SOCIAL INFLUENCE ON HUMAN MEMORY

By

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Abstract

The present study examined the effects of an interviewer's expectations on memory accuracy and confidence in a two-alternative forced-choice recognition memory task. Previous studies that used a similar procedure showed inconsistent results; Stanton and Baker (1942) showed that interviewer expectations did influence participants' responding, whereas Friedman (1942) and Lindzey (1951) showed that interviewer expectations did not influence participants' responding. The present study is predicated on the premise that an experimenter's expectations alone are not sufficient to influence another person's memory. As with previous studies, the current study examined the effects of an interviewer's correct and incorrect beliefs about the answers to a recognition task. However, unlike previous studies, the interviewers were encouraged to nonverbally communicate their expectations. Participants (99 UCR psychology students) studied a series of random shapes and were later asked to distinguish between the studied shapes and their mirror images. The interviewers were given an answer key with half correct and half incorrect answers. This was to elicit results that clearly show whether the subjects followed the expectations of the interviewers. The data were analyzed by calculating a percentage correct score and average confidence for the answers that were keyed correct, and for those that were keyed incorrect. There was higher response accuracy and confidence for test trials that were keyed correctly than for test trials that were keyed incorrectly.

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Social Influence on Human Memory

There is ample evidence that one person's expectations can influence the behavior of another person towards what was expected (Rosenthal, 2002; Rosenthal & Rubin, 1978). For instance, Rosenthal and Fode (1963a) found that rats who were expected to be more successful in a maze because of their training in "maze-brightness", compared to a second group of rats who were expected to have been trained for "maze-dullness", did in fact demonstrate better maze learning, simply due to the experimenter's expectation that the "maze-brightness" group would perform better. The labels of "maze-bright" and "maze-dull" were randomly assigned. Similarly, children in a classroom who were expected to succeed above other students based on results from an intelligence examination, were subsequently treated as though they would succeed, and as expected, they did succeed far above those students that were labeled to be less-successful (Rosenthal & Jacobson, 1966). Again, because the labels were randomly assigned, their school performance was not due to the students' capabilities, or lack thereof, but due to the teacher's belief that those randomly selected students tested higher and would therefor perform better. In both of these studies, rats learned faster and students performed better because of the expectations of others.

In another investigation by Rosenthal and Fode (1963), students were asked to rate the degree of success or failure shown in the faces of ten people's photographs. The experimenters were either told that the pictures they would show to the participants should be rated as either more successful or unsuccessful. The results showed that the experimenters who had expected the photos to be rated as more successful obtained results that followed those expectations; and the same for the experimenters that expected for the photos to be rated as less successful.

A meta-analytic review of 348 studies, like those described above, showed that expectancy effects are obtained with great consistency (Rosenthal & Rubin, 1978). In many of these studies, the expectation is about an individual's overall capabilities. In other studies, the expectation is about

specific responses, for example about the extent to which photographs depict people who are more or less successful. It is important to note, that these choice-specific expectations did not involve objectively correct or incorrect choices. Judgments regarding the appearance of success and failure are subjective. The present study extends this large literature to examine choice-specific expectancy effects for recognition memory decisions that are objectively correct or incorrect.

This issue has received considerable attention in the psychological research on eyewitness identification. In these studies, participants were witnesses to a staged crime (presented on video) and were later shown a lineup that included a suspect who was guilty of the crime, or a person who was suspected, but innocent. The key comparison was between lineup administrators who knew the position of the suspect (non-blind) and lineup administrators who did not know the position of the suspect (blind). To the extent that lineup administrators had an expectation that witnesses would choose the suspect from the lineup – and an incentive to obtain suspect identifications, one would predict increases in suspect identification rates. The results generally do show that pattern, although there are some exceptions, and the results are not entirely consistent (Greathouse & Kovera, 2009; Phillips, McAuliff, Kovera, & Cutler, 2000; Perlini & Silvaggio, 2007).

The most straightforward studies to examine the effects of interviewer expectations on memory performance were conducted over 70 years ago. Stanton and Baker (1942) presented participants with geometric shapes that had no meaning behind them. In the third week, after the participants had initially seen the material on a big screen projector, they were asked to come back to the lab for a final examination of their memory. Each test trial was a two-alternative forced-choice test that presented one of the original studied shapes along with its mirror image. The participant's task was to say which one was the one they had studied. The interviewer presented the test trials and recorded participants' responses. Interviewers were also provided an answer key and thus they would presumably have had strong expectations about the correct answers. However, half of the test trials were keyed incorrectly.

