

Memory Dependence on the Language in Bilingual Education

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Abstract

Spanish-English bilinguals received two languages of academic information mythology, chemistry, biology, and history. Tests have shown that memory is more accurate and searches run faster when the search and encoding languages match. Only balanced bilinguals with comparable high-level abilities in both languages demonstrated language-dependent recall, which was influenced by bilingual language abilities for accuracy. The search and encoded languages are comparable in terms of response times. If they don't, you can get bilingual information faster, but only for Spanish-encoded content. Additionally, we looked into how error patterns are affected by coding and search languages. In conclusion, research findings suggest that language dependence can have an impact on bilingual learning and that language experience can strengthen linguistic cues in the generation of language-dependent memory. The findings are in line with previous research on language-dependent memory in autobiographical stories, which was discussed within the theoretical framework of the relationship between memory and language and influenced bilingual education.

Key words:, Bilingual education, memory, language

INTRODUCTION

The degree to which spoken cognitive language changes and thinking is linguistic determines the relationship between language and memory (Suprayogi & Eko, 2020), (Puspita et al., 2021). Bilingualism studies have also taken into account the process that is incorporated into the theoretical discussion of the effect of language on conceptual expression (Novanti & Suprayogi, 2021), (Aminatun & Oktaviani, 2019a). By looking at bilingual learning, this paper contributes to our understanding of the connection between language and memory. Start by assuming that language is connected to at least some aspects of thinking (Handayani & Aminatun, 2020). There is evidence that verbal expression influences memory, which lends credence to this idea (F. M. Sari & Oktaviani, 2021), (Rahmania & Mandasari, 2021).

According to (Nindyarini Wirawan, 2018), in monolingual studies, the use of pass and sage verbs before or during the display of video-recorded events or during display affects the perception of old and new events thereafter. Similarly, displaying ambiguous spatial representations in combination with spatial prepositions created a false memory bias (Adelina & Suprayogi, 2020), towards the typical representations of spatial representations (Kuswoyo et al., 2020), (Afrianto & Gulö, 2019). Even manipulating the language only during the search has been found to affect the memory of previously encoded information (Aminatun & Oktaviani, 2019b), (F. M. Sari, n.d.). For example, using the word "shatter " in a car speed question on a previously watched videotape gives a higher speed estimate and false memory of glass shards than using the word " hit. " was reported. The general notion that the use of a language affects memory during encoding and retrieval is widely

accepted (Nababan & Nurmaily, 2021), but the exact way a language affects memory during encoding and retrieval is not well understood (Agustina et al., 2021), (Oktaviani & Mandasari, 2019). Previous studies have suggested that if the search context is similar to the original encoding context, the memory of information learned in a particular environment is improved (B. N. Sari & Gulö, 2019), (Yulianti & Sulistiyawati, 2020). This principle of coding peculiarity was later extended to the language context when it was found that using the same language used during the original coding for the search promoted bilingual autobiographical memory (Qodriani & Kardiansyah, 2018), (Istiani & Puspita, 2020). In addition, bilinguals have been found to show stronger emotions when the language used for the search matches the language used for coding than when the two do not match (Gulö et al., 2021). Explain what happened in other languages. In addition, some experiments focus on bilingual memory of word lists showed that no language change occurred during learning (Ngestirosa et al., 2020), (Afrianto & Ma'rifah, 2020). The researcher found it easier to recall and recognize. Process and test when the language changes (Kardiansyah & Salam, 2020). In studies that presented bilingual using a mixed language word list, memory output was organized into both language and semantic categories (Suprayogi et al., 2021), (Febriantini et al., 2021). Words in the same language cluster were memorized significantly more than the language clustering present in the surveyed list (Suprayogi, 2019), (Nurmalasari & Samanik, 2018). The effects of language switching were also investigated using implicit memory tests (Mandasari & Aminatun, 2020), as strategies such as secret translation can cause problems in the study of interlinguistic recall and cognition (Amelia, 2021). For example, some studies have shown that repetitive priming in pair-associate learning is greater when the same language is maintained between sessions (Fithratullah, 2021). However, the results of bilingual word lists and implicit memory studies, as well as image naming and problem-solving studies are not always consistent (Gulö & Rahmawelly, 2019). Methodological variability may result in different processing mechanisms used and may be responsible for these differences (Mandasari, 2020).

