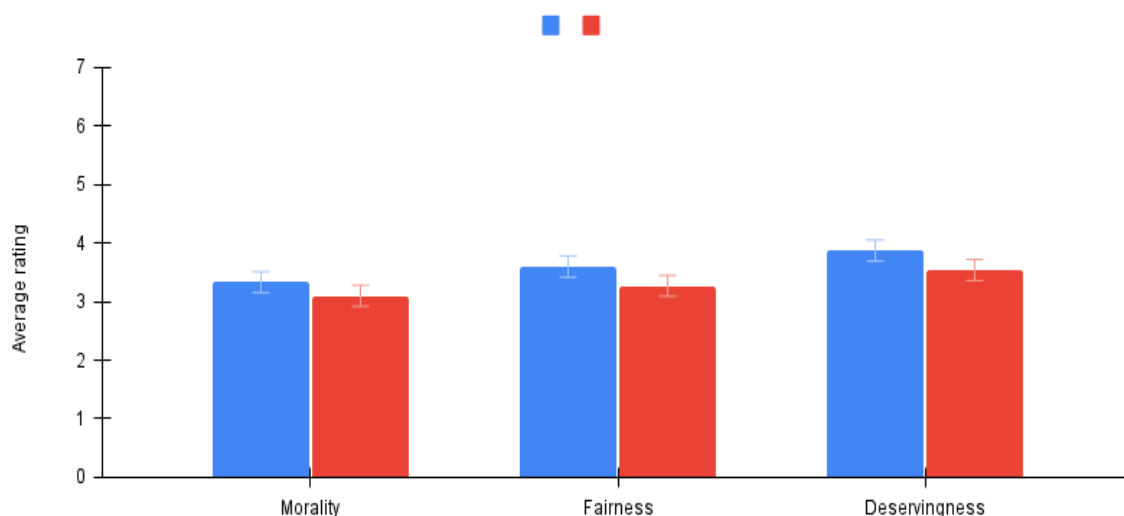


Figure 2: Showing average moral, fairness and deservingness ratings when the effect of the drug (PCE) has more vs less effort.

Conclusion

The trends in the averages are in line with our hypotheses. We found that when the effect of PCE was ‘fast’ people considered the use of PCE as more immoral, undeserving and unfair. Similarly, when the effort put in by the agent using PCE was ‘less’ people considered the use of PCE as more immoral, undeserving and unfair. This is in line with previous suggestions that perceived effort plays a huge role in influencing the public’s negative attitudes towards Pharmacological Cognitive Enhancement (Faber et. al, 2016; Schelle et. al., 2014).

Apart from the small number of participants another limitation that might have played a role in the non-significant results is the fact that our participant pool was undergraduate University students. There is a high intake of drug usage among teenagers at undergraduate universities, which was the participant pool for this study (Goel et. al, 2015). Hence, asking the opinions/attitudes of individuals towards pharmacological cognitive enhancers, when the sample themselves could be partaking in said drugs or have a general positive attitude towards drugs would affect their judgment of morality, unfairness and undeservingness. We will take care of these two limitations in order to understand third-party judgments of use of PCEs. Thus, we expect the observed trends in averages to become clearer and statistically significant as well.

This study addresses a key question as to how certain factors influence the moral judgment of PCEs and why they are considered immoral and unfair, and the agents who use them as undeserving of the outcome.

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An Exploration of Psychological First Aid in Climatic Disaster Contexts of the Pacific Islands

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Abstract

Psychological first aid is an activity of mental health and psychosocial support. This study reviews the purpose of the Inter-Agency Standing Committee (ISAC) guidelines on mental health and psychosocial support and the level of intervention. The study also uses survey questionnaires to explore psychological first aid (PFA) interventions in the context of climate disasters in Pacific Island countries (PICs). In addition, the keyphrases were used to search for published scientific articles on PFA in PICs. The review of ISAC guidelines indicates that the intervention matrix can be applied to prevent and, at the same time, promote recovery. The literature review demonstrates the effectiveness of PFA activity intervention in different contexts. However, such studies on the climate disaster context of the PICs are lacking. A preliminary online survey found that 50% of PFA is part of the disaster response, recovery and rehabilitation program. The study reveals that the current PFA has a low level of consultation and lacks strategic planning and localization. However, the PFA is widely used and is acceptable as a valuable tool during climate disaster response and recovery. There are limitations to this research, and it requires further in-depth study. Some recommendations suggest filling these gaps as areas of improvement for PICs, such as community consultations, based on community needs to ensure that PFA intervention in the context is measurable and recognized. A preventive approach should therefore be taken into account to build mental resilience.

Keywords: Effectiveness of PFA, the Effectiveness of Psychological First Aid, Pacific Island Countries

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Introduction

Recent years have seen psychological first aid (PFA) intervention as an upcoming mental health and psychosocial support (MHPSS) activity in responding to natural and climatic disasters and health emergencies. Climatic disasters more significantly impact Pacific Island Countries (PICs) due to their demographic, location and size. In addition, the health effects of climate catastrophes and pandemics are increasing (Ober & Bakumenko, 2020). Climate disasters in the PICs have destroyed infrastructure and shelter, affected livelihoods and raised public health and socioeconomic issues. Furthermore, the effects of global warming, sea level rise and storm-driven flooding are likely to increase, making smaller islands more susceptible to disasters (Williams & Gutierrez, 2009). Several natural disasters have been observed in the PICs in recent years, including the tsunami in Tonga and King Tide Waves in Fiji, Tuvalu, Cook Islands and Hawaii in 2022, as well as two major tropical cyclones in Vanuatu within 24 hours in early 2023.

PFA provides practical assistance, emotional comfort, and social support using skills designed to assist individuals, communities, and families exposed to traumatic or stressful situations. Therefore, any individual with proper PFA training should be able to provide PFA assistance. The need for PFA is more established as a reactive approach to disaster emergencies rather than an action that, if implemented proactively, can build psychological resilience. Nevertheless, the impacts of disasters have highlighted the growing need for mental health in emergencies, especially for PFA (Zafar, et al., 2021) & (Everly & Lating, 2021). However, this increase with lack of consideration given the event types, contextualization and localization makes it challenging to measure the effectiveness of the intervention, let alone its implementation trends, impacts and issues.

Therefore, this study identifies the critical functions of contextualization using the MHPSS intervention pyramid and explores PFA intervention in the climatic disaster context of PICs using desktop review, online survey questionnaires and interviews. In addition, the study gains insight into the dynamics of PFA effectiveness through a literature review and explores the areas of improvement needed for PICs. The study's outcome aims to inform policy and decision-makers, providers and trainers on ways to enhance mental health support services through PFA to ensure appropriate policies, training and timely psychological support in times of disaster emergencies.

Background Literature Review

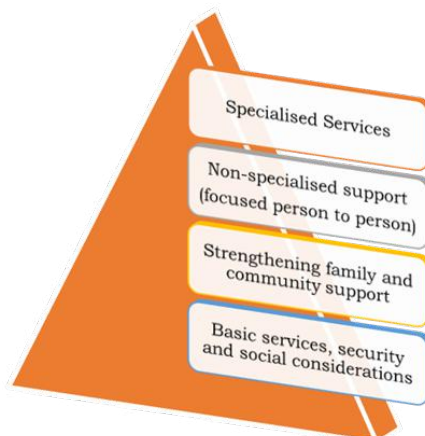
PFA support individuals exposed to traumatic events to cope better by providing a safe and supportive environment. PFA is an in-built psychosocial support (PSS) activity in the MHPSS intervention pyramid (Inter-Agency Standing Committee (IASC), 2007). PFA, defined in a disaster context, is the first and most immediate support for people who go through stressful and traumatic situations. The expert consensus primarily recognizes the PFA interventions as an activity for extreme events, disaster response, and recovery (Shultz & Forbes, 2014). A study confirms that PFA is an identified approach to a broader public health strategy to address distress after an event and supposedly a mental health education in the community (Newnham, et al., 2020). The IFRC (2018) states that PFA uses core principles to help people recover from distress, including providing safety, calming distress, coping, encouraging self-help and connecting people to social supports, a principle adopted from Hobfoll et al. (IFRC, 2018). The John Hopkins model defines PFA as a continuum of care integrating physical first aid and the psychological, supportive, and compassionate

notion of recognizing and mitigating distress (Everly & Lating, 2017). Thus, PFA provides a framework to help distressed people build coping skills and reconnect with their community. The ongoing climate change events will continue to negatively impact the health of vulnerable communities, affecting their socioeconomic capacity. Dawes et al. (2019) noted mental illness issues in developing PICs as an impact of natural disasters. The study acknowledged the need for mental health services against the inadequacy and unavailability of such services post-disaster (Dawes et al., 2019). In addition, the need for immediate assistance to mental well-being post-crisis in Fiji, and in some cases, the need for longer-term psychosocial support, was identified (Empower Pacific, 2016).

A tropical cyclone has many impacts, including damage to the agriculture infrastructure, psychological impacts and a rise in health epidemics. In addition, cyclone brings in economic loss and derail effects on economic development (Deo, et al., 2022). For example, in tropical cyclone Winston in Fiji, 15,661 people assessed direct PFA services by a PSS provider. Of these, 9367 were girls and women, indicating that girls and women were the primary beneficiaries standing at 59.8%. In contrast, boys and men stood at 40.2% (Empower Pacific, 2016). However, data from Tropical Cyclone Harold in Fiji shows that 50.89% of the people who benefited were boys and men, and 56.34% were girls and women. Therefore, a slight increase in males' percentage to 10.69% and a decrease in girls and women by 3.46% were seen during TC Harold in 2020 (Empower Pacific, 2020). This fluctuation, associated with many aspects, is seen as one of the research gaps. However, there is no data stating why there has been a fluctuation and what could be the reasons for gender imparity. In addition, contextualization should pay attention to gender, integrate relevant multi-sectoral considerations, access to a range of support according to the intervention pyramid, use appropriate language, and avoid using assessment tools that have not yet been validated in the local or climate disaster context (Inter-Agency Standing Committee (IASC), 2007).