To the extent that the interviewers' expectations influence the participants' responses, their accuracy for incorrectly keyed test trials would be predicted to be lower than their accuracy for the correctly keyed test trials. That is exactly the result that Stanton and Baker observed. However, two attempts to replicate their results failed to do so (Friedman, 1942; Lindzey, 1951).

The current study is a replication and extension of the original study by Stanton and Baker. Similar to their study, the present study investigated the effect of experimental expectancy when the expected responses have objectively correct and incorrect answers. Therefore, it is examining the choices that the participants make to questions with an objective right or wrong answer. Experimenter expectation bias was induced to examine the effects it has on the human participants' recognition memory and confidence. Confidence is measured because evidence suggests that confidence is indicative to accuracy and can therefore be helpful in valid decision making (Leippe, Eisenstadt, & Rauch, 2009). Additionally, research shows that expectations have a significant effect on confidence, in some cases by increasing it (Russano, Dickinson, Greathouse, & Kovera, 2006), and in other cases by decreasing it (Clark et al., 2013).

Expectancy effects and confidence were measured by randomly assigning flawed keys to research assistants who were the interviewers for the study. As interviewers, they were instructed to test the participants on their recognition memory by presenting to them a slide show of geometric shapes to memorize, then testing them by showing two options for them to decide which was correct from the presentation. The interviewers were given a key that had half the answers correct and the other half incorrect; however, this information was not known by them. The interviewers were "blind" in this, in order to examine the impact that incorrect expectations can have on individuals who either know or do not know the correct answer. In addition to this systematic error, interviewers were also encouraged to give nonverbal cues that showed the participants that would cue participants toward the correct answer. The question considered was, if an individual knows the correct answer to a recognition

memory task, but is being suggested away from that answer, will s/he follow that suggestion?

This study is measuring the dependent variable, being the participant's recognition memory accuracy, and manipulating the independent variable, being the interviewer's bias. What is unique about this study is that instead of measuring an unintentional bias made by the interviewer, we instructed the interviewers to be quite blunt about their bias from the given answer key. This bias was intended to maximize the likelihood of a response from the participants that will either show that they had followed the interviewer's suggestions, or not to have followed. Furthermore, unlike past studies that primarily looked at expectancy biases made of the participants, we instead looked at responses that were objectively correct or incorrect to examine the extent to which the observable bias would be enough to maneuver the participants toward the incorrect choice.

One aspect that motivated this study was the link between an expecter's expectation and that expecter's behavior, which is described in more detail by Rosenthal (1981, 2002). Simply having an expectation cannot, by itself, influence another person's behavior. This raises the question about *how* the expecter's expectation is communicated to the expectee. One hypothesis for the failures to replicate the original results by Stanton and Baker is that the experimenters were relatively good at not communicating their knowledge and expectations to their participants. In the present study, research assistants were encouraged to communicate their expectations to participants, through various non-verbal and paralinguistic gestures, provided that they did not explicitly divulge the answers.

This study is important regarding eye witness investigations that are associated with those investigators who can hold wrongful assumptions that lead to the witness to make incorrect, suggestive decisions in identifying the perpetrator of the crime (Clark et al, 2013). We assume that it should not be enough for an expectation to influence a response from individuals that are sure of their recognition memory, but instead look at the investigator to gain some insight on what is correct.

