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Conceptual and Perceptual Processing Fluency in False Recognition

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We explored the extent and time course of false recognition induced by conceptual and perceptual factors in Jacoby and Whitehouse's (1989) paradigm. In the recognition test following a study phase, a test word (e.g. *dog*) was preceded by a briefly presented masked context word which could be a match (an identical word: *dog*), a mismatch (a different word: *law*) or a control (a string of letters: *xxx*). When context words were presented at short durations (50 ms), match words induced more false recognitions than mismatch words but the opposite occurred at long durations (200 ms). This phenomenon was explained on the basis of differential attributions of the enhanced processing fluency of test words following match context words – at short durations, participants attributed the fluency to test word familiarity, but at long durations, it was attributed to the prior presentation of the context word.

Previous research manipulated context words that physically matched or mismatched the test words, which presumably affected perceptual fluency. We wondered if conceptual fluency would also have the same effect at these durations. We included a manipulation where context words were physically mismatched but semantically related to test words (e.g. *dog-cat*) and also examined participants' recollective experience using Remember/Know judgments (Tulving, 1985).

Method, Results, and Discussion

Eight-two psychology students participated for course credit. A 2 (duration: 50, 200 ms) x 4 (context: match, related, unrelated, control) mixed design was used, with duration run between subjects. Related words were selected based on the Shapiro and Palermo (1968) association norms. The experiment was run on PCs and followed Jacoby and Whitehouse's (1989) procedure. The false recognition data are summarised in Table 1.

Table 1: Mean probabilities (and *SDs*) of false recognition, know, and remember responses across context and duration.

| Response | Context word | | | |
|-----------------|--------------|----------|-----------|----------|
| | Match | Related | Unrelated | Control |
| 50 ms duration | | | | |
| Recognition | .41(.19) | .33(.20) | .25(.17) | .28(.18) |
| Know | .28(.13) | .23(.15) | .19(.14) | .21(.14) |
| Remember | .12(.16) | .10(.10) | .06(.08) | .08(.07) |
| 200 ms duration | | | | |
| Recognition | .37(.22) | .42(.19) | .31(.19) | .32(.20) |
| Know | .27(.18) | .35(.19) | .25(.18) | .25(.19) |
| Remember | .10(.17) | .08(.10) | .06(.07) | .08(.10) |

A Duration x Context interaction was observed for both false recognition and Know responses [$F(3, 240) = 3.70, 5.97$; $MSEs = .02, .01$; $ps < .05, .01$; respectively]. The nature of these interactions was strikingly similar – we observed opposite patterns of results for the match and related conditions as a function of duration. Match words induced more false recognitions and Know responses than related words at 50 ms, [$ts(41) = 2.20, 2.52$; both $ps < .05$; respectively] but the opposite occurred at 200 ms [$ts(39) = 1.86, 3.07$; $ps < .08, .01$; respectively]. For Remember responses, only a main effect of context [$F(3, 240) = 4.57, MSE = .01, p < .01$] was found.

The results suggest that enhancement of perceptual and conceptual fluency, via match and related context words respectively, can both lead to increased false recognition. The finding that Know, but not Remember, responses matched the recognition patterns further suggests that processing fluency is the underlying mechanism for false recognition (cf. Rajaram & Geraci, 2000; Rajaram & Roediger, 1997).

However, the time course of enhancing fluency via perceptual or conceptual processing may be different. False recognitions induced by conceptual processing are greater at a longer time course, whereas the opposite trend occurs for perceptual processing.

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