

## *The Effect of Similarity and Ranking on Competitive Performance*

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### **Abstract**

Natural selection involves a competition amidst scarcity among species. Thus, organisms tend to engage in competitive behaviors, and humans are no exception to this. Social comparison influences competitive behavior such that people are motivated to perform better than others. The social comparison model of competition identifies individual factors and situational factors as important determinants of competitiveness. The study aimed to determine how similarity between competitors (individual factor), ranking (situational factor), and the interaction between them influence competitive behavior. The experiment was conducted using a 2 (similar or dissimilar) x 3 (undisclosed, top, or bottom) between-subjects factorial design. Using convenience sampling, 120 undergraduate students were recruited to compete against a confederate in two motor-based games. Results revealed that the main effects of both factors and their interaction were not statistically significant. Nonetheless, the study sheds light on the attitudes of Filipino college students in the face of competition and how the interplay of subjective and cultural values and situational factors shape their behavior.

Keywords: similarity, ranking, competitive performance, competition, values

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## Introduction

Human life is fraught with competition. From childhood to old age—whether at home, in school or at the workplace—people inevitably find themselves competing with those around them. The social structure associated with competition entails that the success of one person or group corresponds to the failure of the other. Furthermore, competition often activates people's tendency to compare themselves to others because individuals learn the quality of their performance vis-à-vis their competitors (Stanne, Johnson, & Johnson, 1999). The propensity to use others as a yardstick for judging one's own abilities and opinions is the major tenet of Leon Festinger's (1954) theory of social comparison.

### *Social Comparison Model of Competition*

Just as competition fosters social comparison, so does the tendency to socially compare motivate people to compete (Stanne et al., 1999). Nonetheless, although social comparison plays a key role in determining competitive behavior, there are multiple factors that can influence the extent to which competitive behavior is expressed. Stemming from Festinger's (1954) social comparison theory, the social comparison model of competition presents competitive behavior as a product of both individual and situational factors (Garcia, Torr, & Schiff, 2013).

Individual factors are those rooted on the idiosyncrasies of each person. Such factors are further subdivided into *personal factors*, which include individual differences among competitors and the relevance of the arena of competition to an individual's sense of self, and *relational factors*, which include similarity among competitors and their level of relationship intimacy. On the other hand, situational factors are those that arise from the environment and competition structure that are salient enough to influence participants' competitive behavior. These factors include: (a) number of competitors, (b) reward structures, (c) social categories, and (d) proximity to a standard (i.e., ranking). The summation of all of these factors, both individual and situational, determine *comparison concerns* which refers to the need to attain and maintain superiority over others. Comparison concerns, in turn, affect the expression of competitive behavior.

### *Similarity*

One of the individual factors that influence competitiveness is an individual's similarity with their opponent. According to Festinger (1954), people choose to compare themselves to those whose abilities and opinions are similar to their own. Thus, the greater the similarity perceived among competitors, the more competitive they would behave towards each other (Garcia et al., 2013). Researchers have looked into the effect of similarity on the competitiveness (see Dakin & Arrowood, 1981; Garcia et al., 2013; Miller, 1984; Wheeler et al., 1982), whether the similarity among competitors is related to performance in the area of competition or not (e.g. personal characteristics such as age, sex, educational background). It has been found that people are more likely to compare themselves to similar than dissimilar others in terms of their personal attributes and opinions that are related to or predictive of a particular performance (Goethals & Darley, 1977, as cited in Suls & Wheeler, 2000).

Concerning the matter of opinions, Goethals & Darley (1977, as cited in Suls & Wheeler, 2000) posit that opinions may be of two kinds—belief and value—and the role of similarity as a factor in social comparison differs with either. Whereas beliefs are verifiable, values are devoid of any intrinsic truth. The former is within the realm of objective analysis while the latter is more concerned with subjective preferences. With regard to beliefs, people are more drawn to compare themselves to those whose beliefs are dissimilar from theirs. In contrast, people more readily compare themselves to those who share similar values.