PFA in the humanitarian context is designed to assist individuals and groups under stress and distress, making them feel calm and supporting the distressed with coping mechanisms (IFRC, 2020). The basis of PFA, however, is to adopt a humane approach to support and care for individuals during and in times of distress (Inter-Agency Standing Committee (IASC), 2007). According to the Empower Pacific 2016 annual report, most longer-term support groups are people who lack family support and live alone, families who have lost breadwinners or loved ones, people with disabilities and single parents in maritime and remote areas (Empower Pacific, 2016). While attempting to rebuild their lives, the service focused on ensuring safety concerns and normalizing feelings for those affected with practical support (Empower Pacific, 2016).

The MHPSS intervention pyramid is used in emergency settings and recognized by multiple sectors (Inter-Agency Standing Committee (IASC), 2007). MHPSS is a broad concept of specialized and non-specialized levels of emergency support, as shown in Figure 1.



*Figure 1 Mental Health and Psychosocial Support Intervention Pyramid
(Source: IASC, 2020)*

The IASC defines MHPSS as "any kind of external or local support aimed at promoting and protecting psychosocial well-being, assisting and preventing mental illness" Pg 2 (Inter-Agency Standing Committee (IASC), 2007). The intervention pyramid shows the range of integration from recognizing services with more severe conditions to essential services embedding cultural and social considerations. PFA is an in-built concept of the overall MHPSS intervention pyramid (IFRC, 2018). The bottom three activities of the intervention pyramid are supporting primary, social and security concerns, strengthening the capacity through family and community support and other non-specialized support that can reach through PFA activities (Inter-Agency Standing Committee (IASC), 2007).

The MHPSS in emergency settings has a clear matrix of intervention with cross-cutting domains and social considerations to explain the type of response. The type of response includes (1) emergency preparedness with rapid implementation, (2) the minimum response implemented immediately with high priority and (3) a comprehensive response implemented during stabilized and recovery phase (Inter-Agency Standing Committee (IASC), 2007). PFA applies in all three types of response. The domains tell when an emergency happens and what needs consideration at each stage. However, scientific research is not entirely detailed on whether the exact areas can form a framework for building the psychological resilience of the vulnerable community as a proactive intervention and if the effectiveness is determined. Therefore, more priority and assessment on emergency preparedness is necessary. Furthermore, there is a lack of scientific evidence on proactive PFA implementation to make the climate-vulnerable community psychologically resilient before a potential disaster occurs.

There is also insufficient evidence on the effectiveness or impacts of integrating PFA activity into the health, disaster and climate change resilience Program. However, PFA can be integrated as part of other interventions or a stand-alone activity because knowledge and skills are not limited to either psychosocial programmes or reactions (IFRC, 2018). In addition, community engagement and stakeholder consultation are critical at all PFA intervention levels, whether proactive or reactive. For example, in response to the tropical cyclone Yasa response in Fiji, many organizations providing psychosocial support intervened in affected areas with communities having no idea of their scope of work or purpose. How many of them returned to meet the needs of individuals and communities? This question needs further exploration.

The "do" and "do not" outlined in the IASC MHPSS intervention can form indicators for contextualization and, above all, can also be considered for proactive or psychological resilience programs. One ideal contextualization is learning about the local cultural practices without assuming that practices or techniques from the universal concept will necessarily be better in the local context (Inter-Agency Standing Committee (IASC), 2007). The establishment of coordination support with stakeholders and the ability to determine a response should form policies and procedures, a localized training manual, and proper assessment tools for monitoring and evaluation tailored to the local context and type of disasters (Inter-Agency Standing Committee (IASC), 2007). The IASC model further outlines that facilitation should include developing community-owned run programmes and management by the community. The efficacy of PFA could only be more feasible if a proactive approach integrates this activity into climate or disaster resilience programs. Contextualization should also reflect two-way communication, locally appropriate coping solutions and building local capacities by supporting self-help within their resources (Inter-Agency Standing Committee (IASC), 2007).

Methods

This study explores the current trend of PFA in the Pacific countries. One of the agencies that significantly responded to the disaster in their country participated in responding to survey questionnaires and followed by four countries participating in the online interviews. Therefore, this study used semi-structured interviews to explore the PFA trend in the PICs.

PICs include the Federated States of Micronesia, Fiji, Kiribati, the Marshall Islands, Palau, Nauru, Tuvalu, Solomon Islands, New Caledonia, Tonga, Wallis and Futuna, New Zealand and Vanuatu, Samoa and the Commonwealth of the Northern Mariana Islands. The United Nations' list of least developed countries includes Tuvalu, Kiribati and the Solomon Islands. The remaining are developing countries except New Zealand, classified as developed Pg IX (United Nations, 2022). The paper excluded five countries from this study; The Northern Mariana Islands, New Zealand, Nauru, New Caledonia and Wallis and Futuna.

The online survey questionnaire was shared with eleven countries' agencies using Microsoft Forms, of which eight responded to the survey, followed by survey interviews. The survey took place from December 2022 – February 2023. These representatives were selected based on their extensive knowledge of responding to climate disasters and implementing climate-disaster resilience programs in vulnerable communities. The online survey questionnaire included a summary and consent. Those who participated in the interview gave their consent by answering the survey.

The author's extensive knowledge, work in the humanitarian sector, and further understanding gleaned from the literature reviews were used to design the interview outline and formed the basis of the interview. The design outline guided the interview and focused on understanding the topic in different contexts and identifying the research problems and impacts of PFA. Furthermore, the interview questions were accommodated based on the views and experiences of the respondents, thus giving the flexibility of the interview questions (Chang, Tai, Lien, & Chien, 2022).

In addition, this study used grey literature to review and demonstrate whether the IASC emergency matrix of interventions can be equally modified and used for preventative mental health programs and would reflect in any localization of PFA activities or interventions.

IASC guideline was used based on reliability, quality and robustness as it is an expert consensus. For scientific sources and to demonstrate the effectiveness of PFA, articles in PubMed, MEDLINE and Cochrane journals were analyzed using the keyphrases. In addition, published articles in English from 2012 to 2022 included those relevant to climate disasters and PICs. Articles excluded that did not include keyphrases, Pacific Island Countries (PICs), or the effectiveness of PFA.

Results & Discussion

Review of the IASC Guidelines on MHPSS in Emergency Setting

This section reviewed the overall intervention matrix using the IASC guidelines on MHPSS (Inter-Agency Standing Committee (IASC), 2007). The review recommended in this study is not limited to PFA only; therefore, similar domains and functions can observe for implementing the whole MHPSS program. Furthermore, the domains and functions in the intervention matrix also indicate that the guideline **prevents** and promotes MHPSS. Therefore, the intervention matrix can be applied and contextualized as part of a proactive, preventative approach to building the psychological resilience of individuals and the community. In addition, the IASC guideline serves two purposes (1) to protect and (2) to improve mental health and psychosocial support (Inter-Agency Standing Committee (IASC), 2007). Thus, if further contextualized, the functions can focus on **protecting or preventing** mental health and can be applied through PFA.

Furthermore, the matrix of interventions contains three types of response; emergency preparedness, minimum response and comprehensive response. The proactive PFA approach of protecting, preventing, or minimizing the psychological impact of an emergency is lacking in the PICs. 50% of the survey interviews, ideally covering six PICs, confirm that PFA is a reactive activity implemented during the disaster response, recovery and rehabilitation program.

Furthermore, the three levels of commitment to building community psychological resilience through PFA include:

1. National Level – government and non-governmental actors of humanitarian requires coordinated actions, effective coordination, data management and policy making.
2. Stakeholders Engagement & Consultation – includes all PFA providers, disaster responders, social workers, specialized persons, or organizations. At this level, the PFA providers should identify the local coping mechanisms that form the basis for psychosocial support interventions in that particular context.
3. Engaging the community – identify communities or areas vulnerable to climate disasters and conduct an assessment.

Implementation organizations must use a national PFA needs assessment form to identify social problems or psychological risks in emergencies (Inter-Agency Standing Committee (IASC), 2007). The PFA needs assessment would provide a concise level of priority needs for each area and community according to the type of climate disaster.

Analysis of Survey Questionnaires and Interviews

The current state of PFA intervention in the respective PICs was explored using online survey questionnaires. As a result, 73% responded to the online survey questions and had extensive experience responding to climate disasters and implementing resilience programs in vulnerable communities.

The results from the PICs show that 55% are commonly affected by tropical cyclones, 27% typically face king tides and droughts, and 18% of the countries are vulnerable to natural disasters such as earthquakes and volcanic activity eruptions. It is evident that tropical cyclones (also known as typhoons) impact every cyclone season, bring in the most extensive devastation, and significantly contribute to flash flooding, storm surge and strong winds. A study report by the Centre for Research on the Epidemiology of Disasters, UNDRR highlighted that between 1998 to 2017, climate-related disasters dominated, accounting for 91% of the 7,255 events recorded, of which flood was the most frequently observed at 43.4%, followed by storm at 28.2% of all recorded events (Wallemacq & House, 2018).

