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Quantification and Semantic Memory

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Two models are considered for how people verify explicitly quantified sentences, such as *All fathers are parents* and *Some fathers are parents*. The models share the same second stage, but have different first-stage mechanisms. In the Predicate Intersection Model, suggested by Meyer (1970), the first stage involves a serial, self-terminating search among names of categories that intersect the predicate category. In the Feature Comparison Model (Smith, Shoben & Rips, 1974a), the first stage involves evaluating the overall relatedness between the subject and predicate categories by comparing their semantic features. To test the models, three reaction time experiments required subjects to verify statements quantified by Some or All. In the first experiment, the semantic relatedness of categories in false Some-statements was varied. Contrary to predictions of the Predicate Intersection Model, related categories increased reaction time for both true and false Some-statements. While the first experiment revealed that All-statements took longer to verify than comparable Some-statements, the second experiment demonstrated that the All-Some difference can be eliminated by presenting both statement types in the same block of trials, also disconfirming the Predicate Intersection Model. Finally, Experiment III examined the meaning of Some-statements in more detail by having subjects interpret the quantifier Some as "some but not all." With this interpretation, Some-statements took longer to verify than All-statements. Overall the results support the Feature Comparison Model.

Both philosophic and linguistic theories of language (e.g., Frege, 1892; Katz & Fodor, 1963) have discussed how the meaning of a sentence is composed from the meanings of individual words. In a psycholinguistic context, the problem amounts to specifying the process that allows one to derive a psychological representation of a sentence from the representations of words or morphemes. Following Collins and Quillian (1969), we can use reaction time (RT) to study this composition of meaning when subjects are asked to verify sentences about familiar facts, for example, *A penny is a coin*. In particular, the experiments described here are concerned with the meaning of universally quantified sentences (such as *All pennies are coins*) and existentially quantified

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