



# Metacognitive Accuracy of Memory for Names and Faces Using Delayed Judgments of Learning

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## Abstract

This project explores the nature of memory for individual name-face pairs by testing metacognitive accuracy of memory for these pairs using delayed *Judgments of Learning* (JOLs) and a dual-process approach to episodic memory set out by Daniels, Toth, & Hertzog<sup>1</sup>. Young adults (n = 48, mean age = 19.15) studied a set of 96 names and faces and were then asked on a subsequent slide with the face and the first letter of the corresponding name to make judgments on how well they believed they would remember each name when prompted with a face at a later test. Half of the stimuli at study had delayed presentations with judgment slides that were separated by their initial slides by six or seven other stimuli while the rest were made immediately. At test, the participants were shown faces with the first letter of the corresponding names and asked to recall the names that match the stimuli. After recalling the name, they were then asked to rate the quality of their memory. The results show increased metacognitive accuracy for delayed items and that conscious influences on memory (recollection) drove the predictive memory accuracy for the names and faces.

## Background

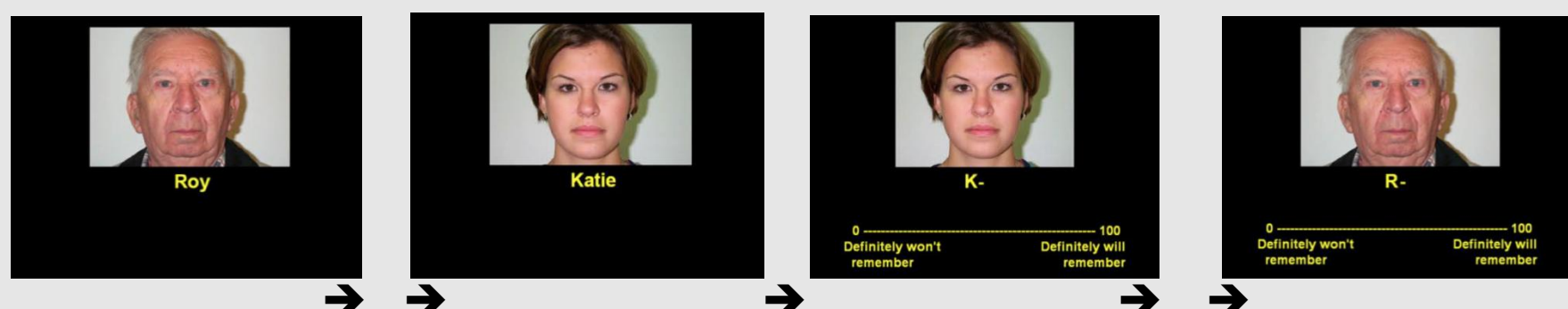
*Judgments of Learning* (JOLs) are a type of judgment used to measure predictive memory accuracy, or how well items will be remembered at a later time. Daniels, Toth, and Hertzog<sup>1</sup> have found that conscious retrieval (recollection) mediates JOL accuracy. In researching metamemory, Nelson and Narens<sup>2</sup> also found that judgments made a certain amount of time after the initial presentation were more accurate predictors of memory performance, known as the *delayed-JOL effect*.

With respect to metamemory and name-face associations, previous research has indicated that memory accuracy for names and faces together tend to be modest at best. In one current exploration of the "Baker-baker" effect, Tauber and Rhodes<sup>3</sup> found that JOL accuracy was much higher for personal information (such as an occupation) attributed to a face rather than a formal name. Watier and Collin<sup>4</sup> also found that, while accuracy in memory monitoring for names and faces is above chance, metamemory is lower for name-face associations than for noun-noun associations.

The goal of the current research is to extend the dual-process paradigm<sup>1</sup> and delayed-JOL effect<sup>2</sup> to predictive memory accuracy for names and faces. While the delayed-JOL effect has been observed for name-face associations (see Watier and Collins<sup>4</sup>), we expect to find that memory accuracy for the pairs, both immediate and delayed, will be driven by recollection rather than familiarity.