Of the participating country, 50% responded as 'No', stating that there are no MHPSS policies or legislation at the national or organizational level. Only one responded to having an MHPSS policy and legislation at the organizational and national levels. An estimated 45% indicated PFA in their organization as a sole activity, not an overall MHPSS program. The PFA by a humanitarian organization adopts the IASC MHPSS intervention principles (Inter-Agency Standing Committee (IASC), 2007) and the WHO PFA manual (WHO; War Trauma Foundation; World Vision International, 2011).

The study's most significant findings through the questionnaire survey indicated (1) 50% of PFA is part of disaster response, recovery and rehabilitation program and (2) that none of the eight PICs that took part had any PFA monitoring and evaluation framework or tools to measure the effectiveness of PFA interventions let alone prior assessment. The absence of assessment, monitoring and evaluation is a significant concern for an activity or program's sustainability because the intervention fails to measure effectiveness and identify gaps for further improvements.

Analysis of literature reviews on the effectiveness of PFA interventions

A literature search string used keyphrases 'effectiveness of PFA' and 'effectiveness of psychological first aid'. The PubMed, MEDLINE, and Cochrane database searches analyzed english articles between 2012 and 2022. The overall search result showed eight hundred fifty-nine papers according to the key phrase "effectiveness of PFA" and three hundred and twenty-six papers on the "effectiveness of psychological first aid." Results with open access were subsequently refined further by the type of article, including reviews, systematic reviews, clinical trials, comparative studies, evaluation studies, meta-analyses, observational studies and randomized controlled trials. Finally, the manually reviewed included PFA and its effectiveness in the climate disaster context of PICs for its absolute relevance. A total of one hundred and one articles had relevance to PFA effectiveness and implementation. However, only eleven articles were relevant to PFA in disasters and precisely zero on PFA effectiveness in the climate disaster context of PICs. Furthermore, the study excluded grey literature and was limited to PubMed, MEDLINE and Cochrane.

Overall, there is still little evidence of the effectiveness of PFA interventions. A systematic literature review shows that no evidence shows the effectiveness of the PFA interventions (Dieltjens, Moonens, Praet, Buck, & Vandekerckhove, 2014). Evidence-based guidelines for psychosocial support will demonstrate its effectiveness in disaster (Dieltjens, Moonens, Praet, Buck, & Vandekerckhove, 2014). Evaluation to see the effectiveness of PFA interventions is still a gap in PFA programming (Dieltjens, Moonens, Praet, Buck, & Vandekerckhove, 2014). An investigation of post-PFA training confirmed increased preparedness at a personal level, resilience planning and community preparedness (McCabe, et al., 2014). In addition, the RAPID PFA showed a decline in acute distress in a small, recognized clinical trial (Everly G. S., Lating, Sherman, & Goncher, 2016). However, through the survey questionnaires, the respondents did not indicate implementation of the RAPID PFA model, thus lacking evidence.

Recommendation and Conclusion

What works well in a developed country may not work in a developing country, but to make PFA intervention more effective, one needs to "think globally and act locally". Unfortunately, based on the way of life of the Pacific community, the availability of resources, tradition and social structure, PFA activities and training implemented in the PICs still lack participation of the community and analysis of the context. The existing community social structure needs a broader cross-section of the community, involving youth, local faith leaders, elders and community groups to help establish collaborative and respectful relationships (Lim & Nakazato, 2020).

Discussion and consultation with communities is a method of addressing practical needs, which often involves linking people to trust in their strengths and resources to help in psychological recovery. The survey interview confirmed that this area needs to be considered and recommended for further community consultation.

Findings from the desktop and survey interviews also confirm the lack of stakeholder engagement and assessment of PFA needs. Thus this study strongly recommends context and situation analysis and assessment. The community consensus supports the psychosocial preparedness and response framework to develop the PFA training programs and the evaluation process (Everly & Lating, 2017). Community-driven and community-supported response approaches allow the community to recognize their lived experience (Newnham, et al., 2020), making it better accepted.

The limitation of this research is that the survey questionnaire and interview were from a perception of one organization in those particular countries. Thus, data is limited. Therefore, it requires further in-depth study and exploration from the national government level to all stakeholders and community study to understand better the trends, impacts and challenges of such intervention. To make PFA intervention cost-effective, more exploration within local communities is essential to improve public health. The PFA aims to support the affected individuals, families and communities in regaining control over their lives and reducing their experience of post-traumatic distress events. Therefore, national policymakers and providers must prioritize PFA preparedness and needs-based approaches.

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Better to Unfriend You!: The Effect of Ostracism and Group Membership on Unfriending Behavior

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Abstract

A growing body of literature has revealed that there are various reasons for unfriending in SNSs (Social Network Sites) such as posting too frequently and polarizing topics, making crude comments, and getting minimal contact. The present study aims at the effect of ostracism and group membership on unfriending behavior in SNSs. We used Cyberball Paradigm to manipulate ostracism in the study and conducted this study online in Psytoolkit. All participants were sent a link to participate. The research sample consisted of 240 participants (164 female, 76 male) aged between 18-63. Participants were randomly assigned to one of the two conditions in which they were exposed to ostracism or inclusion. Afterward, participants were asked to complete several filler questions about the game, manipulation check questions, and The Need Threat Scale. Finally, participants reacted to a person posting 15 different sexist images in terms of unfriending or ignoring the person. According to Chi-Square analyses for each image, the ostracized participants compared to the included participants are more likely to unfriend than ignore the target person. Also, we did not find a significant difference between participants' gender in terms of reaction to the target person posting those images. These findings contribute to our understanding of unfriending in the scope of ostracism and group membership for future research. One of the limitations is the generalizability of the obtained results because the sample with only university students. Further studies on unfriending might investigate cultural factors and demographic characteristics of the target person.

Keywords: Unfriending, Social Network Sites, Ostracism, Psychological Needs

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1. Introduction

One of the most essential needs of human nature is the need to belong (Baumeister & Leary, 1995). In order to meet this need, people try to expand their social contacts and relationships with others. It is obvious that the more the need meets, the more people feel satisfied. Web 2.0 allows people to fulfill their social needs online. Although they do not physically try to get together, it is seen that the bond between friends, colleagues, neighbors, and acquaintances continues online (Gil de Zúñiga, Molyneux, & Zheng, 2014). Therefore, individuals are constantly together during the day. Social media both gives people a chance to get in touch with people all over the world to construct new social bonds, contacts, and relationships and allows for express their attitudes toward almost everything which is exhibited online (Boyd & Ellison, 2007). Therefore, people tend to test their social contacts' attitudes constantly (Kert & Kert, 2010). It can be said that the face-to-face attitude testing process is more difficult than online interactions due to saving face. Traditional interactions contain some concerns about the dynamics of the relationship. People do not want to break others' hearts because of the confronting their attitudes. On the other hand, online interactions alleviate the social burdens of attitude testing process. All processes can happen with some clicks in a short time. In this way, expressing attitudes on any kind of Social Network Sites (SNSs) leads to two potential consequences that one of them is in a benign way and another one is in a malicious way. To start with the benign one, your attitudes towards the post shared by a friend of yours can both maintenance your relationship with him/her and reinforce your relationship. The second one is a malicious way in which you can end your relationship with him/her as a reaction against the post. Imagine that for what reasons you would unfriend one or more friends of yours. As surmised, there is not only one answer. There are many reasons and dynamics underlying our reactions that cause an end with a relationship or a contact. Hence, the main goal of this post is to basically investigate why people unfriend their friends on SNSs. In this context, it is important both to examine what kind of reasons can influence people's reactions relating to unfriending and to assess its consequences.

1.1. The definition of unfriending

Firstly, Raynes-Goldie and Fono (2005) mentioned unfriending in their study. Although they focused on friendship from various perspectives on SNSs, the verb "defriend" emerged as opposed to "friend". After Raynes-Goldie and Fono's study (2005), Oxford American Dictionary described it as "removing someone from your list of friends on a social networking website" (Oxford University Press, 2009). Although Cambridge Dictionary has the same definition, the dictionary defining it as "unfriending" instead of "defriending". Consequently, both can be interchangeably used.

There are many studies that define unfriending in several ways. For instance, unfriending someone is described as a sudden disengagement (Gashi & Knautz, 2015), an ending event or the bond (Pena & Broady, 2014), online boundary management including emotional act or an act to reduce and stop communication (Bevan, Pfyl, & Barclay, 2012) or regulating the online boundary setting (John & Gal, 2018). Despite several various definitions of unfriending, their common point includes termination. This termination can be comprehended differently such as a desire to regulate someone's social environment.

1.2. The reasons for unfriending on social network sites

Researchers state that various reasons can occur in the process of unfriending. In a study by Bevan et al. (2012), four basic reasons are addressed when people tend to unfriend someone on SNSs. Those are posting too frequently, posted polarizing topics, making crude comments, and getting minimal contact.

Posting too frequently: When people are exposed to social media posts excessively shared by a friend, that person is considered as the potential one for being unfriended. Considering that people tend to use SNSs to take another's perspectives by looking through different posts, they might be exposed to the posts shared by the same person. In this case, %63 of people can choose unfriending options (Madden, 2012).