As far as we know, there has yet to be a study that investigates how comparison of value-based opinions impact competitive behavior. It would be interesting to test if the earlier findings about values (i.e. people are influenced more by others who share the same values as they do) may also be applied to evaluate competitive behavior.

### *Ranking*

As a situational factor in the social comparison model of competition, ranking plays a vital role in intensifying competitive behavior among individuals (Garcia et al., 2006). By gaining objective information regarding one's position relative to others, ranking activates the unidirectional drive upward within an individual (Garcia et al., 2013). That is, knowledge of one's rank tends to motivate people to perform better to secure a higher position than that of their competitors. When people compare themselves to opponents who have surpassed them in a valued dimension, upward social comparison occurs and this often incites pain, failure, and inadequacy in the self-evaluator (Garcia et al., 2006; Markman et al., 1993). Nonetheless, such negative feelings drive individuals to seek improvement (Markman et al., 1993) and even foster competitive behavior (Garcia et al., 2006; Kilduff, Elfenbein, & Staw, 2010). However, upward social comparison can only influence self-improvement if people see themselves as capable of changing and if the standard is deemed attainable (Stapel & Koomen, 2000; Lockwood & Kunda, 1997, as cited in Corcoran et al., 2011).

Furthermore, an individual's level of competitiveness increases as the degree of proximity to any meaningful standard increases as well. This standard may either be the top, bottom or some other predetermined threshold (e.g. cut-off points). As such, people tend to act more competitively when their scores fall at the top or at the bottom than when they are ranked in the middle (Garcia et al., 2013).

Whether individuals exhibit greater competitive behavior at top or bottom rankings appears to differ according to cultural context. Heine and colleagues (2001) investigated how success and failure affect motivation of Japanese and North American students. The participants were given a test, the difficulty of which depended on the treatment condition to which they were assigned, and checked how they supposedly performed relative to other students in their university. The distribution of scores was skewed such that those who were given the difficult version of the test would fall below the 50th percentile while those who received the easy version would fall above. Later, the participants were given another similar test and were timed according to how long they persisted answering the items. The results showed that Japanese students persevered more in tasks that follow failure (i.e., being ranked at the bottom) while Canadian students were more motivated by previous triumphs (i.e., being ranked at the top).

Garcia and his colleagues (2013), however, note the dearth of research investigating links between competitive behavior and an individual's lack of certainty regarding one's rank. Support for such a link can, at the time of writing, be implied from research (Garcia & Tor, 2007) that found that removing rank uncertainty tends to lower comparison concerns and consequently competitive behavior.

Nonetheless, on possible interaction effects with similarity, Wood (1989) found that when people's ranks remain undisclosed and they are given information unrelated to the performance dimension (e.g. personal characteristics), they evaluate themselves against others who are similar to them in these respects. At the same time, she also observed from previous research that participants' desire to beat similar opponents is sometimes even outweighed by their interest in them. Thus, in the absence of rank information, similarity in personal attributes tend to weaken competitiveness among individuals.

### *The Current Study*

Reviewing existing literature has shown that similarity and ranking both influence competitiveness by inducing comparison concerns. However, researchers have yet to look into the effect of similarity of values and rank uncertainty specifically on competitive behavior. Related literature on the effects of their interaction is even scarcer. In fact, Garcia and colleagues (2013) recognize the lack of studies that focus on the interaction between individual and situational factors and its influence on comparison concerns and competitive performance.

Thus, the current research aims to address the aforementioned gaps in knowledge regarding the social comparison model of competition. It also serves to challenge the validity of the model in the context of an Asian culture.

Based on previous studies, we predict that: (a) similarity of values between competitors affects competitive performance; (b) ranking affects competitive performance; and (c) the interaction between similarity and ranking affects competitive performance.

## **Method**

### *Participants*

Convenience sampling was used to recruit 120 introductory psychology students (41 males; 79 females) at the University of the Philippines Diliman. Their ages ranged from 16 to 26, with an average of 18.41 ( $SD = 1.69$ ). Compensation was provided via credit stubs, with which participants used to fulfill their class requirements.