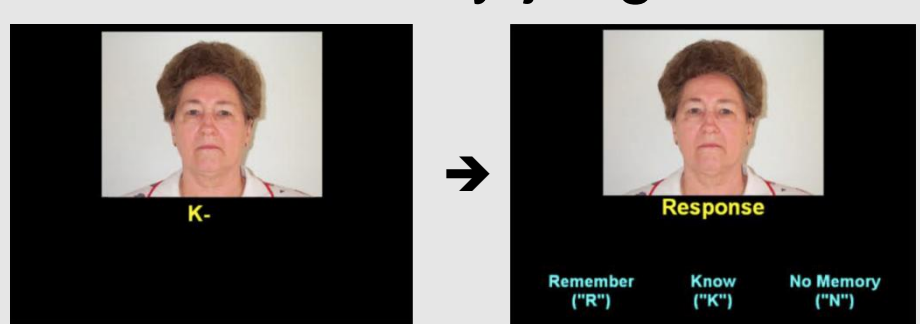
## Methods

Young adults (mean<sub>age</sub> = 19.15) were shown a series of names and faces and were told that they would be tested on their memory for the names that correspond to the faces in a future task. The participants were then asked to rate the likelihood of them remembering the pairs together at a later time. To elicit these ratings, JOLs were used, half immediately following the presentation and half after a delay of six slides.



A single/global JOL (0 to 100) was also obtained just before (pre-study) and just after (post-study) study-list presentation.

After the second global JOL, memory was tested for the name-face pairs shown at study. In each trial, the participants were shown a face with the first letter of the corresponding name and asked to recall the name. After producing the name, they were then asked to rate their memory for the item using Remember/Know/No Memory judgments.