LITERATURE REVIEW

It is still unclear how exactly a pair of tests and learners of the same language benefit from processing (Nurmala Sari & Aminatun, 2021), as well as which types of learning and memory are susceptible to language dependence and the mechanisms that determine these effects (Wahyudin & Sari, 2018). Emphasizes the necessity of identification. Considering the findings of bilinguals' language-dependent autobiographical memory, monolinguals' phonological facilitation when similar features are used at encoding and retrieval (Kuswanto et al., 2020), and processing advantages in same-language test-retest pairs of wordlists (Setri & Setiawan, 2020). Memory access to ecologically valid semantic material may also be improved by language overlap during encoding and retrieval (Isnaini & Aminatun, 2021). The educational classroom is one context that is largely linguistic because it is where language has a significant impact on the critical ends of the learning continuum (Oktaviani & Sari, 2020). The teacher presents the information linguistically, and students frequently have to use language to show that they have learned the material. Therefore, it is essential to comprehend the role that language plays in the encoding and retrieval of information, at least for the communication stages that are essential to the educational endeavor. The connection between language and memory in explicitly linguistic contexts is not straightforward from this vantage point (Pranoto & Afrilita, 2019). Finding language dependent memory could not only have practical implications for

educational testing and clinical services, but it could also help theoretical discussions about how semantic knowledge is represented and processed by linguistic context.

Therefore, the purpose of this study was to investigate the existence of language-dependent memory patterns in learning academic materials and to propose possible mechanisms underlying language-dependent memory. Chilean Spanish and English bilingual speakers were taught academic information in either Spanish or English and their memories were tested in two languages. Bilingual studies of linguistic and cognitive processing have shown that variables such as verbal ability, predominance, and experience influence outcome patterns. For example, there is evidence that changing proficiency levels changes the organization and processing of the two languages. To illustrate these potential implications, a detailed questionnaire was used to assess bilingual language profiles. We predicted that the acquisition of two languages mediates the relationship between language and memory, and that this effect is caused by the similarities and differences in the processing of the two languages. This means that bilinguals with similar levels of proficiency in the two languages may adopt similar cognitive strategies and processing resources in both the first and second languages, but at different levels in the two languages. Bilinguals with proficiency are their first and second languages. As a result, the effects of proficiency on language-dependent memory patterns can be manifested in two possible ways. On the one hand, discrepancies between languages are also related to discrepancies in many other variables, so if there is a large difference in processing between languages, you can increase language-dependent memory. Therefore, the following applies: The more similar the proficiency levels of the two languages are, the weaker the language-dependent memory effect. On the other hand, if the language itself acts as a clue, then language-dependent memory can be enhanced if other cues differ between coding and searching and do not conflict with the language cues for emphasis. The more similar the proficiency of the two languages are, the stronger the language-dependent memory effect.

METHOD

This research adopted qualitative approach as the method for this research. The participants were 20 students and chosen from English Education students batch 2018 who have experienced Bilingual learning this semester. Questionnaire was used to collect the data. The questionnaire was used to see students' agreement/disagreement towards the statements provided. The questionnaire was distributed online through chatting application. Since it is unclear what role the processing differences play in language-dependent memory, the direction of the effect is an unsolved empirical problem and needs to be clarified in this experiment. Bilingual samples are never perfectly homogeneous with respect to language profile, so our study reveals how differences such as relative proficiency between the two languages affect language-dependent memory. There was a possibility of In both cases, it was predicted that differences in the ability to understand materials in different languages and differences in the processing of higher and lower languages would affect language-dependent memory phenomena. In summary, our hypothesis is:

(A) Bilingual provides more correct answers to questions asked in the same language in which the information was originally learned than in other languages.

(B) Bilingual responds faster if the encoding and search languages match than if they do not.

(c) Bilingual proficiency in two languages affects susceptibility to language-dependent memory effects.