### *Experimental Set-up*

Three experimenters were stationed inside the testing venue; one serving as the game master, one as the timekeeper, and one as the competitor. A physical barrier separated the participant and competitor in order to control for social category fault lines (e.g.

gender, ethnicity, affiliation, etc.) that may influence the performance of the participant.

Two boxes labeled “1” and “2” respectively were on the table before the participant. In between the two boxes, an iPad containing video instructions was placed. Under each box was a different game set-up. Underneath the first box was the following set-up: a plate containing the unsorted pile of Skittles, and five clear plastic containers into which the pieces of Skittles were to be distributed. The plastic containers were labeled “Red”, “Orange”, “Yellow”, “Green”, and “Violet” respectively.

On the other hand, underneath the box for the second game was the following set-up: a line of six plastic cups containing water, and a basin where the water from the cups were to be poured. An extra plastic cup was labeled as the “Practice Cup” to be used for the practice round before the game. The competitor on the other side of the barrier had a similar set-up.

### *Procedure*

The experiment was conducted using a 2 (similar or dissimilar) x 3 (undisclosed, top, or bottom) between-subjects factorial design. Participants were assigned to one of 6 treatment conditions via block randomization (Appx. B).

After obtaining informed consent, participants were asked to answer the questionnaire. An “Additional Experiment Time” form was also included along with the consent form (Appx. D) to accomplish this. According to this form, their efforts would be compensated with extra credit stubs should they choose to go through. With the *Additional Experiment Time* form given along with the informed consent, the participant was led to believe that the unseen competitor was a previous participant who volunteered to partake in the experiment once more in exchange for extra credit stubs.

Before entering the testing venue, the participant was asked to complete a questionnaire that would establish his or her similarity with the competitor. The questionnaire included 20 items that prompted the participants to choose between two options to measure their general opinions related to the games that they played later on. This was later used to establish similarity between the two competitors.

Once all forms were completed, the participant was led inside the room and asked to stand in front of a table where the two boxes containing the games were placed. The view beyond the table was obscured by the barrier. On the other side of which, the competitor was stationed.

To keep the participant from getting suspicious of the cover story and to make the competition believable, the timekeeper appeared to time the performance of the competitor. The timekeeper also assisted the participant during the experiment (i.e. removing the boxes to reveal the set-ups, retrieving fallen cups), while the game master pretended to assist the competitor. A fourth experimenter remained outside the room to entertain the next participant and to ensure silence in the corridor while the experiment was going on.

After telling the participants that they would be competing in two games against an experiment volunteer, the game master reported the pair's similarity rating based on the questionnaires they previously filled out. This was rigged according to the treatment condition assigned to each participant. Competitors were either told that they share 18 out of 20 (90%) similar answers with the competitor for the similar condition or that they only have 2 out of 20 (10%) similar answers for the dissimilar condition.

Before the start of each game, the competitors were asked to clap their hands twice to indicate that they are ready to begin. This was primarily done to convince the participants that there was another person behind the barrier. The facilitators would then lift the appropriate box, revealing the materials to be used. Next, the participants were requested to watch the prepared instruction video for each game, after which they were given a single practice round to familiarize themselves with the game. The experiment required the use of motor-based games as tasks involving motor performance lead to more competitive behavior (Stanne et al., 1999).

**Separation Anxiety.** The participants were first asked to participate in "Separation Anxiety", a game wherein participants were presented with an unsorted pile of candies, then were asked to sort them by color into the corresponding plastic container. Participants were to use only one hand throughout the game, with their other hand placed behind their back.

The results of the game would supposedly determine the initial rankings of the two competitors out of 24 participants, who allegedly participated in the pilot study of the experiment beforehand. However, the results of the game did not matter as rankings were rigged depending on the treatment condition assigned to the participant. Rankings were then either reported or not reported to the competitors (Appx. C).