Posted polarizing topics: Especially, posts relating to political views can lead to polarizing between people even though they are friends on SNSs. This situation can be explained based on (with the aid of SIT) Social Identity Theory (Tajfel, 1978, Tajfel & Turner, 1979). According to the essential opinion of this theory, people obtain their self-concepts through the social groups where they are in. Furthermore, they tend to focus on similarities with the in-group, whereas they tend to distinguish themselves from the out-group. The more the importance of social identities increases for people, the more they feel strong emotional ties to the in-group. Because of this reason, people are more likely to be aggressive against out-groups. In sum, people can unfriend or be unfriended in response to posts including polarizing topics (Bronstein & Aharony 2015).

Making crude comments: Face-to-face and computer-based communication (CBC) are quite different from each other. Mostly, CBC provides one-way communication, whereas face-to-face communication occurs in two-way communication. Compared to face-to-face, CBC gives people the opportunity to comfortably make rude, harsh, and impolite comments as responses to the posts. In this regard, people who get those comments are more likely to unfriend the one who leaves those comments in response to the comments (Sibona & Walczak, 2011). As demonstrated above, people need to protect and positively maintain their self-image. Thus, the act of unfriending is seen as an intentional avoidance of harmful comments.

Getting minimal contact: The level of perceived contact among people is important (Lai, 2019). It is more likely to explain how close or distant relationships people have. As assumed, people tend to unfriend geographically distant individuals, whereas they tend to maintain relationships with close ones. A striking finding in a study by Gashi and Knautz (2015) is that perceived geographical distance affects terminating relationships or bonds. By doing so, people try to avoid future contact with them.

Besides the findings of Bevan et al. (2012), various reasons such as gender, age, status, and physical attractiveness might lead to unfriending. A study conducted by Pena and Brody (2014) demonstrates that women and young adults aged between 18-29 are more likely to unfriend someone compared to older users. Moreover, people unfriend those with low social attractiveness rather than physical attractiveness. Hence, this finding plainly indicates that social attractiveness has more influence on unfriending than physical attractiveness.

In the light of these findings, we assumed that there might be a relationship between ostracism and unfriending behavior. Therefore, the current study mainly aimed to reveal the

effect of ostracism on unfriending behavior on SNSs. In addition to the results of Bevan et al. (2012) about posting polarized topics, we supposed that group membership might have an impact on selecting a target person for unfriending.

2. Methods

Previous studies (Pickett & Gardner, 2005, Williams & Zadro 2005) demonstrated that ostracism threatens psychological needs such as self-esteem, belonging, perceived control, and meaningful existence. Williams (2001) states that exposure to ostracism leads to both short and long-term negative behavior and emotion. A study by Twenge et al. (2001) showed that the ostracized people are more likely to have aggressive behavior. Also, the ostracized people tend to express more anger compared to the included people (Warburton et al. 2006). In the light of these findings, we hypothesized that there might be a relationship between ostracism and unfriending. The main objective of the present study is to examine how ostracism effects on unfriending behavior in SNSs. We hypothesize as follows.

H1. The ostracized people compared to the included people will report more unfriending behavior against the target person sharing sexist images.

Many studies have established that behavior can be psychologically tied to social groups that provide social identities. Tajfel and Turner (1979) stated that people tend to define their identities related to social groups and this identification leads people to categorize themselves as in-group or out-group. Reynolds et al. (2000) emphasized that such categorization causes in-group bias or out-group degradation. That is, people might have more aggressive attitudes toward out-group whereas they might have more protective and helpful attitudes toward in-group (Tajfel et al. 1971). When gender as social identity is salience, it is expected that women are more likely to identify themselves with their gender as men does (Maldonado et al. 2003). We assume that gender can affect people's reaction to when they are exposed to the context related to gender. Considering these results, we aim to reveal how ostracism affects unfriending behavior based on gender in the current study. We proposed the hypothesis as follows.

H2. The ostracized women as an ingroup member compared to the ostracized men will report more unfriending behavior against the target person sharing sexist images.

2.1 Participants

All participants were undergraduate students recruited from a public university in Türkiye. A total of 240 participants (164 female, 76 male) with ages ranging from 18 to 63 ($M=22.01$, $SD=5.72$) attended the current study. An a priori power analysis for Chi-square testing was computed to determine the required sample size. Alpha error of .05, a statistical power of .80 and an estimated effect size of 0.18 were assumed, which indicated $N=226$ observations necessary to identify a small to medium effect. The educational level of the sample varies from high school to Ph.D.. %10.8 of the participants graduated from a high school, %86.3 of participants studied in a university, %2.1 of the participants are postgraduate students, and %0.8 of the participants are Ph.D. students. The income level of the sample varies between 0 and 6000 Turkish Liras and more in a month. %60.8 of the participants earns between 0-1500 Turkish Liras, %9.2 of them earn between 1501-2500, %7.9 of them earn between 2501-4000, %10.4 of them 4001-6000, and %11.7 of them earn 6000 and more in a month. Also, we asked participants to rate how often they use social media in order to better understand

how actively they use it. In terms of using social media, participants reported that they spend their time on YouTube (%21.2), Instagram (%40.8), Facebook (%0.8), Twitter (%10.8), WhatsApp (%23.3), Snapchat (%0.8), and other applications (%2.1). Besides using social media, the number of social interactions in SNSs are an important indicator. Hence, participants were asked to report how many friends, followers and people followed they currently have. On average, they stated that they have 221.9 friends, 447.7 followers and 392.7 followed people. We received ethics approval from the university's Human Research Ethics Committee (Approval number: HRE2017-0060).

2.2. Measures

The Need Threat Scale: This scale was developed by Van Beest and Williams (2006) to measure the effects of psychological exclusion on basic psychological needs. The Cronbach Alpha of the scale was .92. The Need Threat Scale aims to measure the levels of belonging, self-worth, control, and meaningful existence needs of people with being ostracized. The scale has four sub-dimensions in connection with the four basic needs. There are five items in each sub-dimension. The scale with 20 items is a seven-point Likert-type scale. A high score from the subscales means that the level of satisfaction of the relevant need is also high, and therefore less threat is perceived against this need. The scale was adapted to Turkish by the Hacettepe University Social Psychology Laboratory Research Group within the framework of the TÜBİTAK Project, numbered 109K094, "Cognitive, Emotional and Behavioral Consequences of Being Exposed to Psychological Exclusion" (Aydın & Şahin, 2011). Since the principal investigator of this study was part of the team that carried out the Turkish adaptation of the scale, separate permission was not obtained. The internal consistency coefficients of the scale are .91, .86, .84, and .88 for the sub-dimensions of belonging, self-worth, control, and meaningful existence needs, respectively.

Dependent Variable: Participants were asked to react in terms of unfriending or ignoring the person who shares sexist images which was determined by the preliminary study.

2.3. Procedure

We conducted this study in Psytoolkit (version 3.4.2). Psytoolkit (Stoet, 2017) is a software package to program and run psychological surveys and experiments online and offline. All participants were invited to the study via social media. They were asked to first read the informed consent and asked to accept to be a volunteer participant in our study. Afterward, participants were asked to complete several questions related to their demographic information such as age, gender, income, education, and the usage of social media.

Then, we used the Cyberball Paradigm to manipulate ostracism in our study. This paradigm is one of the most used paradigms in studies related to ostracism. In this paradigm, participants are informed about the game they are virtually playing with two other people (see Figure 1). They are asked to pass the ball to one of the other players whenever they take it. Based on this paradigm, we formed the two conditions that those are being ostracized or included. All participants were randomly assigned to one of those conditions. Participants in the inclusion condition get the ball as much as other players, while participants in the ostracized condition get the ball only twice during the game. As soon as the manipulation ended, participants were asked to complete several filler questions about the game and The Need Threat Scale. Finally, participants were asked to give a reaction (unfriending or ignoring) to fifteen sexist images that are ostensibly shared by a friend of participants in

social media. All participants were informed about the study and thanked for participating at the end of the study.