**Remember (R):** Clear memory for the name and face together with corresponding details.

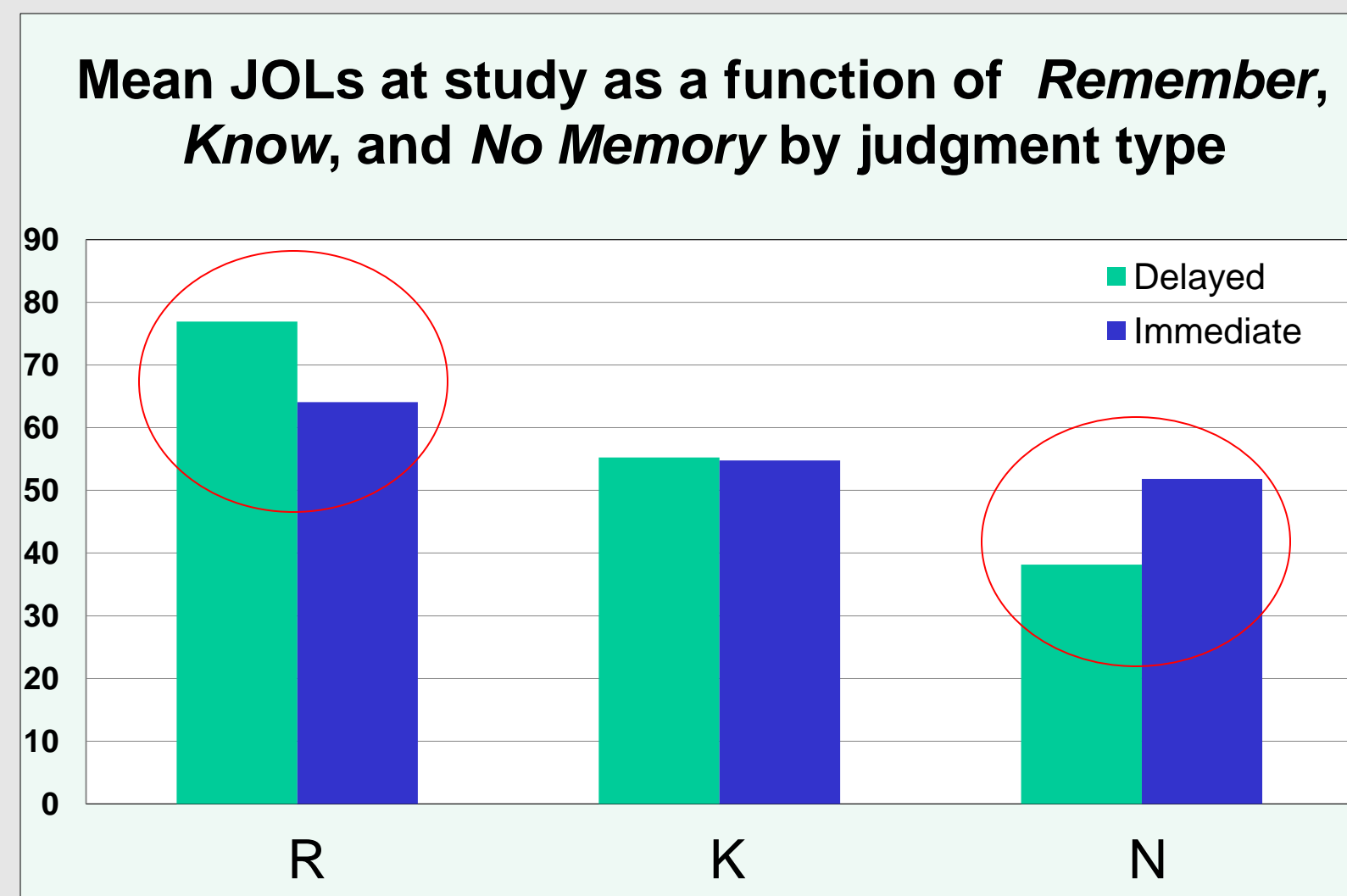