The factor of ranking was subdivided into three levels, namely, *undisclosed*, *top* and *bottom*. The participants in the "undisclosed" condition, he or she was told that his or her rank will be disclosed only after finishing the second game, though this was never carried out; a participant in the "top" condition was told that both he or she and a competitor's ranks fall within the Top 2 of the previously-tested pilot group; while a participant in the "bottom" condition was told that both he or she and a competitor's ranks fall within the Bottom 2 of the previously-tested pilot group. Furthermore, it has been noted that competitive comparison is elicited to an optimal level when individuals must be aware that their performance is inferior to that of their competitors (Dakin & Arrowood, 1981). Thus, the confederate was always a rank higher than the participant in both the "top" and "bottom" conditions.

**Flip Cup.** Following "Separation Anxiety", the participants were then tasked to participate in the next game called "Flip Cup". The mechanics of the game were to empty a cup of water into the basin, then to flip the cup in such a way that it makes a 180° rotation (i.e. upside down to right-side up), and to move on to the next cup until all cups have been successfully emptied and flipped.

To further ensure that the participants would not see their competitor, the facilitators were tasked to pick up any accidentally-dropped cup. Participants were told that whoever completes the task first will be declared the winner. This was done to allow

for longer time measurements for better comparison of competitive performance, as measured by the duration of time taken to complete the task.

Time was recorded as soon as the game master gave the signal to begin. Time recording stopped when the participants finished flipping all six cups. Only the results from the second game were considered for measuring competitive performance, while the first game was used only to establish ranking.

After “Flip Cup”, the game master gave the participants a manipulation check, which prompted them to recall (a) whether they were similar to the competitor and (b) their rank (undisclosed, higher, lower). They were also asked if they were color blind or afflicted with any motor disability that may have affected their performance in the games. The participants were then debriefed and compensated.

## Results

The results of the experiment were analyzed using SPSS ver. 23. A two-way analysis of variance (ANOVA,  $\alpha = .05$ ) was used in order to determine the main effects of the factors as well as the interactions between them. Only the data obtained from the second game (“Flip Cup”) was considered in the analysis.

The results of this experiment failed to provide significant statistical evidence for the effects of similarity and ranking on competitiveness. The main effect of similarity bordered on being significant but still failed to reach the desired level,  $F(1,114) = 3.81$ ,  $p = .054$ ,  $\eta^2 = .032$ . Participants from the dissimilar condition ( $M = 0.92$ ,  $SD = 0.70$ ) outperformed those in the similar condition ( $M = 1.15$ ,  $SD = 0.58$ ) and, therefore, were more competitive.

The calculated main effect of ranking was likewise determined to be nonsignificant,  $F(2,144) = 0.43$ ,  $p = .65$ ,  $\eta^2 = .007$ . Those who were told that they ranked at the bottom of the supposed previously-ranked pilot test group were found to be the most competitive among the three conditions ( $M = 0.96$ ,  $SD = 0.54$ ), followed by the participants who were ranked at the top ( $M = 1.06$ ,  $SD = 0.67$ ). Finally, the least competitive participants came from the undisclosed condition ( $M = 1.09$ ,  $SD = 0.74$ ).

Lastly, the interaction between the two factors was not significant,  $F(2,114) = 1.54$ ,  $p = .22$ ,  $\eta^2 = .026$ . The following interactions were observed and ranked from most competitive to least competitive: dissimilar-bottom ( $M = 0.70$ ,  $SD = 0.39$ ), dissimilar-top ( $M = 1.00$ ,  $SD = 0.80$ ), dissimilar-undisclosed ( $M = 1.06$ ,  $SD = 0.79$ ), similar-top ( $M = 1.11$ ,  $SD = 0.52$ ), similar-undisclosed ( $M = 1.12$ ,  $SD = 0.70$ ), similar-bottom ( $M = 1.22$ ,  $SD = 0.55$ )

## Discussion

Contrary to any of the posited hypotheses, the main effects of similarity and ranking and their interaction were not statistically significant. Furthermore, participants who believed that they were dissimilar from their competitor were more competitive than those who thought they were similar. Participants ranked at the bottom were also the most competitive of the three conditions. They were followed by those in the top-ranked condition and those in the undisclosed rank condition. Finally, participants in

the dissimilar-bottom condition were the fastest and, therefore, the most competitive among all treatment conditions. This was followed by those in the dissimilar-top, dissimilar-undisclosed, similar-top, similar-undisclosed, and similar-bottom conditions.

