Effects of Syntactic Structure in the Memory of Concrete and Abstract Chinese Sentences

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Smith (1981) found that concrete English sentences were better recognized than abstract sentences and that this concreteness effect was potent only when the concrete sentence was also affirmative but the effect switched to an opposite end when the concrete sentence was negative. These results were partially replicated in Experiment 1 by using materials from a very different language (i.e., Chinese): concrete-affirmative sentences were better remembered than concrete-negative and abstract sentences, but no reliable difference was found between the latter two types. In Experiment 2, the task was modified by using a visual presentation instead of an oral one as in Experiment 1. Both concrete-affirmative and concrete-negative sentences were better memorized than abstract ones in Experiment 2. The findings in the two experiments are explained by a combination of the dual-coding model and Marschark's (1985) item-specific and relational processing. The differential effects of experience with different language systems on processing verbal materials in memory are also discussed.

Accompanying the rapid development of cognitive psychology in the past two decades, there has been a renewed interest in the study of mental imagery (e.g., Paivio, Clark, & Kahn, 1988). Substantial evidence shows

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that mental imagery is an aid to memory coding especially for verbal materials (e.g., Begg & Clark, 1975; Kieras, 1978). Factors affecting the effect of imagery on the memory of verbal materials have been extensively investigated. These factors include, for instance, material concreteness (e.g., Paivio, 1971; Day & Bellezza, 1983), imagery instructions (e.g., Anderson & Bower, 1973; Paivio et al., 1988), individual differences (e.g., Ernest & Paivio, 1971), deep-structure complexity (e.g., Richardson, 1975), second language recall and comprehension (e.g., Paivio & Desrochers, 1979).

Among various factors that are considered to be related to mental imagery, material concreteness is the most intensively studied one. Paivio (1971) found that concrete or high-imagery words were better retained than abstract words in various kinds of memory tasks such as paired-associate learning, free recall, serial learning, and recognition memory. In explaining why concrete materials were better memorized than abstract ones, Paivio (1971, 1986) put forward the famous dual-coding model. He proposed that meaning consists of the relations between external stimuli and internal verbal and nonverbal representations. Imagery and verbal processes are assumed to be differentially available as memory codes for concrete and abstract items. Specifically, the verbal code is equally available for concrete and abstract materials as they are equivalent in verbal representational meaning. However, concrete words are more likely to evoke images than abstract words because the former are higher in referential meaning (i.e., deeper processing of information) which, in turn, can enhance their memory.

Marschark and Paivio (1977) reported some supporting results for the dual-coding model. They found that concrete sentences were in general better recalled than abstract ones. Subjects were observed using imagery as a strategy in concrete conditions, while they preferred a verbal strategy in abstract conditions. However, Marschark and Paivio also found that the processing of both concrete and abstract sentences involved the construction of some integrated mental representations, which was reflected in the similar pattern of semantic substitutions in recall. They, therefore, modified the original dual-coding model by postulating a common abstract level of representation in addition to the two-modality representational systems.

The dual-coding model, however, was challenged by results of a number of studies. For example, Day and Bellezza (1983) reported that unrelated concrete word pairs were recalled better than related abstract pairs, even though the latter were rated higher in imagery and familiarity. They concluded that material concreteness, rather than its familiarity or