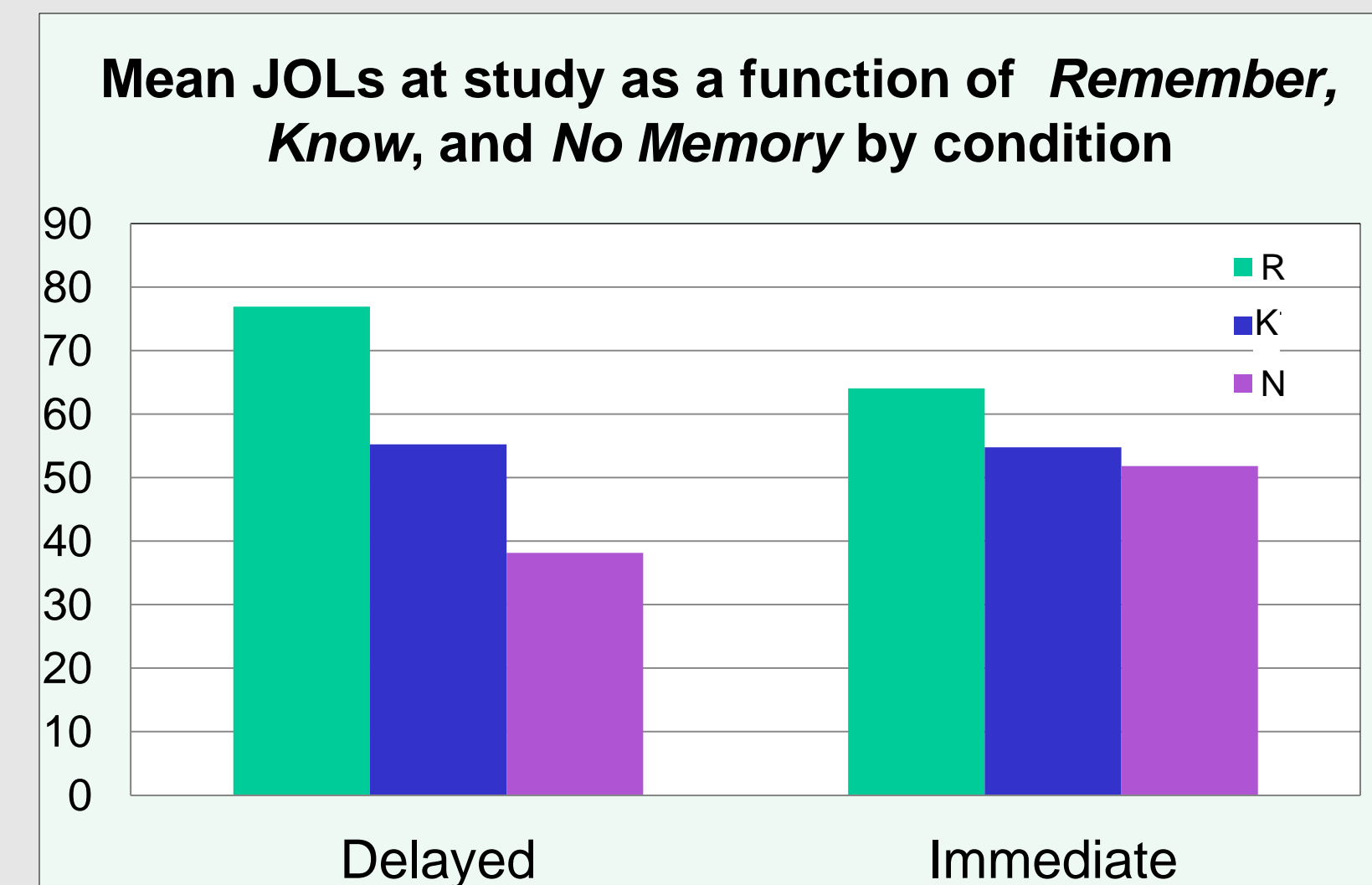
**Know (K):** The name is known, but details associated with the two together are not distinctly remembered.