### *Similarity*

The present study aimed to determine whether similarity of value-based opinions influence competitive behavior of Filipino college students since it has been found to effectively induce social comparison (Goethals & Darley, 1977, as cited in Suls & Wheeler, 2000). While, similarity produced a marginally significant impact on competitive performance, such results were ultimately deemed to be non-significant to prevent committing a Type I error (Pritschet, Powell, & Horne, 2016).

The contrast between the results of the current study and the framework of Garcia and colleagues (2013) may be attributed to cultural relativism. The research on the social comparison model of competition is primarily based on a Western, individualistic perspective whereas Filipinos have a collectivist culture. Competition in individualist cultures occur between individuals while competition tends to occur between groups in collectivist cultures (Triandis et al., 1988). When faced with situations in which individual and collective interests are conflicting, persons with collectivist backgrounds are also more inclined to cooperate than compete. The opposite is true for those coming from societies where individualism is emphasized (Parks & Vu, 1994). Although the social comparison model is based on empirical evidence which have been rigorously tested, some of its claims, particularly that greater similarity between individuals encourages competitive behavior, may not be applicable to collectivist cultures such as that of the Filipinos. Though the results of the study contradict the said model, it may support observations that when rankings remain undisclosed, people's desire to win (i.e., their competitiveness) tends to be overpowered by the desire to know more about their competitor if they know that they are similar to them in a particular domain (Wood, 1989).

Moreover, the failure of similarity to establish a significant effect on competitive performance is consistent with the findings that although people choose to compare themselves to others who share the same values as their own, they also draw more support from such similar individuals (Goethals & Darley, 1977, as cited in Suls & Wheeler, 2000). That is, they experience more social support from those with identical values. Indeed, according to Deutsch (2006), competition involves decreased perceived similarity of values among competitors and increased awareness of conflicting interests. On the other hand, increase in perceived similarity produces and is produced by cooperation. That is, when people are aware that they share the same values and beliefs, there is a possibility of developing a positive affinity among themselves.

The differing role of similarity in competition and cooperation may also explain why participants in the dissimilar condition performed faster and thus more competitively than those in the similar condition. Since the similarity rating between the participants and their competitor was reported prior to the commencement of the games, it must have been salient enough to trigger a distinct type of social relationship. That is, competition was incited among those who thought they were only 10 percent similar



to their competitors. On the other hand, subtle feelings of cooperation might have fostered among those who believed that they shared 90 percent of their values with their competitor.

These propositions are made even more probable when one contextualizes the data against the backdrop of Filipino culture, specifically with the *Sikolohiyang Pilipino* (Filipino Psychology) concept of *Ibang-Tao* (others) and *Hindi-Ibang-Tao* (one of us) dichotomy. The two constructs are subsumed under the concept of *kapwa* (shared identity) (Enriquez, 1992, as cited in Yacat, 2013). In the process of social interaction, Filipinos tend to identify people as either *Ibang-Tao* or *Hindi-Ibang-Tao* (Pe-Pua & Protacio-Marcelino, 2000). It is possible that after finding out they shared the same values as their competitor, the participants viewed their competitor as *Hindi-Ibang-Tao*. By thinking that they have a sense of shared identity with their competitor, a strong feeling of competitiveness was not induced among the participants in the similar condition. Thus, competing against people with dissimilar values elicited stronger feelings of competitiveness than when competing against similar opponents because the former involves a low sense of perceived relatedness with the other person.

### *Ranking*

The lack of statistical significance of ranking may be explained by a distinction between two upward social comparison conditions: upward social comparison in the task and upward social comparison on the scale (Garcia & Tor, 2007). Task comparisons are made based on a single specific action, whereas scale comparisons pertain to a general view of an individual's overall performance. Although task and scale comparisons are correlated, competitive behavior is not as strongly induced when there is no possibility of a rival surpassing one's rank. Though the supposed ranks of the participant and confederate were disclosed after the first game, it was explained at the outset that winning was based on the performance on the two games alone. Also, the rigged ranking was independent of the second game. Therefore, only task comparison was available to the participants.

