Have You Read this Before?

Evaluating Familiarity Using Response Times

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Eyewitnesses are often asked to recognize faces from mugshots or in police lineups. But how good is our ability to recognize faces with minimal prior exposure, and in the absence of the appropriate context? Studies suggest eyewitnesses may be much less accurate than performance in laboratory tests of recognition memory, even though great weight is given to eyewitness identification (Shapiro & Penrod, 1986; Watkins, Ho & Tulving, 1976). How can recognition memory be accurately evaluated?

One method requires witnesses recall the face of a suspect, either by describing it to a police sketch artist or by building a face from a set of features (e.g., using an "Identi-kit"). However, several studies have shown that, rather than eliminating context effects, such methods may require participants to transform visual memories into verbal form, or choose similar features when no exact match is offered.

Further, because these methods take far longer than memory recognition itself, they may introduce bias to the selection of subsequent features (e.g., Mauldin & Laughery, 1981). For example, while considering whether a face looks "familiar," a witness may recall the crime circumstances, and reason that the face should have a particular feature (e.g., a teenager is more likely to have been at the schoolgrounds). The long time periods involved in these methods may allow other thoughts to influence the recognition process.

An alternative method is suggested by Seymour, Seifert, Shafto and Mosmann (1999), who showed that response times (RT] can detect whether participants are familiar with verbal stimuli. Participants were asked to study a set of phrases, and then to perform an Old/New recognition task. Some of the "new" items in this task were already familiar from an earlier task. Participants had to reject the new items within a strict response deadline, too fast to allow strategic processing (< 750 ms). The results showed participants were slower to reject familiar non-target items compared to unfamiliar non-target items. This method reliably detected whether participants had seen the "new" items before, even though that familiarity was unrelated to the test task.

In the present study, we replicate Seymour et al. (1999) using faces as stimuli instead of words. Our hypothesis was that non-target faces familiar from a prior task will interfere with responses in a new task. In Part 1, participants studied pictures of six individual faces ("Probes"), and then had to identify whether a picture was the same as studied, or mirror-reversed. In Part 2, participants were told to study six more faces, the "Target" faces. Then, participants completed an Old/New judgment task, and were told to respond "old" only to the Target pictures. They were instructed to respond "new" to both new faces ("Fillers") and to any of the earlier mirror test faces (Probes). The results show that participants' familiarity with the Probe faces interfered with fast and accurate responses. Probe faces were more often incorrectly called "Old" (M = .57; SD = .21) than were Filler faces (M = .18; SD = .06), t (23) = 9.14, $p < .001$. Also, RTs for Probe faces correctly called "New" (M = 670ms; SD = 124) were reliably slower than for Filler items (M = 597ms; SD = 85), t (23) = 2.42, $p < .03$.

We conclude that participants are unable to identify the source of a feeling of familiarity within the short time frame required by this task. Therefore, they are more likely to initially falsely recognize a familiar item as a Target item, thus affecting their response. This paradigm may hold promise for evaluating visual recognition memory in other settings. To the extent that items interfere with fast and accurate responses, this method easily identifies them as familiar to the participant. Although further studies are needed, these results suggest that the RT-based "Guilty Knowledge" test reported by Seymour et al. (1999) may offer a robust paradigm with which to evaluate recognition memory for faces.

References

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