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Time Course of Semantic and Phonological Interference Effects in Picture Naming

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Introduction

Picture naming has become an important experimental paradigm in cognitive psychology. Time course of interference and priming effects observed in these paradigms support a two-stage processing model involved in naming with a semantically driven stage and a phonological driven stage (Kempen and Huijber, 1983). Schriefers, Meyer, and Levelt (1990) used a cross modal word-picture paradigm to illustrate these effects. In this paradigm, subjects are asked to name black and white line drawings under different SOA conditions. In the silent condition, only the line drawing is seen (for example, a picture of a lion). In the interfering stimulus (IS) condition, the picture is accompanied by an auditory stimulus. The (IS) is either a semantically related word or a phonologically related word or an unrelated word. At short SOA's semantic (IS) produces interference while at late SOA's phonological (IS) produce facilitation. This finding has been taken to support for a two-stage processing model involved in naming.

Picture Naming Study

The present study makes use of a cross modal word-picture naming paradigm to explore the time course of lexical activation. The current studies extend previous findings in two important ways. First to more completely document the time course effects we include five SOA's (e.g. -200, -100, 0, +100, +200). Second, to better understand the nature of the interference we compared different types of (IS). We vary phonological (IS) by presenting word initial (IS) (picture:cat, word:cab) (Exp. 1) and word final phonological (IS) (picture:cat, word:mat) (Exp. 2). We vary the nature of the semantic relationships by presenting semantic word associates (picture:cat, word: mouse) (Exp. 1) versus members of semantic categories (picture:cat, word:pig) (Exp. 2).

Discussion

Sixty subjects named simple black and white line drawings (Snodgrass and Vanderwart, 1980). In the (IS) condition, the picture is accompanied by an auditory stimulus. In this experiment the phonological (IS) shared word initial overlap and the semantic (IS) were word associates. Our results are shown in figure 1 below. At

-100 msec SOA we find greater semantic interference. At late SOA we observe faster reaction times for picture accompanied by phonological (IS). Our findings are partially consistent with the study of Schriefers et al. (1990). However, the effects at the very early SOA condition (-200 msec) are unexpected. We observe a phonological (IS) effect and lack of a semantic (IS) effect. These findings raise questions concerning whether these stages are discretely ordered or rather reflect independent but simultaneous effects with different time courses. A second study (Exp. 2), currently underway is designed to further explore these effects by varying the nature of the (IS).

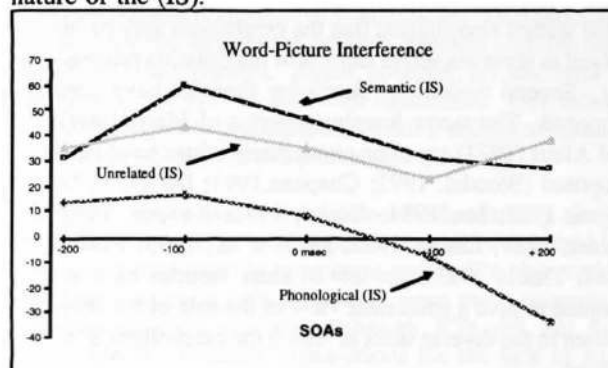


Figure 1: Time course of interference effects.

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