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

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

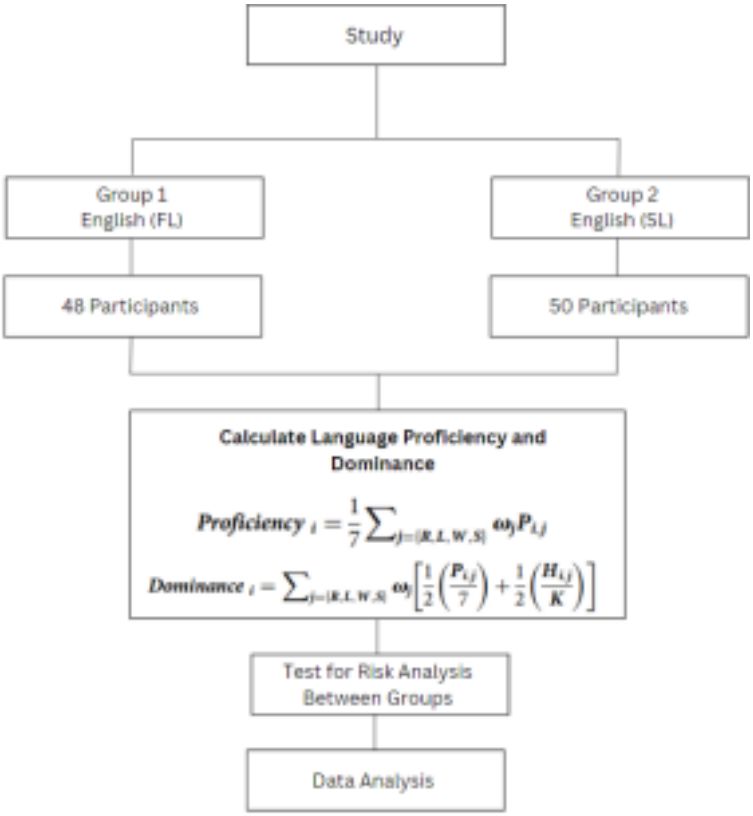

Figure 1: Experiment Procedure

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).*

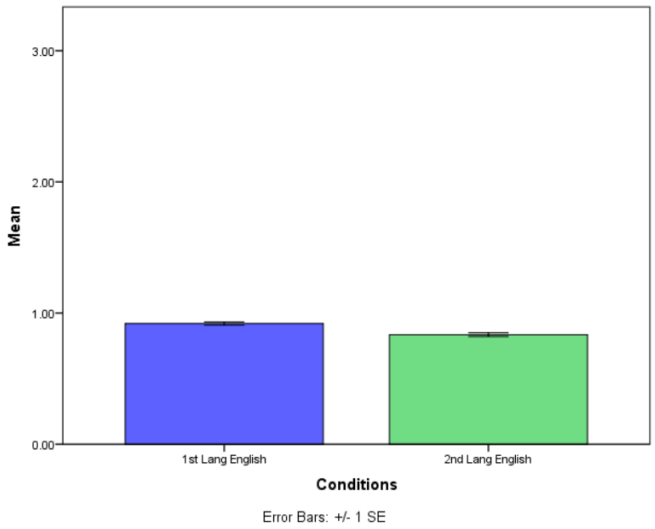

Figure 2: Language Proficiency scores for the two groups

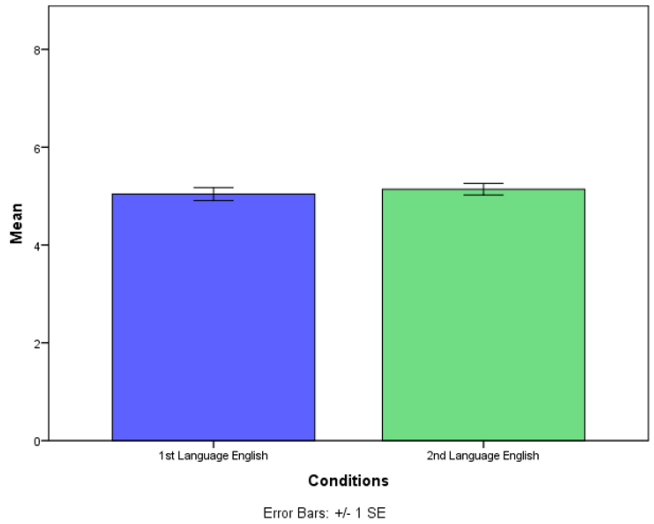

Figure 3: Risk Analysis scores for the two groups

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.

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