Method

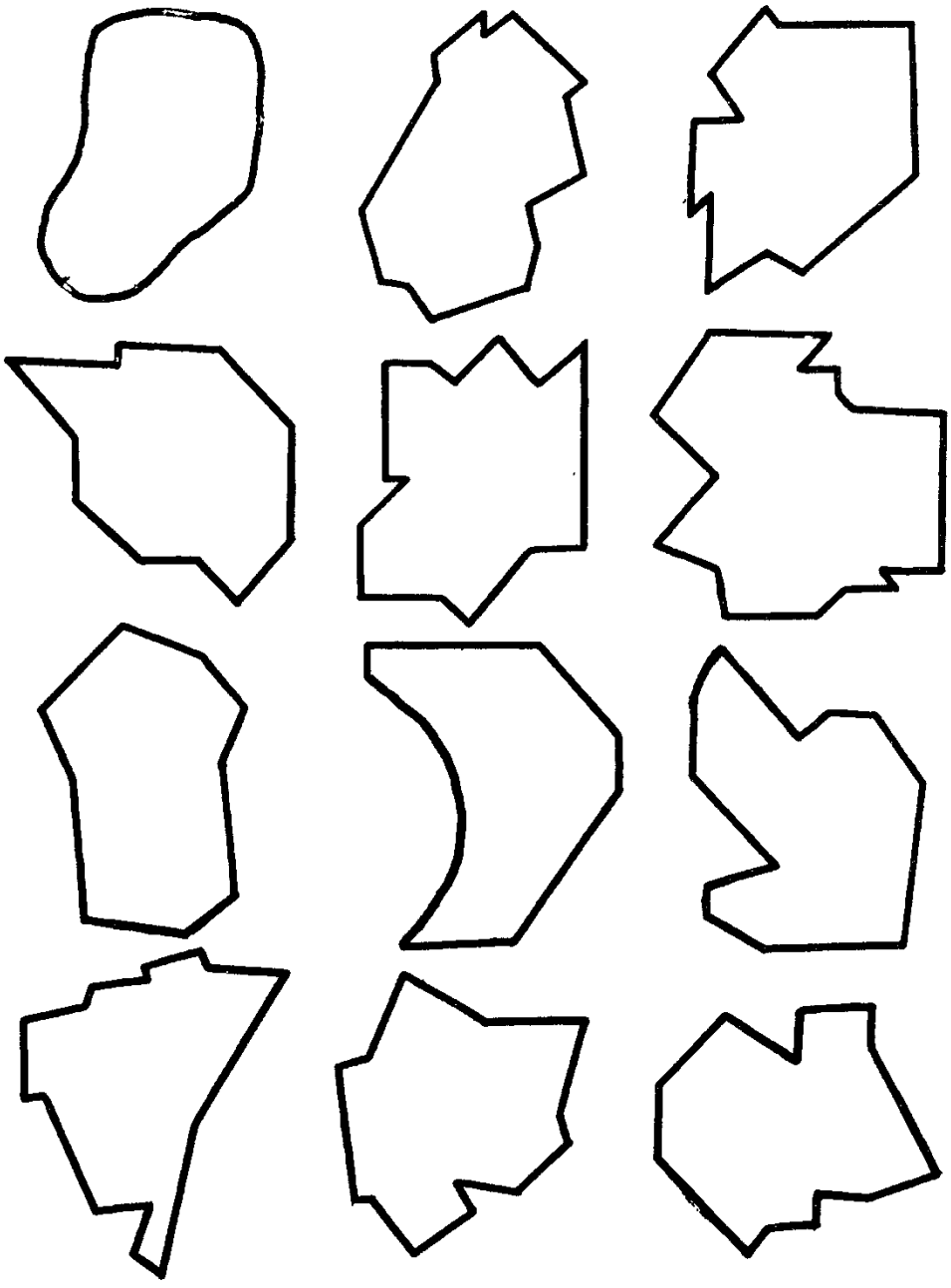
Participants

The participants were 99 undergraduate introductory psychology students (73 female, 26 male) at the University of California, Riverside. However, data from 11 of the participants were not included in the analyses because their low less-than-chance performance suggested that the research assistant may have opened the wrong file to run the study. Participants self-reported as Asian/Pacific Islander (45%) and Hispanic/Latino(a) (33%), followed by White/Caucasian (8%), Black/ African American (.04%), and Other/Mixed (.09%). The participants' ages ranged from 18-28 (*M* = 18.90*; SD* = 1.29; see Appendix A).

Materials and Procedure

Participants watched a short presentation of 12 geometric shapes shown one at a time, for 8 seconds each. The shapes were shown either facing right or left. The set of shapes were shown twice in the same order. Immediately after the presentation had ended, each participant was given a Big Five Personality Inventory (John and Srivastava, 1999) and a list of math problems in order to minimize primacy and recency effects from the presentation. After 3-minutes, the experimenter administered a recognition memory test for the shapes shown in the presentation. Each test trial presented one studied shape plus its mirror image. The participant's task was to indicate which test item had been studied. The experimenter sat across from the participant during this process and administered each test trial by holding up the two stimuli just below their own face. This positioning of the test stimuli was done to increase the likelihood that the participants would see the research assistant as the test stimuli were shown, instead of only focusing on the test material. Experimenters were encouraged to covertly communicate their expectations regarding the correct answers through non-verbal means. Participants verbally reported their decisions to the experimenter who recorded them on a response sheet that also showed the ostensibly correct answers in the column next to where the responses were recorded (see Appendix B). Participants also gave a confidence judgment on a scale of 50 percent to 100 percent for

each response. The low end of the scale was set to 50 percent because a complete guess had a 50-50 chance of being correct. After the interview process was over, the participants were handed a final questionnaire that asked them to report whether they had noticed the bias or not. However, the data could not be assessed for the study because it became clear after further reports that many of the participants had answered the questions untruthfully, so that the interviewers would not get in trouble for giving away the answers.