**No Memory (N):** Either no memory for the name-face pair or no memory for the name that goes with a recognizable face.

## JOL Accuracy: Backsort

› We examined the JOLs the participants made at study as a function of the *Remember/Know/No Memory* (R/K/N) judgments that the participants made at test using a backsorting procedure implemented by Daniels et al. (2009).

› As expected, a pattern in the data similar to the findings of Daniels et al. (2009) emerged – that *Remember* (R) judgments were higher for both conditions than were *Know* (K) or *No Memory* (N).



› Overall, judgments made for delayed items had a much greater R/K/N spread on average (76.9 – 38.1) than did the immediate items (64.1 – 51.8), indicating a lack of predictive memory accuracy for immediate judgments.

› Items recalled at test (R) garnered higher JOLs than did items that were know (K) or not remembered (N), and even more so in the delayed condition. This is also similar to previous studies and shows that conscious memory, rather than more automatic forms of memory, is driving metacognitive accuracy and that delayed judgments boost this accuracy.

› We also found an interesting cross-over pattern between the delayed and immediate conditions. While we expected and found higher judgments for R in the delayed condition, the judgments in both conditions remain similar for K and then increase for N in the immediate condition.

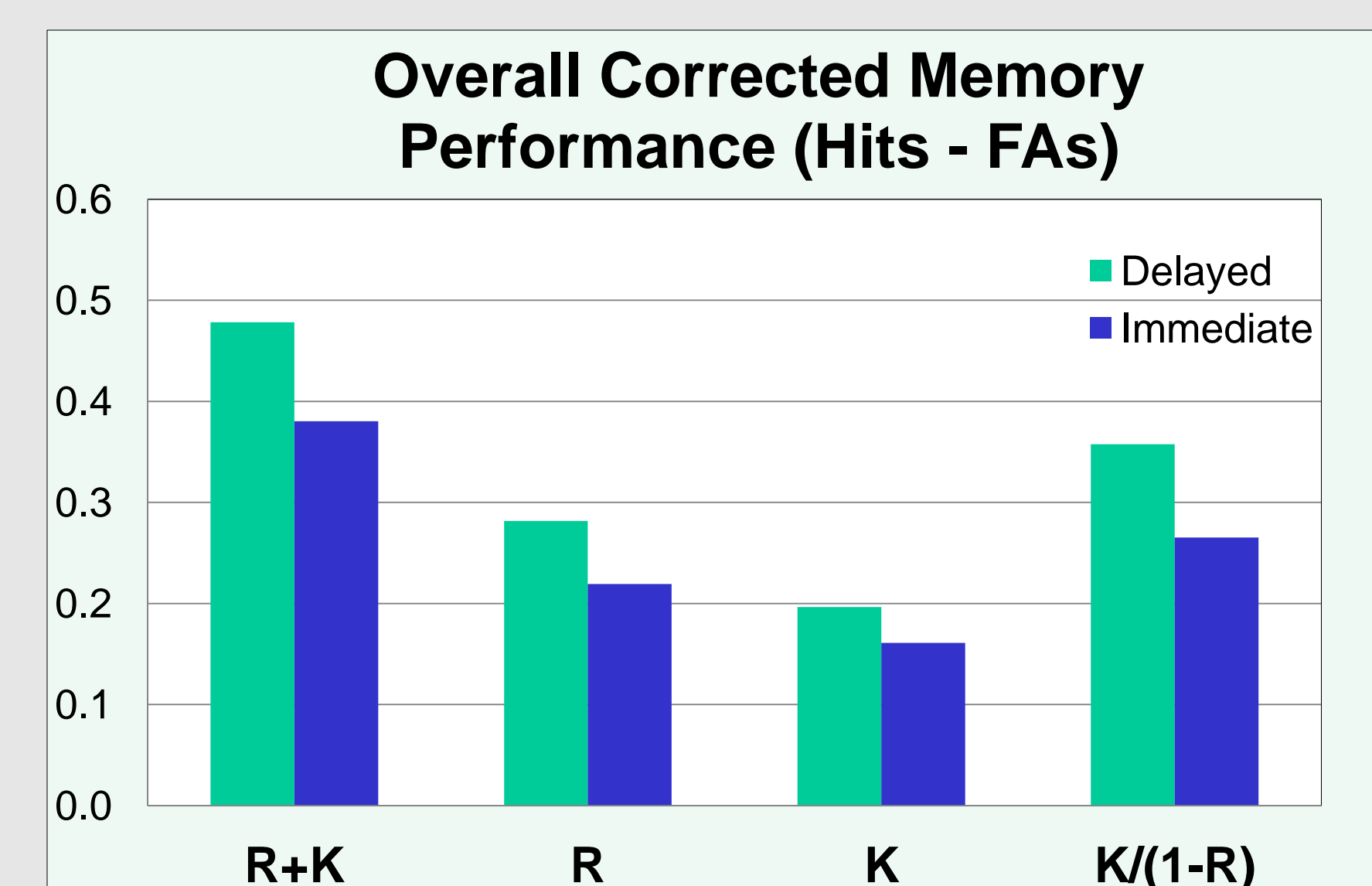
## Memory Performance

› Along with the other types of memory ratings (i.e. R/K/N), estimated familiarity (K/1-R) was also computed based on the assumption that familiarity and recollection make independent contributions to recall.<sup>5</sup>

› Calculations made for the unstudied stimuli were similar in each condition since the new names and faces were not presented at study.

		Studied				Unstudied			
		R	K	K/(1-R)	N	R	K	K/(1-R)	N
Delayed	M	0.31	0.34	0.51	0.35	0.03	0.15	0.15	0.83
	SD	0.17	0.18	0.24	0.21	0.05	0.18	0.19	0.19
Immediate	M	0.25	0.31	0.42	0.45	0.03	0.15	0.15	0.83
	SD	0.17	0.19	0.24	0.22	0.05	0.18	0.19	0.19
Overall	M	0.28	0.32	0.46	0.40	0.03	0.15	0.15	0.83
	SD	0.16	0.18	0.23	0.21	0.05	0.18	0.19	0.19

› As expected, corrected memory performance (Hits – FAs) for all names and faces showed lower accuracy for every type of rating in the immediate condition. The symmetry of the data between the conditions suggests that memory performance for name-face pairs follows a distinct pattern regardless of the condition, but that delayed judgments increase memory performance.



› Concordant with the findings of Daniels et al. (2009), automatic influences on memory (K) were found to have lower overall memory accuracy than conscious ones (R), emphasizing the importance of recollection in memory for name-face pairs.

## Gamma Correlations

Gammas as a function of coding (Standard, Recollection Only, & Recall Only) by condition



› To study the accuracy of delayed and immediate JOLs with names and faces, we also computed gamma correlations for standard coding (R + K), recollection coding (R), and recall coding (correct production of name).

› In each of the codings, the data suggests that delayed JOL accuracy for name-face pairs is much greater than immediate JOL accuracy.

