New submission from ARC Award Final Report

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Name of Researcher

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Position in Department/Faculty

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Project Title

Cross-Cultural Differences in Categorization: A Replication and Extension

Term of Project

Fall 2021 - Fall 2022

Please introduce yourself – include pertinent background information relating to the topic of your research project.

I completed my PhD in cognitive and behavioural neuroscience at the University of Waterloo, Ontario, before moving to British Columbia to teach at Langara College. My PhD work focused on the study of memory and attention.

Please discuss your educational background and your work experience that led you to taking on this research project. If possible, include a quote that helps define your interest in this project.

I became interested in the study of culture and cognition after completing training in interculturalism at Langara College. This training opened my eyes to the cultural variety in thinking and communication. I began to look for research on culture and cognition, and while there is extensive research comparing American and East Asian students, there is very little study on students from India. With the increase in international students from India at Langara College, it seemed an excellent opportunity to begin to study how students from India approach cognitive tasks. If culture affects our fundamental cognitive processes, then way we literally perceive and understand our world is changed by culture.

Please summarize your project in plain language that others not in your field could understand.

The field of cognitive has largely assumed that the way humans process information is universal. However, research from the field of cross-cultural psychology suggests that people from different cultures think differently. For example, research comparing European Americans to East Asian participants suggests that methods for dealing with contradiction, reasoning styles, and categorization of objects, among others, are all affected by culture (Nisbett, 2003). One such study indicates that whereas European Americans are likely to categorize objects based on taxonomic categorization (similarity of attributes, properties), East Asians are more likely to use thematic categorization (relationships among objects).

While there has been extensive research comparing the thinking styles of Chinese and European American students, there is relatively little looking at Indian students. We have been exploring whether Indian students categorize objects based on taxonomic or thematic categorization. Our previous research suggested that International Students from India categorize using more thematic categorization than European Canadian students when completing the task in English, but not in their native language (Hindi or Punjabi). The current project aimed to replicate this finding and

explore whether categorization style was influenced by acculturation, or a measure of how much the students have adopted to the Canadian culture.

Identify the project goals and objectives. Explain how the results may be used to solve a problem or inform further research in the field.

Intercultural misunderstandings are often ascribed to problems in language proficiency, but this misses a much larger picture. Recognizing the ways in which culture affects how we understand and organize our world is key when working in intercultural environments.

Research in cross-cultural differences in cognition can be applied to any intercultural environment, but, as an educator, I am most interested in applications to educational settings. For example, do categorization styles affect how students approach multiple choice questions or organize textbook content? How might processing styles affect what we focus on and remember? And how can we, as instructors, attend to these differences? These are some of the questions our lab is interested in exploring.

Briefly explain the steps taken (methods used) to conduct the research, and describe the key findings.

We first obtained ethical approval and ARC funding. Data collection began in the Fall semester of 2021 and continued until the end of the Spring, 2022 semester. Participants were recruited by asking instructors to advertise the study through email and/or Brightspace.

Students interested in participating in the study were directed to a Survey Monkey link. Although we were specifically interested in students from Canada with European heritage, international students from China, and international students from India, any participant could complete our study. Students completed two categorization tasks and answered questions regarding demographics, academics, and language preferences and proficiency. Students indicating they were born and raised in India with Indian ancestry, born and raised in China with Chinese ancestry, or those indicating they were from another country, also completed the Vancouver Index of Acculturation (VIA; Ryder et al., 2000).

The first categorization task was a triad task. Students saw lists of three items and were asked to indicate which two of the three were most closely related. As an example, consider the three items spoon, soup, knife. Choosing spoon and soup would indicate a thematic categorization (as spoons are used to eat soup), whereas choosing spoon and knife would indicate a taxonomic categorization (as both spoons and knives are utensils). Participants received one of two versions of this task, with 4 critical items and 6 filler items.

The second categorization task asked participants to view a picture of a triangle with a wood-like texture called 'dax.' Participants were asked to select either a triangle with a Styrofoam texture or pieces of an item of wood-like texture. Selecting the triangle-Styrofoam would indicate a more taxonomic categorization (they are both the same shape) and selecting the wood pieces would indicate a more thematic, substance-based categorization (they are both made of the same material).

In our first study (Fall, 2021), all participants completed the task in English. We found an interaction between our groups and the version they received. In one version of the task, Indian students were more likely to use thematic categorization than the European Canadians. There were no differences between European Canadian and Chinese students, or Chinese and Indian students. Although the difference between the European Canadian and Chinese students failed to reach significance, this may be due to a small sample size of Chinese students. Interestingly, we also found that scores on the heritage culture questionnaire positively correlated with thematic categorization in Chinese students, suggesting that Chinese students who have stronger associations to their heritage culture show higher thematic categorization, though this result should be received with caution due to a small sample size (24 participants). There were no differences in the Dax task.

In our second study, participants completed the task in their native language (English, Traditional or Simplified Chinese, or Hindi or Punjabi). We found a main effect of group. Results showed that the Chinese students were more likely to use taxonomic categorization than both the European Canadians and Indian students, who did not differ. Unlike in the previous study, we did not find that the VIA correlated with performance on the task. We did, however, find evidence that the Chinese students were more likely to select the wood-pieces than the other two groups on the

Dax task.

The results coincide with our previous results suggesting that Indian participants are more likely to categorize objects thematically than European Canadians, but only when completing the task in English. The results also replicate previous work suggesting people from China are more likely to categorize thematically than European Americans, though this effect may only be found when completing the task in their native language. Categorization style appears to be affected not only by culture, but also the language the items are presented in.

Who was involved in this project (eg. faculty, students, community partners)? How did their involvement contribute to the project's success? Were there any challenges to overcome?

I continue to work with two students who supported the original research project in 2019/2020. One student has just graduated from UBC, and the other is near the end of their studies at SFU. I also recruited two additional Langara students from our PSYC 2320 Research Methods and PSYC 2321 Data Analysis in Psychology classes in Summer 2021 to help me with the project. They helped design and prepare the study, recruit participants, and code the data. Another student was brought on to help with data coding during Summer 2022. Although all three research assistants have since moved on from Langara, they continue to work on the project.

They contributed to the project's success in multiple ways. First, they helped me with the initial design of this project, including choosing items, integrating attention checks into our survey, and helping to choose wording for the survey. Second, they spend many, many hours coding the Survey Monkey data into Excel. Finally, they will help me consider next steps for the research.

Please share any personal stories that made this research experience memorable/valuable.

We tend to believe that people see the world as we do. I sometimes still have a hard time believing that someone would think 'soup and spoon' belong together instead of 'spoon and knife.' Looking at the data has really helped open my eyes to the diversity in our perceptions and understandings.

What are the next steps for this project and for you as a researcher?

I plan to begin writing a manuscript in hopes of publishing this project in an open-source journal. I would then like to continue to explore cross-cultural differences in cognition. Although there are many questions left to explore with respect to categorization and culture, I think I would like to begin to explore whether culture affects what we attend to and remember.

Please upload any images that will help to showcase your project.

- Slide4.jpg
- Slide3.jpg
- Slide2.jpg
- Slide1.jpg

Langara Institutional Repository Consent

By submitting, I consent to uploading my ARC Fund final report to the Langara Institutional Repository (The LaIR).