This study examined the interactive relationship between direct and indirect associative strength in the prediction of item judgments and cued-recall performance. Participants were recruited from Amazon's Mechanical Turk and were given word pairs of varying relatedness to judge for their semantic, thematic, and associative strength. After completing a distractor task, participants then completed a cued recall task. First, we sought to expand previous work on judgments of associative memory (JAM) to include semantic and thematic based judgments, while also replicating bias and sensitivity findings. Next, we tested for an interaction between direct and indirect association when predicting participant judgments while also expanding upon previous work by examining that interaction when predicting recall. The interaction between direct and indirection association was significant for both judgments and recall. For low indirect association, direct association was the primary predictor of both judgment strength and recall proportions. However, this trend reversed for high indirect association, as higher levels of indirect relation decreased the effectiveness of direct relation as a predictor. Overall, our findings indicate the degree to which the processing of associative, semantic, and thematic information impacts cognitive processes such as retrieval and item judgments, while also examining the underlying, interactive relationship that exists in language used to represent concept information.