RESULTS AND DISCUSSION

The materials in this study are ecologically valid and designed to represent the types of academic material that students may encounter in a real classroom. There are four short stories about myth, history, biology, and chemistry, along with four corresponding question sets. An English version of the story and question are included in the appendix. The Spanish version is available on request. The four stories are structured to contain fictitious but rational information in order to make the content meaningful while preventing prior knowledge of the material. The mythological story explained a myth related to the celebration of the beginning of winter held by a group of fictional people. The historical story explains the causes, paths, and consequences of the war between two fictional nations. The biology story portrays the flora of a fictional island. The history of chemistry explained the accidental discoveries and properties of fictitious chemical elements. All four stories were balanced in length within and between languages. For each story, we have 10 questions that are structured so that no answers to other questions are available. The questions has been translated into Spanish by English and Spanish bilinguals, and the Spanish version of each story has been reviewed by two Spanish and English bilinguals who speak Chile as their first language and it was done. After the development of the final version of the stimulus, all material was taped to the soundproof booth to control the variability of the stimulus and question presentation by the experimenter (intelligibility, speed, etc.). Great care was taken in choosing the narrator for the recording. We contacted several bilingual speakers in Chilean Spanish and English, identified highly skilled speakers in both languages, and made three Spanish-English bilingual audio sample recordings in Chile. Eleven independent judges evaluated three audio samples for intelligibility in English and lack of foreign accent, and the highest rated speaker was selected.

Figures and Tables

Table 1 contains the mean and standard deviation of all relevant measurements of the language background collected using the Language Experience and Proficiency Questionnaire. It also shows a statistically significant difference between Spanish and English within each bilingual group, as well as a statistically significant difference between balanced bilingual and unbalanced bilingual. For each reported measurement, a variance analysis was performed using groups (equilibrium, unbalanced) as inter-subject variables and language (Spanish, English) as intra-subject variables. For each measure of competence, the interaction between group and language was important. Analysis with follow-up comparisons and revealing significant differences is marked with an asterisk in Table 1. In all cases, the difference in proficiency between Spanish and English was smaller for balanced bilinguals than for unbalanced bilinguals. In particular, the t-test of

ability measurements showed that imbalanced bilinguals reported significantly different levels of ability in comprehension, conversation, and reading.

Table 1

Language history for balanced and unbalanced bilinguals, based on self-reported data.

No	Measure	Balanced bilinguals	Unbalanced bilinguals
1	Mean age when tested	21.5 (2.59)	22.4 (3.2)
2	Proficiency speaking	4.6 (0.52)	5.0 (0.00)
3	Proficiency reading	4.7 (0.67)	4.9 (0.27)
4	Age when began learning	0.95 (1.01)	0.96 (1.25)
5	Years in country where language spoken	19.1 (4.22)	22.1 (3.33)

CONCLUSION

Language-dependent memory phenomena are located in the realm of context-dependent memory and follow the same principles as other contexts contained under the principles of coding specificity. However, language-dependent memory can also be based on cognitive mechanisms specifically related to language. For example, Slobin (2003, p. 177) discovered that "the language in which information is presented is very likely to affect the way information is stored and interpreted." Slobin also suggested that listeners and observers encode information in a language-friendly way. Encoding information in a way that matches subsequent searches can be formulated as an extension of Slobin's "think to speak" hypothesis (Slobin, 2003). As applied to bilingual speakers, language-dependent searches may be related to bilingual consent and disagreement expectations in the coding and search languages. Bilingualism, in particular, is aware of which language to speak in which context, and often has clear expectations of when each language needs to be spoken. Slobin's Thinking for Potential Speaking provides an elegant theoretical framework for finding these bilingualistic experiences. If bilingual expects that the language's encoding and search context will match (it doesn't have to be explicit), then more or exclusive to the language differences that are more important to the encoding language than any other language. May pay attention. Bilingual can address all aspects of the scene that may be needed for later language retelling if you have expectations when the language encoding and search context do not match. That is, if bilingual expects the language context at searching to be different from the language context at encoding, then the encoding strategy can be adapted and the information encoded according to the search language in addition to the information. increase. Matches the encoding language. One of the consequences of this strategy could be the benefits that bilinguals experience in contexts such as academic

settings. In this case, learning and testing may expect a consistent language environment when retrieving information in the same language in which the information was encoded. Note that if a language-dependent memory pattern encodes a "unique" specificity effect, it cannot be expected that the pattern will be modulated by factors such as language ability or history of language usage.

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