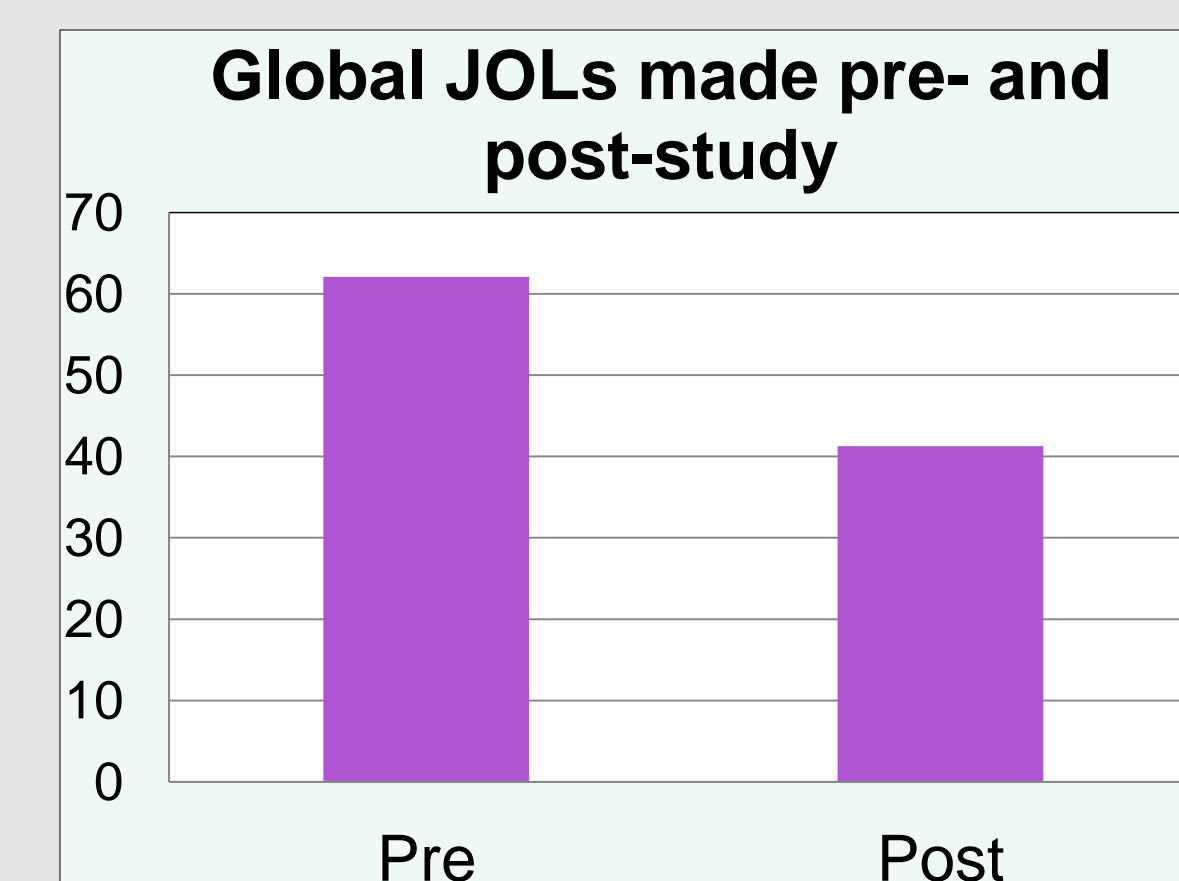
› Although the size of the effect is somewhat smaller in the Recollection Only Coding, the difference in JOL accuracy between immediate and delayed items is especially pronounced when the gammas are examined using Recall Only Coding.

› Overall, data from the gammas show that, on an item-by-item basis, delayed JOLs for name-face pairs are more accurate in predicting future memory performance.

## Global JOLs

› With the global JOLs that were made by the participants prior to and after studying the 96 names and faces, there was a significant decrease after the names had been studied.

› This degree of global judgment correction reflects a common fallacy concerning memory for names and faces. Before individuals are to remember a group of names and faces, they mistakenly perceive their future memory to be considerably better than it actually will be. After studying the names, however, they correct their initial overly-confident judgment.



## Discussion

› In prior research<sup>1</sup>, we found evidence that recollection, rather than familiarity, plays a large role in mediating JOL accuracy. One of the goals of this project was to extend this dual-process framework to metamemory accuracy for names and faces using recall.

› We also sought to replicate the delayed-JOL effect found in prior metamemory research<sup>2</sup> using names and faces as stimuli. This effect postulates that JOL accuracy increases for items with delayed judgments instead of immediate ones.

› For JOLs, the data suggests that conscious influences are driving memory accuracy for name-face pairs. This effect is most prominent when the JOLs are backsorted, indicated by the higher average of the ratings made for the *Remember* judgment. This is also reflected in the corrected memory performance, though with a somewhat smaller effect.

› Overall, the delayed-JOL effect was found with memory accuracy for name-face pairs with gamma correlations showing that item-by-item, delayed JOLs are much more accurate.

## References

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