Cross-Linguistic Semantic Differences and Code Switching

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Abstract: We explored the degree to which cross-linguistic semantic differences influence code switching by examining the processing of code-switched sentences by Chinese-English bilinguals in the experiments. A language type×gender consistency interaction was found when sibling terms appeared in English, but not in Chinese. Code switching reaction times were longer for Chinese sibling sentences when these were embedded in gender-inconsistency sentences than in gender-consistency sentences. This result suggested that the gender-inconsistency restrictions produced by code switching were met, but that the gender-consistency restrictions were not.

Key words: semantic differences; code switching; interference

1. Two different kinds of code switching in bilingual behaviors

We think that there are two different kinds of code switching in bilingual behaviors.conscious code switching and Unconscious code switching. Whereas the former refers to intention to switching to separate language deliberately, and it is under involuntary control, the latter refers to the fact that code switching occurs when a word or a phrase in one language substitutes for a word or phrase in a second language (Li, 1996). Unconscious code switching (i.e. translation) is an automatic process of retrieval when communicate in second language with which almost previous studies have been concerned. Macnamara and Kushnir (1971) proposed that a “two switch mechanism” determines which of the bilingual’s two mental lexicons will “on” or “off” during the course of language processing. Here and now we just focused on the code switching, which was concerned with switching deliberately to one language from another although little is known about how Chinese-English bilinguals switch to second language during the communicative process. The cognitive mechanisms of this kind of code switching will be investigated in this article.

They often code switch from one language to another, especially when communicating in second language such as English. Even though much has been written on how bilinguals organize their two languages in memory, little is known about why Chinese-English bilinguals mix their two languages during the communicative process. Current research continues to emphasize just code switching, as recent psycholinguistic research has focused on how code-switching is a natural product of the interaction of the bilingual’s two languages. Early researchers viewed code-switching as evidence that the bilinguals’ two languages were organized in separate and distinct mental dictionaries. Other research shows that bilinguals comprehend code-switch sentences faster when there is an overlap between the two languages’ sound systems. For example, Chinese-English bilinguals, where Chinese is the native language, take longer to recognize English code-switched sentences in Chinese sentences, but only if the English sentences begin with consonant–consonant clusters (e.g. block), as opposed to consonant-vowel clusters (e.g. big), because the Chinese language sentences do not begin with consonant–consonant clusters. Other important factors reported to influence the recognition of code-switched sentences include context, phonetics, homophonic (e.g. sentences pronounced the same) and homographic (e.g. sentences spelled the same) overlap between the two languages (Li, 1996).

New ideas of the present study came from Anggoro & Gentner’s (2004) studies in which a recognition task was used to test whether the two languages (Indonesian and English) induce different encodings. In their experiments Indonesian and English speakers were shown a series of sentences: three kinship standards and their three corresponding family sentences, along with 21 other sentences. Participants were asked to remember the scenes for a later memory task. Recognition memory for the scenes was later tested using variants of the standard sentences. Memory for each standard was tested by using two variants: the Seniority Variant, which preserved the seniority relation but altered the gender relation, and the Gender Variant, which preserved the gender relation but altered the seniority relation.English speakers showed the reverse pattern. Other results from the same set of studies also point to an influence of language on code switching. For example, relative to English speakers, Indonesian speakers show greater sensitivity to changes in seniority than to changes in gender in a similarity task. These results suggest greater sensitivity to the dimension that is required in naming siblings in each language. Although these results demonstrated that linguistic difference in sibling terms influence the way people encode and remember scenes and perceive similarities among them, we made further inference that the linguistic difference in sibling terms shall influence Chinese-English bilingual’s code switching.

2. The study proves that linguistic difference matter to the way people code switch

Our study focused on one pair of contrasting languages-English and Chinese – which vary in the way they name sibling relations. Chinese makes a lexical distinction for whether a sibling is older or younger. The sentences 哥哥姐姐 (gē ge jiě jie) refer to older sibling while the sentences 弟弟妹妹 (dì di mèi mei) refer to younger sibling. In contrast to English brother and sister, the Chinese sibling terms 兄弟（xiōngdì）and 姐妹 (jiěmèi)are not gender-neutral. When a Chinese refers to his/her siblings, he/she speaks not in terms of sister and brother but rather of older and younger. So the sibling terms are especially suitable for investigating how code switching in processes of Chinese-English bilinguals’ translations occurs. It does allow for the possibility that the sibling terms vary in so definite range that extraneous terms can be easily controlled. On the other hand, Chinese-English bilinguals can easily read and pronounce the stimuli consisted

of the sibling terms, especially in English. This may provide a better understanding of validity of our study that investigates whether this linguistic difference matter to the way people code switch.

Experiment Participants. 86 Chinese-English bilinguals who reported have no speech or hearing deficits were participated in this experiment.

Materials. All the stimuli in this experiment were created with reference to the stimuli used by Anggoro & Gentner (2004). There were two variants of English/Chinese sentences, each of which had 20 English/Chinese sentences, including variant 1(inconsistent gender), and variant 2 (consistent gender,) respectively, as shown in table 1.Latin square design could be used to present all the 80 Chinese /English experimental sentences.The sentences were presented in a different random order for each participant, and each participant saw only one list.