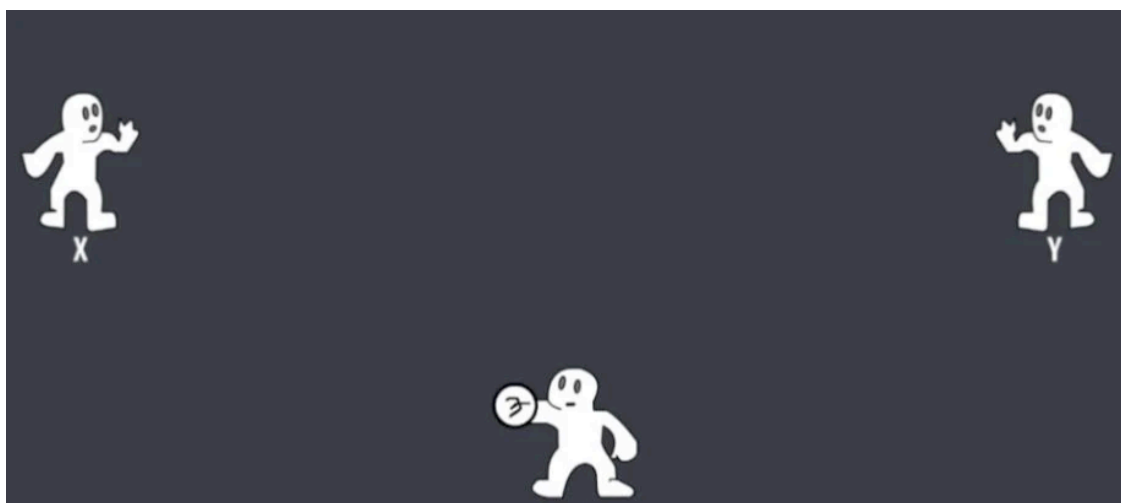


Figure 1. An image from the Cyberball game

2.4. Results

We randomly assigned a total of 240 participants to one of the two conditions where 140 participants were exposed to ostracism, whereas 100 participants were not. We first tested the effect of ostracism on the sub-dimensions of The Need Threat Scale (Table 1). According to analysis, the results showed that the ostracized participants ($M=2.27$, $SD=1.03$) reported significantly less a feeling of belonging to the group compared to not the ostracized participants ($M=4.55$, $SD=1.45$), $t(238)=13.47$, $p < .001$, $d=1.73$. Similarly, the ostracized participants ($M=2.27$, $SD=1.08$) reported significantly less control compared to not the ostracized participants ($M=4.33$, $SD=1.13$), $t(238)=12.84$, $p < .001$, $d=1.68$. In terms of the third sub-dimension of the Need Threat Scale, the ostracized participants ($M=3.88$, $SD=1.57$) reported significantly less self-esteem compared to not the ostracized participants ($M=5.17$, $SD=1.16$), $t(238)=7.35$, $p < .001$, $d=0.97$. In the last sub-dimension, the ostracized participants ($M=2.39$, $SD=1.18$) reported significantly less meaningful existence compared to not the ostracized participants ($M=4.42$, $SD=1.15$), $t(238)=11.17$, $p < .001$, $d=1.47$. Overall, our results showed that the ostracism manipulation via the Cyberball paradigm was successful for each dimension of the Need Threat Scale.

Table 1: The results of the Need Threat Scale based on conditions

Dimension of the NTS	Condition		t	Cohen's d	df
	Inclusion	Ostracized			
Belonging	4.56 (1.45)	2.27 (1.03)	13.47***	1.76	238
Control	4.33 (1.31)	2.27 (1.08)	12.85***	1.68	238
Self-Esteem	5.17 (1.16)	3.88 (1.57)	7.35***	.96	238
Meaningful existence	4.42 (1.51)	2.39 (1.18)	11.17***	1.46	238

In the next step, we conducted Chi-Square Test for 15 images to examine the relation between ostracism (being ostracized or inclusion) and reaction (unfriending or ignoring). The results showed that there was a statistically significant difference in unfriending behavior between two conditions in six images (Figure 2), whereas there was not a statistically significant difference in nine images. The relation between these variables was significant for six images, respectively, $\chi^2 (1, N = 240) = 5.70, p = .017$, $\chi^2 (1, N = 240) = 7.56, p = .006$, $\chi^2 (1, N = 240) = 4.87, p = .027$, $\chi^2 (1, N = 240) = 4.87, p = .027$, $\chi^2 (1, N = 240) = 3.76, p = .052$, $\chi^2 (1, N = 240) = 4.84, p = .028$. Participants in the inclusion condition reported unfriending behavior more compared to participants in the ostracism condition for each image.

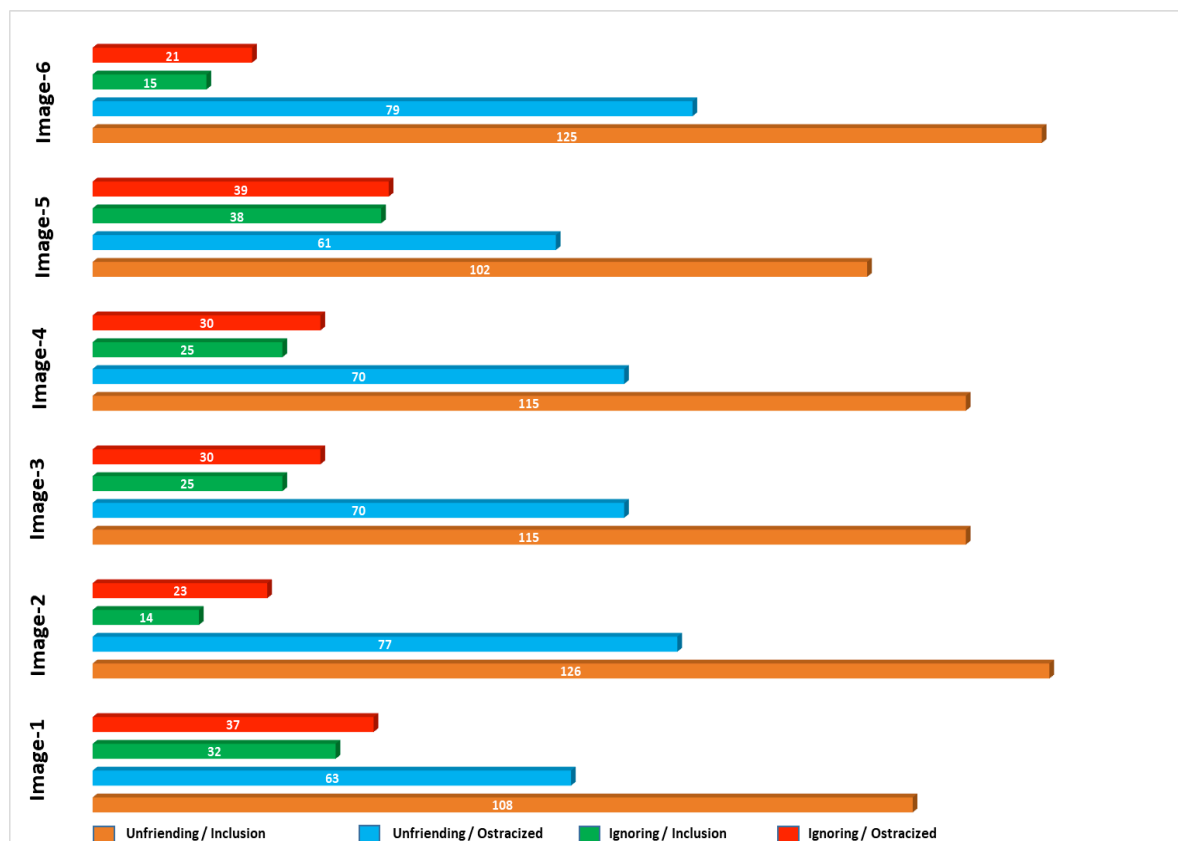


Figure 2: Crosstabulation of reactions based on conditions

Our other assumption is related to participants' group identity. We hypothesized that the presence of ostracism leads more unfriending compared to the presence of inclusion when the person sharing the sexist image is an ingroup member. That is, we expected that women would give more unfriending reaction to the sexist images than men. However, the results demonstrated that our hypothesis was partly supported for some images (see Table 2, 3, and 4). We did not strictly find a significant difference between participants' gender in terms of given reactions.

Table 2: Crosstabulation of reaction and condition based on gender for image 1

Gender	Reaction	Condition		χ^2	p
		Inclusion	Ostracized		
Male	Unfriending	25 (22.066)	14 (16.934)	1.85	0.17
	Ignoring	18 (20.934)	19 (16.066)		
Female					
	Unfriending	83 (78.073)	49 (53.927)	4.84	.028
	Ignoring	14 (18.927)	18 (13.073)		

Note. $*= p \leq .05$. Expected count appears in parentheses below group frequencies.

Table 3: Crosstabulation of reaction and condition based on gender for image 2

Gender	Reaction	Condition		χ^2	p
		Inclusion	Ostracized		
Male	Unfriending	33 (29.987)	20 (23.013)	2.304	0.12
	Ignoring	10 (13.013)	13 (9.987)		
Female					
	Unfriending	93 (88.720)	57 (61.280)	5.922	0.01
	Ignoring	4 (8.280)	10 (5.720)		

Note. $*= p \leq .05$. Expected count appears in parentheses below group frequencies.

Table 4: Crosstabulation of reaction and condition based on gender for image 3

Gender	Reaction	Condition		χ^2	p
		Inclusion	Ostracized		
Male	Unfriending	27 (24.895)	17 (19.105)	0.974	0.32
	Ignoring	16 (18.105)	16 (13.895)		
Female					
	Unfriending	88 (83.396)	53 (57.604)	4.436	0.03
	Ignoring	9 (13.604)	14 (9.396)		

Note. $*= p \leq .05$. Expected count appears in parentheses below group frequencies.

3. Discussion and Conclusion

This study mainly aimed to examine the effects of ostracism on unfriending behavior on Social Network Sites. Our findings showed that ostracized people tended to ignore behavior rather than unfriend behavior toward the target person sharing sexist posts. We expected that ostracized women would choose unfriending behavior more than ostracized men when they witness the target person sharing sexist posts on SNSs. Consequently, our hypotheses were partly supported in some cases.

Williams and Zadro (2005) expressed that ostracism threatens psychological needs (self-esteem, belonging, control, and meaningful existence). Thus, this causes short and long-term unfavorable behavior and emotion (Williams, 2001). For instance, one study by Twenge et al. (2001) showed that ostracized people are more likely to have aggressive behavior. Also, ostracized people tend to express more anger than included people (Warburton et al., 2006). In contrast to these findings, we found that ostracized people tend to ignore rather than unfriend. One reason might be related to suppressing aggressive behavior to stay connected to the group that they belong to. Because being ostracized not only leads to anger but also sadness and pain with losing a sense of belonging (Williams et al., 2000). Furthermore, many studies supported that ostracized people show a tendency to conform to a norm or comply with a request (Carter-Sowell et al., 2008, Riva et al., 2014). Consequently, ostracized people may have more normative and prosocial behaviors that give social connectedness to their group rather than aggressive behaviors such as unfriending the target person or group. Previous studies on this (Lakin & Chartrand, 2005, Pickett et al., 2004) proved that ostracism leads people to behave in ways to strengthen their threatened social needs.

