General Discussion

These experiments were designed to answer a couple of questions about the nature of semantic and associative memory. While this topic has been researched before (see Hutchison, 2003 for a review), there have been some methodological problems with previous studies. First, many studies have used self-selected word pair stimuli that participants normed as part of the experiment as “purely” semantic word pairs or words with both relationships to study the associative boost. However, as explained earlier, there are multiple databases of semantic and associative word pairs, which have shown to measure separate types of information (Maki & Buchanan, 2008). The experiments presented here made use of these databases to create separate, orthogonal word pairs to test only semantic and associate priming, with two purposes.

First, several experiments were designed to test the nature of both semantic and associative priming when they are separate from each other. The judgment data indicated that associative judgments are only predicted by associative information and that semantic judgments are predicted by both semantics and associations. Second, both associative and semantic priming were found, which indicated that these relationships could be separated from each other. Latency data on these judgments also showed that there was something separate about associative and semantic judgments; associative judgments were consistently faster than semantic judgments.

Since these relationships were found to be separable, it led to a second question about where an associative memory store would be placed in memory models. One current model of memory, that also explains priming, is McClelland and Rumelhart’s (1981) IA model (Stolz & Besner, 1996). However, the IA model does not have a good description of where associative information would be stored. Williams (1996) has proposed an “inter-lexical” hypothesis for associative or common occurrence links that stated that information would be stored at the lexical or word level. Since associative information is stored at the word level, priming from associative relationships would always occur because to identify the word would automatically bring up links between the words. Also, associative information could not be restricted or blocked when word identification was necessary because they are stored in the same level.

Judgments of semantic and associative memory can also be partially understood from these models. This model would predict that during an associative judgment task, only associative information should be important when making those judgments because the semantic store is not necessary and is therefore ignored. During a semantic judgment task, both associative information and semantic information should be involved in making judgments because the information flows back down from the semantic store and associative information is already present in the lexical level. Latencies would also show a similar prediction of results. Associative judgments should be faster than semantic judgments because semantic processing is not necessary for associative judgments. After processing at the lexical level, an associative judgment can be made. Semantic judgments would take longer due to an extra processing level.

In Experiment 1, priming for semantic and associative pairs was found above unrelated word pairs in the RSVP task regardless of judgment type. These results answered the first question about the nature of separate priming. It was not necessary to have both relationships for priming of either associative or semantic relationships to occur. The same amount of priming for associative word pairs was seen in both the semantic and associative judgment conditions. Judgments had a lopsided pattern of information use, where associative information predicted both associative and semantic judgment conditions while semantic information only predicted semantic judgment conditions. Finally, associative judgments were faster than semantic judgments, altogether which supports the modified IA model because associative information cannot be blocked or ignored, which may have indicated associative information was stored at a word level.

Experiment 2 tested if the order of the judgment pairs made a difference in priming and judgments using the RSVP and judgment task. A new set of word pairs was tested so that the order of the judgment pair could be reversed. Originally, the top word in the judgment pair was related to the target word in the RSVP stream. Here, the order of the pairs was flipped so that the bottom word was now related to the target in the RSVP stream; otherwise the RSVP and judgment task remained the same. This experiment found interesting results because it was the only time that associative priming was not found to be significantly reported more than semantic priming. However, both relationship types were primed more than unrelated word pairs.

After testing for word order of the judgment pairs, Experiment 3 was tested to examine if judgment placement could change priming. In one condition, participants judged priming words before the RSVP stream, while other participants judged priming words after the RSVP stream. Both groups showed significant priming over unrelated word pairs and significant associative priming over semantic priming. There was no difference between the two groups, so priming words, which were part of the judgment pair, just need to be seen to create priming. Judgment data only partially replicated previous results. Associative information predicted word pair ratings in both the associative and semantic conditions, while semantic information did not predict word pair ratings. While this result was a bit odd considering all previous findings, it did not disconfirm model predictions. Semantic information may have been ignored or blocked, which is a restriction of the downward arrows in any of the model predictions. The consistent findings of strong associative priming and an inability to restrict or block associative information during any judgment or priming task favors the suggested IA model.

After several different tests on the combined RSVP and judgment task, it was clear that other manipulations of judgments or word pairs would produce basically the same results. Associative priming was always found to be very strong, and usually stronger than semantic priming. There can be no question about the answer to priming and word pair relationships. Associative and semantic priming are indeed separate entities, and while dual relationships can help priming, they are not necessary to create enhanced identification for related words. Both types are shown to prime in a newer paradigm of priming with the RSVP task and a tradition lexical decision task experiment. Finally, a model with associative information stored at the lexical level was suggested. This model posits that associative information should always primed, judged faster than semantic information, and should always predict memory judgments. All three of these results were found, which indicates that this model may be a acceptable definition of how associative and semantic information are separately stored.