LANGUAGE AND LEARNING: THE EFFECTS OF LANGUAGE-DEPENDENT MEMORY ON PUNJABI AND MANDARIN ESL STUDENTS

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Introduction

Students who seek their education in foreign countries, along with encountering many unique opportunities, face many challenges. For some students, the foremost of those challenges is learning new material in a new language. Educational institutions are profoundly language based. They require students to learn information delivered through spoken and written language, in lectures and textbooks, and to demonstrate their understanding of that information through writing. The work is difficult, even for students operating in their native language, and those learning a new language at the same time can find themselves at a disadvantage (Miller & Peleg, 2010). Reading in a new language is sometimes a struggle and, with the increasing quality of translation applications, second-language students may be tempted to translate their readings into their native language in order to make the task a little easier. However, language context may affect what information a person recalls (Marian & Kaushanskaya, 2007).

Studies of autobiographical memory have found that people are able to recall more memories when the language of retrieval matches the language of encoding than when it does not (Marian & Neisser, 2000; Marsh, Kanaya, & Pezdek, 2015), and they are also able to retrieve these memories more quickly (Mortensen, Berntsen, & Bohn, 2015). The language-dependent recall effect extends to semantic memory as well, though language proficiency also impacted results: the effect is reliably present only when participants are highly proficient in both languages (Marian & Fausey, 2006; Marian & Kaushanskaya, 2007).

The present study adds to these findings by investigating the challenges that foreign language students are facing here in Canada, who will be tested in English in the majority of their courses regardless of what language they choose to study the material in. In this case, our main focus is ESL Punjabi and Mandarin students at Langara. We hypothesize that students will have higher scores on a recall test when the language of the test matches the language in which they encoded the information than when it does not, and this effect will be stronger for bilinguals with high proficiency in both languages.

Results

Multiple two-tailed independent samples t-tests were conducted to compare recall scores in the match and mismatch conditions for different participants.

For the data as a whole, there was not a significant difference between the match (M = 15.35) and mismatch (M = 12.86) conditions; $t(43) = 2.02$, $p > 0.05$. This difference was significant for a one-tailed t-test at $p = 0.03$.

For the balanced bilinguals, there was not a significant difference between the match (M = 15.75) and mismatch (M = 12.68) conditions; $t(19) = 1.42$, $p > 0.05$.

There was also no significant difference between match ($M = 15.05$) and mismatch ($M = 12.75$) conditions for the unbalanced bilinguals; $t(21) = 1.41$, $p = 0.17$.

For the native Punjabi speakers, there was a significant difference between the match (M = 16.27) and mismatch (M = 12.69) conditions; $t(29) = 2.34$, $p = 0.03$.

For the native Mandarin speakers, there was not a significant difference between the match ($M = 13.63$) and mismatch ($M = 13.33$) conditions; $t(12) = 0.12$, $p = 0.90$.

Discussion

We predicted a significant difference overall between match and mismatch conditions and a stronger effect for the balanced bilinguals. This hypothesis was not supported. We were unable to reject the null for our data as a whole, and the difference between groups for the balanced bilinguals was no closer to significance than that for the unbalanced bilinguals. The only result that was significant for a two-tailed t-test was the Punjabi students: there was a difference between the match and mismatch conditions in this group. By contrast, the Mandarin students' mean recall scores were nearly identical for each condition.

Previous research with Mandarin-English bilinguals by Marian & Kaushanskaya (2007) indicates that while match or mismatch of encoding and retrieval language does have an effect on recall, encoding in native language versus non-native language does as well. In fact, in this study, the advantage of encoding in the participant's native language was greater than the encoding-retrieval match advantage. As we only tested recall in English, it may be that the advantage to students encoding in their native language balanced out the advantage of those in the match condition, who were encoding in their non-native language. However, it is unclear why this would have a different effect on the scores of Mandarin and Punjabi speakers.

Differences between the results of Mandarin and Punjabi students may be due to language or cultural differences, or may be due to limitations of the current study. As Mandarin is not written phonetically, the names of invented things (such as places and plants) in the Mandarin passages were written in English characters, while this was not the case for the Punjabi passages. This may have had some effect, although only 4 of the 24 questions required participants to recall these invented names. Our sample of Mandarin students was very small, making it difficult to draw conclusions about this group. We also noticed that the Mandarin students were more engaged with our distraction task but, as the mean recall test scores were very similar for Punjabi and Mandarin students, it is difficult to say whether this had an impact. Finally, we had to eliminate a section of the BLP from our results, as the majority of participants did not fill it out correctly. It is possible that this had an impact on our ability to accurately separate the balanced bilinguals from the unbalanced bilinguals.