As mentioned above, connecting socially with others is a fundamental need of human nature (Baumeister & Leary, 1995). Many studies have established that behavior can be psychologically tied to social groups that provide social identities. Tajfel and Turner (1979) stated that people tend to define their identities related to social groups and this identification leads people to categorize themselves as in-group or out-group. Reynolds and colleagues (2000) emphasized that such categorization causes in-group bias or out-group degradation. Thus, people may have more aggressive attitudes toward the out-group, whereas they may have more protective and helpful attitudes toward their group (Tajfel et al., 1971). It is expected that women are more likely to identify themselves with their gender as men do (Maldonado et al., 2003) when their gender is salience. We assumed that gender could affect people's reactions when gender is salience. Considering these findings, even though we hypothesized that ostracized women would report more unfriending behavior than ostracized men when the target person posts sexist images on Social Network Sites, our findings were inconsistent with prior works. We found that for both genders, ostracized people show a tendency to ignore the target person whereas not ostracized people are more likely to unfriend that target. This might be related to social identity threat for women. One study (Steele et al., 2002) has established that social cues in the environment may activate negative ingroup stereotypes, and this causes reminding the devalued status of the ingroup. Therefore, ostracized women might have felt lower belongingness to their ingroup because of the presence of masculine cues on SNSs (Cheryan et al., 2009). Another potential explanation is that social cues related to social identity threat might lead to more withdrawal behavior instead of aggressive behavior (Molden et al., 2009). Similarly, Stout and Dasgupta (2011) conducted an experimental study that demonstrated that exposure to exclusive gender-related cues reduces women's sense of belongingness to their ingroup. Consequently, ostracized women's reaction to sexist images on Social Network Sites might have been related to

withdrawal behavior (e.g. Ignoring) the target person instead of behaving aggressively (e.g. Unfriending) that target.

There are several limitations in the current study. One limitation might have been related to the research sample. Although our research sample was adequate for the Chi-Square analysis according to the power analysis, but for the larger effect size, further research might have a bigger sample than we had. Another potential limitation is related to the data obtained as self-report. In the present study, we measured participant's intentions rather than the actual cases of unfriending or ignoring on Social Network Sites. This might have caused a biased answer in case participants are forced to choose one intentional behavior out of two. That is, participants' reaction was limited to two preferences, namely unfriending and ignoring as categoric variable. However, future research might focus on adding other preferences such as blocking or reporting. The last limitation is that we conducted the study online. As it is known, although online studies have many advantages in terms of time and effort, they have some disadvantages such as an uncontrollable environment. In the current study, we used the Cyberball Paradigm to manipulate ostracism, but we lacked control of participants' environment when they participated in the study. Hence, future studies might focus on direct ways of unfriending as behavioral data in real time in a face-to-face environment.

Consequently, previous studies have not examined the relationship between ostracism and unfriending behavior on Social Network Sites. In this study, we aimed to reveal the effect of ostracism on unfriending. Our results showed that the ostracized people are less likely to unfriend the target person compared to not ostracized people. Although we expected that women tend to unfriend the target person compared to men, the findings based on gender demonstrated that there is no difference between men and women in terms of unfriending the target person for some cases.

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Emotional Responses to Different Modes of Occlusion Applied to Phrases Expressing Situational/Emotional Concepts

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Abstract

In prior basic research exploring the influence of different Chinese character structures and varied positions of occlusion, the speed and accuracy of character reading recognition has been explored. Based on those cumulative research results, this study extends the investigation from occluding single words to occluding phrases. The experimental design, tested on 105 men and 115 women in the general public, uses mixed-design ANOVA, with two independent variables: mode of occlusion (n=8) and emotion (n=5), and a between-subjects factor of gender, to measure the dependent variable of emotional response to text phrases. The purposes of this research are to understand: 1. Whether text-occluding techniques are more conducive to emotional arousal than normal text; 2. Whether different modes of occlusion can evoke different degrees of emotion for the same phrase; and 3. Whether there are differences in emotional responses between genders to different occlusion patterns on the same text. The data was analyzed using repeated measures and the results showed that different occluding modes do affect the strength of the emotional response to the same emotional phrase. It was found that the occluding modes of Fading and Occluding strokes with objects have the most significant emotional connection for each phrase. In comparison, the same phrases with no occlusion elicited the least emotional response from participants. The most common emotional response to the five phrases with different occlusion modes was “calm” with the exceptions of the emotional responses of “surprise” for Stepping on land mines and “calm and joy” for Oktoberfest.

Keywords: Mode of Occlusion, Text Phrases, Emotional Responses, Emotions

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1. Introduction

This project is based on prior basic research exploring the influence of occlusion on recognition of Chinese characters (Tsao & Liao, 2015; Liao, 2018), continuing to systematically extend and deepen the discussion, hoping to gradually establish relevant principles to facilitate teaching and design applications. The term occluded text refers to the part of the text that is cut off or covered, that is, the unknown and invisible text (Luijckx, Thillou, & Gosselin, 2006), which is a creative technique by designers to convey a certain concept or achieve specific communication effects. The purpose is to deepen impressions (Zeigarnik, 1999), as well as to improve attention and processing motivation (Meyers-Levy & Tybout, 1989).

The stimulus materials used in the basic research were all occluded single characters; however, in actual design practice for books, posters, packaging, and products, the themes or product names are often double or multiple characters. Moreover, in order to match or improve consistency of the design tonality and emotion with the theme or product, designers will select appropriate characters for processing. Occluding part of the strokes is one of the methods to create text shapes, so very diverse occlusion modes are created. Aside from vertical or horizontal occlusion on the four sides, there are many other occlusion modes because the text itself has hidden meanings (Fiske, 2010) and also has shape and function characteristics (Resnick, 2003); accordingly, fonts of different shapes are rich in emotions. Therefore, questions arise as to whether characters occluded differently have different emotional characteristics, whether they are more able to arouse emotional responses, and the concurrent possibility that there are words or phrases suited for specific emotions/situations (herein defined as: can trigger emotions or association with situational words or phrases).

Therefore, the questions that this research explores include: 1. Whether the technique of occluding text is more helpful to evoke emotional response than use of normal text; 2. Whether designs with different modes of occlusion evoke different emotional responses to the same text; and 3. Whether there are differences in emotional responses between genders to different occlusion patterns on the same text.

1.1 Emotion

The term "emotion" refers to the field of understanding the psychological state of a person, a means of cognition or judgment; as one first perceives whether a situation is pleasant or not, then emotion arises, so cognition is usually accompanied by emotion (Peters, 1970). Norman (2004) also mentioned that everything we do comprises both cognition and emotion, and cognition is responsible for the acquisition of meaning, while emotion reflects the value we attach to objects or matters.

Regarding the term emotion, over the past century, psychologists have not been able to give a satisfactory definition, and researchers choose arguments according to their own research (Feng, 2005). Therefore, the key points of this study's interpretation of emotion are set according to Webster's dictionary (Gove, 1982), as follows: 1) a conscious mental reaction (such as anger or fear) subjectively experienced as strong feeling usually directed toward a specific object and typically accompanied by physiological and behavioral changes in the body; 2) a state of feeling; 3) the affective aspect of consciousness.

Ekman, Friesen, & Friesen (1982) proposed six basic emotions in their research, including: joy, distress, anger, fear, surprise, and disgust. Russell (1980) put forward the view that

emotions are relative, and Plutchik (2002) stated that emotions have several characteristics, including that they have intensity changes, show similarity to one another, and may express opposite or polarized feelings or actions. Goleman (1996) divided emotions into eight categories based on suggestions from experts and assigned synonyms to each category (Table 1). Table 1 includes five of the emotions mentioned by Ekman et al. (1982), with the exception of distress.

Table 1: Eight Categories of Emotion and Their Respective Synonyms

Emotion Category	Synonym	Emotion Category	Synonym
Anger	Angry, resentful, sullen, indignant...	Sadness	Sad, sullen, melancholic, depressed...
Fear	Anxious, nervous, worried, doubtful...	Joy/Happiness	Excited, happy, pleased, delighted...
Love	Affirmed, friendly, intimate, affectionate...	Surprise	Shocked, amazed, astonished...
Disgust	Belittled, contempt, ridiculed, rejected...	Shame	Guilty, embarrassed, remorse, shame...

1.2 Text Design and Emotion

Designers have long relied on changing the shape and form of letters and words to heighten text meaning (Malik, Aitken & Waalen (2016). For example, research has confirmed that fonts are related to taste, and whether the font is round or not is highly correlated with sweet, sour, bitter and spicy flavors (Velasco, Woods, Deroy & Spence, 2015a), such as round fonts are usually associated with sweet taste (Velasco, Salgado-Montejo, Marmolejo-Ramos & Spence, 2014). Font characteristics can also convey emotional meaning: Rounded fonts are associated with more positive emotions, while angular fonts are associated with negative emotions (Morrison, 1986; Velasco et al., 2015a; 2015b). Other studies have shown that dynamic text design can convey emotions (Plutchik, 1980; Acton et al., 1998; Wang et al., 2004); for example, text designed to twist and shake can convey anger; loops convey joy; tense movements convey fear.

1.3 Text Meaning and Situational Associations / Context and Design

Barwise and Perry (1983) defined situation in two ways. One is that a situation expression is a kind of support for facts or messages and the situation corresponds to the deep meaning conveyed by the message. Two is that the situation takes the context into consideration, which enhances the interaction between the situation and the message dialogue relationship.