Furthermore, Garcia and his colleagues (2006) emphasized that upward social comparison could only heighten people's competitiveness if the domain where they lost is deemed important to the self. Winning in the games might not have been important to them since they would be given credit stubs as compensation regardless of their performance in the games, thus explaining why the main effect of ranking was not statistically significant. Perhaps if participants were competing in a more valued area, ranking would have a significant effect on competitive behavior.

Participants also performed better when they were ranked at the bottom than if their ranks were at the top or were undisclosed. This suggests that Filipinos, like the Japanese, as noted by Heine and his colleagues (2001), are more likely to work harder in the face of failure than after attaining success. That being said, further studies are needed to be able to conclude that Asians, unlike Westerners, are more motivated in accomplishing tasks after experiencing failure.

It is also probable that participants in the top ranking condition were not as competitive as those in the bottom because collectivists have low self-enhancement levels, which is mediated by modesty being a social requirement in their culture

(Kurman, 2003). In relation to this, Filipinos have a concept of *hiya*, which refers to a “kind of conscious self-control or restraint (something similar to temperance)” (Lasquety-Reyes, 2016, p. 66). *Hiya* was further described by Pe-Pua and Protacio-Marcelino (2000) as a sense of propriety. Similar to other collectivist cultures, there exists a norm in the Philippines to practice modesty, or more appropriately *hiya*, that mediates low self-enhancement.

On the other hand, since ranking induces upward social comparison as well as the unidirectional drive upward in an individual (Garcia et al., 2006), non-disclosure of one's rank relative to others failed to trigger these two important factors. Thus, participants in the undisclosed condition performed least competitively.

### *Interaction effect*

The study failed to provide support that the interaction between similarity of values and ranking significantly affects competitive performance. This suggests that though individual factors (e.g. similarity) and situational factors (e.g. ranking/proximity to a standard) influence competitiveness, they operate distinctly. Individual factors focus on the actor's perception of the competitor and performance dimension rather than the specific context of the competition. The opposite is true for situational factors (Garcia et al., 2013).

On the other hand, self-handicapping may explain why participants in the similar-bottom condition performed slower than those in the similar-top condition and were even the slowest when compared to all other treatment conditions. Self-handicapping refers to the practice of intentionally undermining one's chances of success to justify potentially poor performance and protect one's self-worth (Ormrod, 2012). As can be observed, participants in the similar-bottom condition performed slower than those in the similar-top condition and were even the slowest when compared to all other treatment conditions. We speculate that this is a result of the self-handicapping of the participants since they may have felt doubly inadequate after finding out they placed at the bottom two of the previously-ranked pilot test group, coupled with having been defeated by their competitor.

Also, because it is probable that people who share similar values experience a feeling of shared identity, participants in the similar-bottom condition may have seen their competitor as their *karamay* or *kadamay*. This Filipino concept comes from the word *damay* which refers to the ability to feel for others, especially in the midst of a dilemma or a crisis (Dela Cruz, 2015; Torres, 1985). More than just a feeling, however, it also moves people to act in ways that would bring the self closer to others (Dela Cruz, 2015). The similar-bottom participants must have felt comforted by the fact that they had a *karamay* in placing last in the ranking and so did not find it necessary to compensate for their low rank. In contrast, the participants in the dissimilar-bottom condition may not have viewed their competitor as a *karamay* because they did not think they share enough values with their competitor. Thus, they were still motivated to outperform their competitor to make up for being ranked last.

### *Limitations and recommendations*

One of the limitations encountered during the research was the restricted time given to the researchers for data collection. Given more time, more participants might have been recruited perhaps causing significant results, especially considering the marginally significant results of the similarity factor.