Design. The independent variables were language type (Chinese vs. English) and gender consistency (inconsistent vs. consistent) that is the presented stimuli. List and item rotation group were included for participants and items analyses, as dummy variables to help stabilize variance due to the rotation of participants and items across lists. Planned comparisons of this study were conducted to investigate the code-switch difference between Chinese and English reaction times at each variant for Chinese and English sentences.

Procedure.Participants were tested individually on a computer . Code switching reaction times/reaction times were recorded with millisecond accuracy using E-prime 2.0 program in the computer that measured the time between the onset of the experimental sentence and the onset of the space key press. Each trial in each condition proceeded as follows: A fixation point (+) appeared in the center of the screen; Participants press the space key using the index finger of their dominant hand.

Table 1 Reaction Times

Language type and Gender Consistency	RT				Difference
	Chinese		English		
	M	SE	M	SE	
Chinese switching					
Inconsistent gender	1194	43	3657	24	2463**
Consistent gender	1263	37	3122	40	1859*
English switching					
Inconsistent gender	2271	48	3826	29	1555*
Consistent gender	2459	32	3455	45	996

* p<.05 by participants only. ** p<.05 by participants and items.

3. Results and Discussion

RT. The two-way interaction between language type and gender consistency was significant by participants, $F1(1,31)=5.37$, $p<0.5$, and marginal by items, $F2(1,38)=2.56$, $p<0.6$. Planned comparisons showed that for Chinese switching, Chinese RT were more quick than English RT at consistent gender level, $F1(1,31)=19.2$,$F2(1,38)=9.27$,at inconsistent gender level, $F1(1,31)=26.8$, $F2(1,38)=12.15$. The same influence occurred for English switching, Chinese RT were more quick than English RT at consistent gender level, $F1(1,31)=13.8$, $F2(1,38)=8.32$, at inconsistent gender level, $F1(1,31)=21.5$, $F2(1,38)=10.92$. Post hoc tests performed on the participant means revealed that as with Chinese Switching to Chinese, no further analysis was conducted on Chinese-Chinese code switching data, because it was the easiest code switching (Incon-gender: M=1194, SE=43; Con-gender: M=1263, SE=37) in comparison with all other circumstances and there were no significant differences between consistent- and inconsistent gender occurred in all the stimuli (all ps>.10). As with English Switching to Chinese, it was easier code switching (Incon-gender: M=2271, SE=48; Con-gender: M=2459, SE=32), and there were significant differences between consistent- and inconsistent gender, $t1(31)=2.98$, $p<.01$; $t2(38)=3.17$, $p<.01$. As with Chinese Switching to English, it was more difficult code switching (Incon-gender: M=3657, SE=34; Con-gender: M=3122, SE=40), and there were significant differences between consistent- and inconsistent gender, $t1(31)=3.46$, $p<.01$; $t2(38)=2.84$., $p<.01$. Finally, as with English Switching to English, it was the most difficult code switching (Incon-gender: M=3826, SE=29; Con-gender: M=3455, SE=40), and there were significant differences between consistent- and inconsistent gender, $t1(31)=3.26$, $p<.01$; $t2(38)=2.91$., $p<.01$. Analyses comparing the English and Chinese stimuli revealed consistent differences between consistent- and inconsistent gender semantic components.

Conclusion

The present research provides the clearest empirical evidence to date for cross-linguistic semantic differences influencing code switching, Using an online task that directly taps the computation of bilingual sentence meaning, we demonstrated that Chinese-English code switching was easier than English-Chinese code switching and cross-linguistic effects were more prominent, particularly when a semantic component is involved. The key results were predicted by models of code switching and second language learning, providing

further evidence that the comparisons of cross-linguistic semantic differences provide appropriate simulations of processes of bilingual code switching.

References

[1] Yu Zhengtao, Zhao Yali, Xiang Yan, et al. Cross-language emotion classification based on affective semantic adversarial [J]. Computer Engineering and Science, 2023, 45(2):8. (in Chinese)

[2] Yu Xiujin, Jiang Zhaozi. The structural attributes of the “bao” sentence under the cross-language argument allocation model [J]. Contemporary Linguistics, 2023, 25(1):26.

[3] Hu Jianhua. On the structure of “Yu V” in the Book of Songs from the perspective of cross-language comparison: Syntactic semantics of” Wang Yu Xingshi “and” Wang Yu’s Expedition “[J]. Foreign Language Teaching and Research, 2022, 54(4):14.

[4] Ye Heng, Gong Zhengxian. Translation quality assessment of cross-language pre-training model using semantic association enhancement., 2023, 37(3):79-88. (in Chinese)

[5] Feng Guoli, Yu Xiujin. The current situation and problems of cross-language case category research [J]. Shandong Foreign Language Teaching, 2022, 43(4):10. (in Chinese)

[6] Wang C. A study on the orientation system of generative grammar from a cross-language perspective. Foreign Language Studies, 2023, 40(2):10. (in Chinese)

[7] Feng Yili. The meaning essence of the phrase “Na +CL+N” from the perspective of cross-language comparison [J]. Fudan Foreign Language and Literature Review, 2022(2):12.

[8] Yu Jiangling Ma Wulin. A contrastive study on semantic rhymes of Chinese and English synonyms [J]. Foreign Languages, 2022, 38(1):91-99. (in Chinese)