According to this definition, integrating the concept of situation into text design can be said to be an associative response of the designer to the text meaning, which indicates that through imagination, connection with one's own experience, and cognition of the environmental context, the text is transformed into a specific message meaning, even accompanied by certain emotions that interpret it. Take the occlusion design of the product name for high mountain tea packaging as an example. Imagine the tea growing on high mountains, that are soaked in haze all year round, with fluctuating cloud cover. Therefore, the more the character strokes are deliberately occluded to fit the situation. the better the quality of the tea seems. Norman (2004) mentioned that another important aspect of situational products lies in their suitability for the situation, which is also applicable to graphic design. Words themselves contain different concepts of situations or emotions, the expression of which can be achieved through different text design techniques.

According to the "Chinese Parts of Speech Analysis" report (Chinese Knowledge and Information Processing Lab of Academia Sinica, 1993), the Chinese language is divided into eight parts of speech: aspect words (N), predicates (V), adverbs (D), non-predicate adjectives (A), prepositions (P), conjunctions (C), auxiliary words (T) and interjections (I). Aspect words include: determinants, pronouns, location words and nouns (for example: objects, time, places, etc.), and predicates include action words (such as: jump, eat, run, etc.). As aspect words and predicates are related to the information represented by other parts of speech as the most meaningful, nouns are selected for investigation in this study.

2. Research Methods

2.1 Experimental Design

A three-factor mixed design experiment was designed with the independent variables mode of occlusion ($n=8$) and emotion ($n=5$, calm, joy, sad, surprise and fear (within), and a between-subjects factor of gender, to measure the emotional response to text (a total of 5 text phrases: High Mountain Tea, Oktoberfest, Thirty Years, Foreign Culture, and Stepping on Land Mines) with the 5 emotions on a 7-point Likert scale, through a questionnaire created for data collection. In order to avoid cognitive overload of the participants, different participants were recruited for each of the five words tested, and the data were analyzed by repeated measures ANOVA.

2.2 Participants

A total of 230 people from the general public, aged between 20 and 65, were divided into five groups. The participants were assigned as shown in Table 2. Each group provided emotional responses to one text phrase, resulting in a total of 220 pieces of valid data.

Table 2: Assignment of Participants

High Mountain Tea		Oktoberfest		30 Years		Foreign Culture		Stepping on Land Mines	
M	SD	M	SD	M	SD	M	SD	M	SD
23.45	8.39	22.68	6.20	23.39	7.52	22.32	5.31	23.14	7.10
male	female	male	female	male	female	male	female	male	female
20	27	23	24	19	19	22	22	21	23
Total =47		Total= 47		Total= 38		Total =44		Total= 44	

Note:M/SD Unit: years of age

2.3 Test Stimulus Sample

Text phrases with emotional associations were collected from life and literature, then those that are easily associated with situations or emotions were selected by the researcher using the screening principle of avoiding direct use of emotion words such as happy, angry, etc. This resulted in the selection of 5 text phrases, described as follows, with their respective preset situation and emotional response: 1. High Mountain Tea imagines the situation of tea grown on cloud-shrouded mountains and a calm normal situation or emotion; 2. Oktoberfest can be linked to joyful emotions or situation; 3. Thirty Years, which indicates a situation wherein time flies, with emotions of surprise and sadness; 4. Stepping on Land Mines stirs

the imagination with the fear of encountering bloody flesh; 5. Foreign Culture can be associated with the emotions of surprise or amazement evoked by differences.

Seven (7) modes of occlusion were applied: (1) edge bleed, (2) occlude 2/9 of strokes on the right side, (3) replace strokes with text, (4) place other objects between the characters, (5) obliquely occlude the lower right corner, (6) cover multiple strokes with other objects, and (7) occlude by fading, plus a normal character without occlusion, making a total of 8 techniques. Each of these techniques was used to design the 5 text phrases, respectively, applying bold font, the same font size, and the same layout style. The samples are shown in Table 3.

Table 3: Experimental Samples

	High Mountain Tea	Oktoberfest	Thirty Years	Foreign Culture	Stepping on Land Mines
Bleeding					
Right-side occlusion					
Occluded lower right corner					
Fading					
Object in middle					
Object replacing strokes					
Small text replacing stroke					
Normal Text					

2.4 Experimental Equipment

An IBM computer with a 17-inch screen (width x height = 34 x 27.2 cm) at a resolution of 1024 x 768 pixels was used. Each participant was positioned 45 cm away from the computer screen, with a viewing angle of 15 degrees. The eight (8) samples, with different modes of occlusion applied to each text phrase, were shown to each participant. Using the five

emotions and a 7-point Likert scale, participants each completed a questionnaire designed in Google Forms.

2.5 Experimental procedure

The experiment was carried out independently in the same research room. Before the experiment started, the participants were briefly informed about the experimental method. During the process, the eight (8) samples of the same text phrase were sequentially displayed. The order was randomized for each experiment and only one text sample was displayed on the screen at a time. Participants were asked to check the appropriate level on the five emotional scales for each sample of occluded text. The levels ranged from 1-7, indicating the degree of affirmation from low to high. There was no time limit for answering. After the experiment was completed, a small gift was given to each participant.

2.6 Results

A three-factor mixed design ANOVA was used to analyze the emotional responses to text phrases in relation to mode of occlusion, emotional vocabulary and gender, in which mode of occlusion and emotional vocabulary were designed as dependent variables (within), while gender was treated as a between-subjects factor. The emotional response data for the five (5) text phrases was analyzed and tested by repeated measures ANOVA, and the results are as follows. In Tables 4 to 8, it can be seen that there is no significant difference between genders in the emotional response results for these five phrases, so this factor is not discussed in the sub-sections below.

2.6-1 High Mountain Tea

The results for mode of occlusion in Table 4, $F(7,315)=2.66$, $p<.011$, $\eta^2_p=0.056$, indicate that there was a significant difference between at least one mode and the others. The Scheffe Post-Hoc test results for Fading ($M=2.70$, $SD=0.15$), Occluded by object ($M=2.56$, $SD=0.10$), Bleeding ($M=2.55$, $SD=0.12$), Occluded by small text ($M=2.37$, $SD=0.13$) and Objects placed between characters ($M=2.46$, $SD=0.12$), were greater than Occluded right side ($M=2.37$, $SD=0.13$) and Occluded lower right corner ($M=2.37$, $SD=0.13$), all greater than Non-occluded ($M=2.27$, $SD=0.11$). In other words, the emotional response to the phrase High Mountain Tea for the occlusion mode of Fading is more obvious, and the complete non-occluded text has the least emotional response. From Table 4, it can be seen that there is an interaction between mode of occlusion and emotional vocabulary. Occluding with other objects is found to be significantly related to emotions of calm and joy, but the association with other emotions is quite weak.

The results for emotion $F(4,180)=35.06$, $p<.001$, $\eta^2_p=0.438$ indicate that there was a significant difference between at least one emotion and the others. The Scheffe Post-Hoc test shows that, under different modes of occlusion, the text phrase reflects calm ($M=3.30$, $SD=0.16$) greater than joy ($M=2.72$, $SD=0.14$) and surprise ($M=2.65$, $SD=0.14$), and all greater than sadness ($M=1.91$, $SD=0.11$) and fear ($M=1.79$, $SD=0.11$). In other words: under the effect all modes of occlusion of the phrase High Mountain Tea, participants tended to report calm emotions, not sad or fearful ones.

Table 4: ANOVA for Mode of Occlusion, Emotional Vocabulary and Gender for the Emotional Response to High Mountain Tea

Source of Variance	SS	df	MS	F	P	η^2_p
A. Mode of Occlusion, $n=8$	29.71	7	4.24	2.66	.011*	.056
Error	501.56	315	1.59			
B. Emotion, $n=5$	571.27	4	42.81	35.06	.000***	.438
Error	733.21	180	4.07			
A \times B	350.52	28	12.51	7.81	.000***	.148
Error	2018.47	1260	1.60			
C. Gender, $n=47$	1.43	1	1.43	.07	.78	.002
Error	845.29	45	8.78			

* $p < .05$, *** $p < .001$

2.6-2 Oktoberfest

From Table 5, it can be seen that there is no significant difference for mode of occlusion $F(7,315)=2.00$, $p > .05$, $\eta^2_p = 0.043$. From the average values, the three modes of Occluding with small text, Fading and Occluding with other objects ($M=2.79$, $SD=0.11$; $M=2.78$, $SD=0.12$; $M=2.76$, $SD=0.10$) have a relatively greater impact on emotion, while participants' emotional response to non-occluded Oktoberfest is least obvious. It can also be seen that there is an interaction between mode of occlusion and emotion, and a significant correlation exists between Occluding with other objects and the emotion of joy.

The results for emotion of $F(4,180)=36.82$, $p < .001$, $\eta^2_p = 0.450$, indicate a significant difference for least one emotion among all the others. The Scheffe Post-Hoc test shows that the participants' emotional reaction tendencies to Oktoberfest all modes of occlusion were: calm ($M=3.40$, $SD=0.14$) and joyful ($M=3.27$, $SD=0.12$) greater than surprise ($M=2.81$, $SD=0.17$), and those greater than sadness ($M=2.04$, $SD=0.14$) and fear ($M=1.85$, $SD=0.14$). That is to say, Oktoberfest is associated most with emotions of calm and joy, while it has a lower association with sadness and fear.