Additionally, it was observed that some of the participants exhibited difficulty in executing and/or understanding the rules of the “Flip Cup” game used to measure competitiveness. It is possible that this may have led to the non-significant results of the study. This is important since ambiguity of instructions often results in the participants focusing more on performing the task correctly rather than concentrating on the goal of winning, thereby inciting self-consciousness that disrupts their competitive behavior (Martens & Landers, 1972, as cited in Baumeister, 1984). Such is the phenomenon of "choking under pressure" in which a person fails to meet high performance standards set by both the situation and the individual himself (Baumeister, 1984). It often occurs when people are forced to do specific tasks for the first time (Baumeister, 1984). Therefore, using a different game to measure competitiveness may possibly have produced different results. Since “Separation Anxiety” is relatively easier to understand and execute, we noticed that participants were able to focus more on playing competitively than on carrying out the instructions accurately. Hence, we should have chosen this to measure competitiveness rather than “Flip Cup.” Conversely, should future researchers opt to use “Flip Cup” as a procedure for obtaining data, we recommend that they measure perseverance rather than competitiveness.

The researchers of the present study recommend that future researchers design a competitive task that is more relevant to the participants (i.e. something academic-related for students) to induce competitive behavior as dimension relevance is one of the individual factors in the social comparison model of competition (Garcia et al., 2013). Another would be to explore competitive behaviour and attitudes of Filipinos as the literature is lacking. They may expound on the relationship of competitiveness and *kapwa*. It would also be interesting to research on other factors of the social comparison model of competition such as social category fault lines, particularly race, since Filipinos are generally considered warm and hospitable toward foreigners.

There was a failure to probe the participants about how they felt upon learning their similarity rating with their opponent and their ranking in the supposed list of pilot test participants. Researchers, who want to replicate the current study, may ask participants the extent to which they perceived themselves as competitively performing in the tasks via a Likert scale.

Future variations of this study may also have the participants compete with each other instead of with a confederate posing as an experiment volunteer. The gender of participants may also be considered as a possible factor affecting competitive behavior.

## **Conclusion**

The present study aimed to analyze how similarity of values and rankings influence competitiveness. The results failed to provide evidence that the main effects of either of the two factors, as well as their interaction, had a significant effect on competitive behavior. Nevertheless, the study somehow shed light on the attitudes of Filipino students in the face of competition and how the interplay of subjective and cultural values and situational factors shape their behavior. It was noted that when Filipinos compete against people who do not share the same values as them, stronger feelings of competitiveness are induced than when they are confronted with similar opponents because the former involves a low sense of perceived relatedness with the other person. Furthermore, with participants having performed better when ranked at the bottom, it may be inferred that, for Filipinos, being at the bottom provides room for improvement .

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## Appendix A

PN:

### QUESTIONNAIRE

Which of the two options do you prefer? Write A or B in the space provided. Don't spend too much time on any one item.

A	B	Ans
Sweet	Sour	
Milk	Orange Juice	
Candies	Chocolates	
Play alone	Play with others	
Bright colors	Pastel Colors	
Angry Birds	Candy Crush	
Jogging	Playing video games	
Coffee	Tea	
Red	Blue	
Twister	Checkers	
Crossword	Sudoku	
Milkshake	Milk Tea	
Monopoly	Snakes & Ladders	
McDonald's McFloat	Jollibee's Coke Float	
Rubik's Cube	Tetris	
ROYGBIV	Black & White	
M&M	Nips	
Coca-Cola	Pepsi	
Green	Yellow	
Scrabble	Chess	

Questionnaire that will measure similarity between competitors. Participant number (PN) is indicated at the upper-left.



