Cross-Language Priming Effects from L2 to L1 in Episodic Recognition

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Several studies using the masked priming paradigm produced translation priming effects from L1 to L2, but not from L2 to L1. (de Groot & Nas, 1991; Gollan, Forster & Frost, in press; Sanchez-Casas, Davis & Garcia-Albea, 1992). Given the generally accepted assumption that strong direct lexical links exist between translation equivalents (Kroll & Stewart, 1994). This asymmetry raised the question of why such lexical links don't produce priming effects from L2 to L1. A hypothesis was proposed that these links are episodic in nature, thus unable to produce cross-language priming effects in a masked lexical decision task. This study was intended to test this hypothesis.

Method

26 Chinese-English bilingual speakers participated in the study. The critical stimuli were 32 Chinese-English translation pairs. All the subjects were tested in two tasks, episodic recognition (ERT) and masked lexical decision (LDT). In the ERT, the subjects first studies 32 Chinese words and then were asked to judge if a word presented on the screen was one of the words they studied previously. In the LDT, the subjects were asked to decide if two Chinese characters presented on the screen form a word. In both tasks, a test item consisted of a forward mask (500 ms), an English prime (50 ms), a blank space (50 ms), a backward mask (150 ms) and a Chinese target (500 ms). Half of the Chinese targets in both tasks were preceded by their English translation and the other half by unrelated English primes. The backward mask was included to increase the SOA so that the processing of the prime may not fall behind the recognition of the target. Two counterbalanced presentation lists were constructed for each task. The subjects were assigned to them randomly.

Results and Discussion

For each subject, an average score was calculated based on their correct responses to each condition. Any data that was two standard deviations above or below the average and any subject whose error rates were higher than 20% (6 subjects in ERT and none in LDT) were excluded. The subjects' performance in the two tasks is presented in Table 1.

LDT: The 5 ms of difference in LDT is not significant, which replicated the findings in the previous study in which the same stimuli and procedures were used, i.e., no priming was found from L2 to L1 in LDT.

Table 1: Subjects' reaction time (ms) and error rates (%) in episodic recognition and lexical decision tasks

	ERT		LDT
	Old	New	
TRNSL	699 (11.6)	734 (13.4)	614 (3.1)
UNRLD	733 (12.8)	731 (13.4)	619 (2.3)
Priming	+34	-3	+5

TRNSL=translation, UNRLD=unrelated.

ERT: A two-way ANOVA of the ERT reaction time data, produced a marginally significant main effect of prime-target relation ($F1=4.09$, $p=.058$; $F2=2.97$, $p=.09$) and a significant interaction ($F1=9.48$, $p<.001$; $F2=5.80$, $p=.019$). Separate analysis showed a significant priming for "old" words ($F1=14.7$, $p<.01$; $F2=6.55$, $p=.015$). The significant priming effects from L2 to L1 in ERT provide strong support for the hypothesis that the lexical links between translation equivalents in bilingual memory are episodic in nature.

The findings of this study suggest that lexical knowledge of a bilingual speaker may be organized in two distinctive ways. In addition to a lexical system in which L2 words may be reorganized on the basis of their orthography, pronunciation and meaning to form an highly integrative lexicon, as that of L1, their lexical knowledge may also be represented in the form of an episodic system. An important characteristic of this system is its preservation of lexical knowledge as it was formed or reinforced with little reorganization. Such knowledge include lexical links between translation pairs.

References

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