Table 5: ANOVA for Mode of Occlusion, Emotional Vocabulary and Gender for the Emotional Response to Oktoberfest

Source of Variance	SS	df	MS	F	P	η^2_p
A. Mode of Occlusion, $n=8$	17.97	7	2.56	2.00	.054	.043
Error	403.28	315	1.28			
B. Emotion, $n=5$	745.74	4	186.43	36.82	.000***	.450
Error	911.37	180	5.06			
A \times B	534.41	28	19.08	12.95	.000**	.224
Error	1855.93	1260	1.47			
C. Gender, $n=47$	7.56	1	7.56	.39	.531	.009
Error	853.62	45	18.96			

*** $p < .001$

2.6-3 Analysis of Thirty Years

It can be seen from Table 6 that the mode of occlusion results $F(7,252)=4.25$, $p < .001$, $\eta^2_p = 0.105$, indicate that there is a significant difference between at least one mode and the others. The Scheffe Post-Hoc test shows that emotional response to Thirty Years is most obvious for Fading ($M=2.98$, $SD=0.17$), Occluded by objects ($M=2.76$, $SD=0.13$),

Non-occluded ($M=2.59$, $SD=0.13$), and Occluded by small text ($M=2.58$, $SD=0.13$), while Occluded on the right ($M=2.19$, $SD=0.13$) has the least emotional response. It can also be seen that there is an interaction between mode of occlusion and emotion, with a significant connection between Fading and sadness, and the lowest correlation with joy.

Results for emotion, $F(4,144)=11.13$, $p<.001$, $\eta^2_p=0.039$, indicate that at least one emotion among all the others is significantly different. The Scheffe Post-Hoc test indicates that, across all modes of occlusion for the phrase Thirty Years, participants were most inclined to feel calm ($M=3.36$, $SD=0.19$), more so than surprised ($M=2.57$, $SD=0.17$), sad ($M=2.51$, $SD=0.16$) or joy ($M=2.40$, $SD=0.14$), and even more so than fear ($M=2.11$, $SD=0.15$).

Table 6: ANOVA for Mode of Occlusion, Emotional Vocabulary and Gender for the Emotional Response to Thirty Years

Source of Variance	SS	df	MS	<i>F</i>	<i>P</i>	η^2_p
A. Mode of Occlusion, $n=8$	65.84	7	9.40	4.25	.000***	0.105
Error	567.49	252	2.25			
B. Emotion, $n=5$	275.2	4	68.82	11.1	.000***	0.23
Error	890.14	144	6.18	3		6
A × B	287.15	28	10.25	7.42	.000***	0.17
Error	1391.66	1008	1.38			1
C. Gender, $n=38$	23.25	1	23.25	1.46	.23	0.03
Error	573.32	36	15.92			9

*** $p<.001$

2.6-4 Foreign Culture

The results of $F(7,294)=6.60$, $p<.001$, $\eta^2_p=0.136$ displayed in Table 7 for mode of occlusion indicate that there is a significant difference between at least one mode and the others. The Scheffe Post-Hoc test illustrates that participants had significantly more response to Fading ($M=3.13$, $SD=0.13$), Occluded by other objects ($M=3.02$, $SD=0.12$) and Bleeding ($M=2.90$, $SD=0.10$), greater than Objects between characters ($M=2.70$, $SD=0.10$), Non-occluded ($M=2.65$, $SD=0.11$), Occluded on the right ($M=2.62$, $SD=0.10$), Occluded by small text ($M=2.60$, $SD=0.10$) and Occluded lower right corner ($M=2.57$, $SD=0.11$). Moreover, it can be seen that there is an interaction between mode of occlusion and emotion, and it is found that occluding with other objects has a significant connection with the emotion of surprise.

Results for emotion $F(4,168)=16.63$, $p<.001$, $\eta^2_p=0.284$, indicate that at least one emotion is significantly different from the others. Scheffe Post-Hoc test results show that participants tended to respond with calm ($M=3.69$, $SD=0.18$) more than surprise ($M=2.96$, $SD=0.14$) to the different modes of occlusion for Foreign Culture, both greater than joy ($M=2.47$, $SD=0.12$), sadness ($M=2.37$, $SD=0.14$) or fear ($M=2.37$, $SD=0.15$).

Table 7: ANOVA for Mode of Occlusion, Emotional Vocabulary and Gender for the Emotional Response to Foreign Culture

Source of Variance	SS	df	MS	F	P	η^2_p
A. Mode of Occlusion, $n=8$	70.27	7	10.04	6.60	.000***	.136
Error	446.89	294	1.52			
B. Emotion, $n=5$	459.08	4	114.77	16.63	.000***	.284
Error	158.84	168	6.89			
A \times B	484.11	28	17.29	10.82	.000***	.205
Error	1878.31	1176	1.59			
C. Gender, $n=44$	5.79	1	5.79	.46	.500	.011
Error	524.71	42	12.49			

*** $p < .001$

2.6-5 Stepping on Land Mines

It can be seen from Table 8 that results for mode of occlusion, $F(7,294)=3.67$, $p < .001$, $\eta^2_p = 0.08$, indicate that there is a significant difference between at least one mode and the others. Through the Scheffe Post-Hoc, it was found that Fading ($M=2.95$, $SD=0.14$), Object between characters ($M=2.79$, $SD=0.14$), Bleeding ($M=2.75$, $SD=0.15$) and Occluded by the other objects ($M=2.74$, $SD=0.13$), are all greater than Occluded by small text ($M=2.73$, $SD=0.14$), Occluded lower right corner ($M=2.60$, $SD=0.15$) and Non-occluded ($M=2.58$, $SD=0.13$), which are all greater than Occluded right side ($M=2.44$, $SD=0.14$). An interaction between mode of occlusion and emotion is found, as Occluding with other objects and Object between characters were both more significantly linked with surprise, as was Fading with fear.

The results of $F(4,168)=9.02$, $p < .001$, $\eta^2_p = 0.177$ for emotion indicate that there is a significant difference between at least one emotion and the others. The Scheffe Post-Hoc test finds that surprise ($M=3.12$, $SD=0.15$) and calm ($M=2.99$, $SD=0.18$) were greater than fear ($M=2.65$, $SD=0.15$), joy ($M=2.43$, $SD=0.16$) and sadness ($M=2.29$, $SD=0.14$).

Table 8: ANOVA Mode of Occlusion, Emotional Vocabulary and Gender for the Emotional Response to Stepping on Land Mines

Source of Variance	SS	df	MS	F	P	η^2_p
A. Mode of Occlusion, $n=8$	36.148	7	5.164	3.670	.000***	.080
Error	413.684	294	1.407			
B. Emotion, $n=5$	177.892	4	44.473	9.027	.000***	.177
Error	827.676	168	4.927			
A \times B	318.667	28	11.381	7.912	.000***	.159
Error	1691.502	1176	1.438			
C. Gender, $n=44$	8.174	1	8.174	.309	.581	.007
Error	1111.867	42	26.473			

*** $p < .001$

3. Discussion and Conclusion

For these experiments on modes of occlusion, emotional vocabulary, and gender in regard to the emotional response to text phrases, the research results show that the emotional response to text phrases changes in emotional strength due to different modes of occlusion. It is found

that the Fading mode of occlusion is most significant for all the text phrases. To a certain extent, this mode seems to be applicable to the five phrases; perhaps because Fading seems associated with situations and emotions related to the unknown, disappearance, and sadness. Second is Occluding with objects. Perhaps these objects occluding the character strokes help to associate the situation referred to by the text and further arouse certain emotions. In relative comparison, techniques such as Non-occluded, Occluded right side and Occluded lower right corner were less able to arouse the participants' emotional responses, especially the Non-occluded mode, which was highly associated with calm emotion. Overall, non-occlusion was the least emotionally arousing. It is worth mentioning that in addition to Fading for High Mountain Tea, Occluded right side was most obviously linked to the emotion of calm. A question worth investigating is whether this is influenced by some tea brands having already used this design method for their packaging text.

There are significant differences in the emotional responses of the participants to the five text phrases under different modes of occlusion. Aside from the stronger emotional responses of surprise for Stepping on Land Mines, and calm and joy for Oktoberfest, the other text phrases most often evoke calm emotion. In other words, the participants did have different emotional responses to reading these phrases, but they were not very strong. It was also clearly shown that the emotional responses to the five text phrases were least related to fear. What is worth mentioning is the emotional reaction to Stepping on Land Mines; surprise stands out, followed by calm. Whether this truly reflects the real psychological reaction of ordinary people when they encounter land mines is worthy of follow-up discussion.

On the whole, text itself has hidden meanings, but different modes of occlusion play a role in enhancing the text to spark different levels of imagination and emotions in people. The strength of the emotional responses, aroused or weakened, will vary depending on the combination of text and occlusion modes. For example, for the phrase Thirty Years, it was found that there was a significant relationship between Fading and the emotion of sadness, which echoed previous research (Malik et al., 2016; Velasco et al., 2015a, 2015b; Plutchik, 1980; Acton, 1998; Wang et al., 2004). If a designer can skillfully apply the technique of occlusion, it will increase the interest and eye-catching degree of the design without affecting the text recognition. In this paper, occlusion by Fading was found to be generally suitable for all five text phrases. However, the results of this experiment have not been able to specifically summarize whether there are specific texts that are most suited for occlusion. After all, there are so many nouns among the aspect words of a language, so follow-up research can focus on different aspect words, modes of occlusion, and whether viewers have a design background or not, to continue to verify whether there is a difference in emotional response to the text.

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