## Appendix B

B 1	B 2	B 3	B 4	B 5	B 6	B 7	B 8	B 9	B1 0	B1 1	B1 2	B1 3	B1 4	B1 5	B1 6	B1 7	B1 8	B1 9	B2 0
1	2	2	6	3	1	5	4	4	2	3	2	5	1	6	4	5	3	1	5
6	6	6	1	2	5	3	5	5	5	5	3	2	2	1	2	4	6	6	6
4	3	4	2	4	3	1	6	2	3	6	4	4	3	3	6	1	4	3	3
3	4	5	4	1	4	2	1	3	6	2	1	3	6	4	1	6	2	5	1
5	5	3	3	5	3	6	3	1	1	4	6	6	4	2	5	2	1	4	2
2	1	1	5	6	2	4	2	6	4	1	5	1	5	5	3	3	5	2	4

Assignment of treatment conditions via block randomization

## Appendix C

In the following lines, Participant A would refer to the competitor (confederate). Participant B would refer to the participant.

### Similar-Unspecified

- 90% similar
- “Thank you for participating. Your individual rankings and the player who performed faster shall be announced after the second game.”

### Similar-Top

- 90% similar
- “Thank you for participating. Based on both your performances, Participant A performed better than Participant B. Ranked by speed, the both of you are respectively #1 and #2 out of 24 pilot test participants.”

### Similar-Lower

- 90% similar
- “Thank you for participating. Based on both your performances, Participant A performed better than Participant B. Ranked by speed, the both of you are respectively #23 and #24 out of 24 pilot test participants.”

### Dissimilar-Bottom

10% similar

“Thank you for participating. Your individual rankings and the player who performed faster shall be announced after the second game.”

### Dissimilar-Top

- 10% similar
- “Thank you for participating. Based on both your performances, Participant A performed better than Participant B. Ranked by speed, the both of you are respectively #1 and #2 out of 24 pilot test participants.”

### Dissimilar-Bottom

- 10% similar
- “Thank you for participating. Based on both your performances, Participant A performed better than Participant B. Ranked by speed, the both of you are respectively #23 and #24 out of 24 pilot test participants.”

## Appendix D

### ADDITIONAL EXPERIMENT TIME

The experimenters will provide additional CREDIT STUBS for participants who choose to volunteer additional time for this experiment. Volunteers will participate in the same two games that he or she had participated in during his or her original time slot.

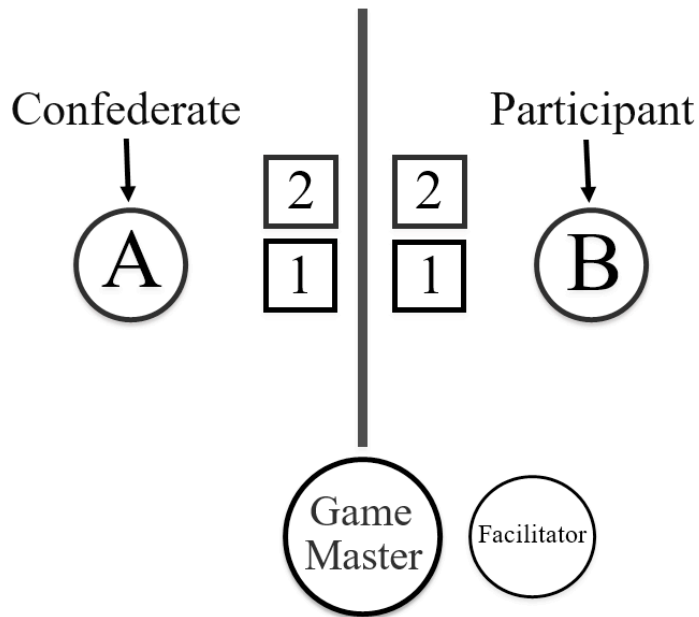
If you are interested in volunteering more time for this study, please check the box below and provide your cell phone number. Experimenters will contact you within 24 hours to arrange a volunteer schedule that will suit you.

YES, I would like to volunteer more time for this experiment.

Cellphone:

**The Additional Experiment Time form** that is presented with the informed consent form. This form will reinforce the cover story made for the participant's competitor.

## Appendix E



**Fig. 2** The room will be setup in such a way that there will be a barrier at the center to conceal the participant's opponent (confederate). At each side of the barrier, two boxes labelled "1" and "2" will be placed on a table where the materials of each game are hidden underneath. The game master will be standing at one end of the barrier facing the competitors. Beside him or her will be the facilitator.