Future research into language-dependent memory should examine languages separately or comparatively, as our study indicates there may be very different results depending on the languages spoken. As the research on this topic up until now has only investigated a small fraction of the possible languages bilingual people speak around the world, there is a great deal of additional research that could be done. Future research should be sure to examine recall and encoding in participants' native and non-native languages to control for native language advantages.

Method

Overview: The purpose of our study was to investigate the effects of language-dependent learning using fictional stories translated into either Punjabi or Mandarin and a recall test based on those passages which was administered in English. Participants in the match condition read and were tested on the passages in English, and those in the mismatch condition read the passages either in Punjabi or Mandarin and were tested on the passages in English. All participants were either Punjabi or Mandarin ESL students.

Participants: Participants were ESL Punjabi ($n = 31$) and Mandarin ($n = 14$) introductory psychology students at Langara College recruited through the SONA system, which grants course credits in exchange for participation. Our obtained sample included 15 males and 28 females and had a mean age of 20 ($M = 19.89$).

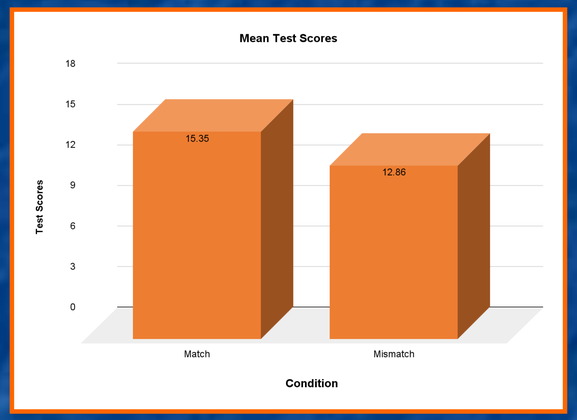
Procedure: The match group had 23 participants (8 Mandarin and 15 Punjabi), and the mismatch group had 22 participants (6 Mandarin and 16 Punjabi). Punjabi and Mandarin participants were tested separately, and for each session participants were randomly assigned to either the match or mismatch condition.

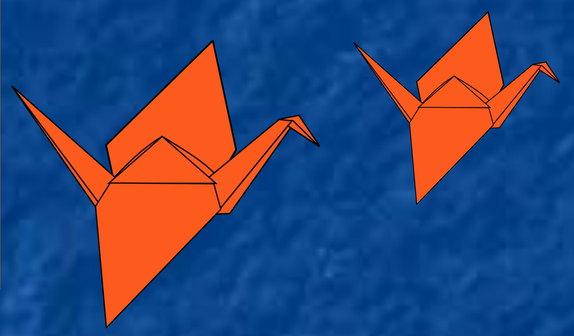
Participants were given two passages either in their native language or in English and had a total of 10 minutes to read the passages. The passages were fictional stories, one of which was biology related and the other history related.

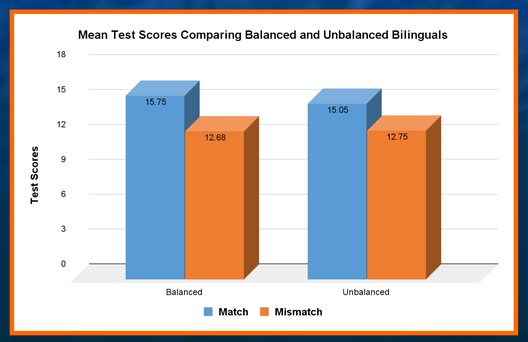
After reading the passages, participants were directed to follow a 6-minute instructional origami video (https://www.youtube.com/watch?v=Ux1ECrNDZl4). This video is a step-by-step guide to making an origami crane. Participants were told not to worry if they did not complete the activity.

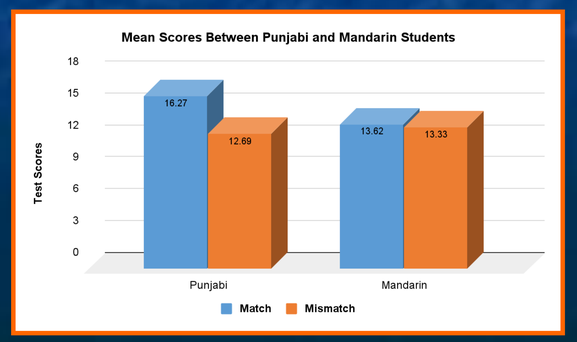
After the video, participants were given 15 minutes to complete a recall test about the two passages consisting of 24 simple short answer questions, with 12 questions regarding each passage. The recall test was administered in English for all participants in both conditions.

At the end of each session, participants completed the Bilingual Language Profile (Birdsong, Gertken, & Amengual, 2012), a measure of language balance for bilinguals that yields a dominance score indicating the relative degree of fluency in both languages. The average dominance score was used to divide the sample into balanced and unbalanced bilingual groups, with scores closer to zero than average forming the balanced group.









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