Results

Accuracy was assessed as the percent correct separately for the six items that were keyed correctly, and for the six items that were keyed incorrectly. The participants had higher response accuracy for those test trials that were keyed correctly (78.16%) than for those trials that were keyed incorrectly (73.26%), t (87) = 1.956, p = .053. Average confidence was also assessed separately for trials keyed correctly and for trials keyed incorrectly. Participants also reported more confidence for those test trials that were keyed correctly (84.09%) than for those keyed incorrectly (78.21%), t(87) = 4.514, p <.001. Furthermore, the participants were more confident in their answers when they were consistent with the interviewer's bias, even when the bias was incorrect, t (87) = 2.853, p < .001.

Table 1

Percent Correct and Average Confidence for Correctly and Incorrectly Keyed Answers

	Correct Key	Incorrect Key
Percentage Correct	78.16%	73.26%
Confidence Level-Correct	84.09%	78.21%
Confidence Level-Incorrect	49.01%	42.06%

Discussion

The present experiment assessed the extent to which a participant's recognition memory decisions could be influenced by the expectations and biases of the interviewer. The present results provide evidence that interviewers influenced participants in two ways. Participants' recognition accuracy was lower when the interviewer biased them towards an incorrect answer, and participants also showed higher confidence levels when their responses matched the interviewer's expectations,

whether the interviewer's bias was correct or not.

The study's findings replicated those of Stanton and Baker's. This raises a new question: why were the past replications unable to get similar results? It is assumed that in both Friedman (1942) and Linzdey (1951) studies, they did not present a strong enough bias that could lead to an effect similar to Stanton and Baker's. This suggests that, although biases are present throughout an interview process, they may not be sufficient to change an individual's recognition of previously learned stimuli.

These results give some insight in the field of eyewitness identification because when an eyewitness is unsure or less confident in his/her choice of suspects, this can be a cue to investigators that their decision is being driven by another factor other than their accurate memory recall.

Limitations and future research

The current study showed that participants were influenced by the interviewer; however, the question remains as to whether this influence reflects mere conformity or whether the interviewer changed participants' memory for the stimuli. The participants could have answered the forced choice question (A or B) in accordance with the interviewer, without considering what the true answer was based on their recognition, but instead following the bias because they really did not know the correct answer, or because they knew it but followed the opposing bias anyway.

Future research can expand on these findings by considering the Big Five Inventory data. These data can be used to investigate a possible association between personality traits and an individual's susceptibility to biases. For example, one may question whether these results would be obtained if participant were older or had perceived higher status relative to the interviewers.

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Appendix A

Finally, we would like to ask a couple questions about yourself. If you do not wish to answer any of the questions, that is okay. Just leave it blank. Check as many as apply:
What is your age? _____

What is your gender? Male Female Other

What is your ethnicity?

White/Caucasian

Asian/ Pacific Islander

Hispanic/Latino

Black/African America

Native American/ American Indian

Other
If Other, please specify: _____

Appendix B

NAME:
Participant number:
Experimenter name: RA 1

Test Trial:	Correct Answer:	Participant's Answer:	Participant's Confidence:
1	B		
2	A		
3	A		
4	B		
5	B		
6	A		
7	A		
8	B		
9	A		
10	B		
11	B		
12	A		

*Confidence is rated on a scale of 50%-100%. 50% meaning their choice was a guess and 100% meaning participant is absolutely sure of their choice.

Note: 1, 2, 3, 5, 7, 10 randomly chosen to be incorrectly keyed.

NAME:

Participant number:
Experimenter name: RA 2

Test Trial:	Correct Answer:	Participant's Answer:	Participant's Confidence:
1	A		
2	B		
3	B		
4	A		
5	A		
6	B		
7	B		
8	A		
9	B		
10	A		
11	A		
12	B		

*Confidence is rated on a scale of 50%-100%. 50% meaning their choice was a guess and 100% meaning participant is absolutely sure of their choice.
Note: 1, 2, 3, 5, 7, 10 randomly chosen to be incorrectly keyed.

NAME: RA 3
Participant number:
Experimenter name:

Test Trial:	Correct Answer:	Participant's Answer:	Participant's Confidence:
1	A		
2	B		
3	B		
4	A		
5	A		
6	B		
7	B		
8	A		
9	B		
10	A		
11	A		
12	B		

*Confidence is rated on a scale of 50%-100%. 50% meaning their choice was a guess and 100% meaning participant is absolutely sure of their choice.
Note: 4, 6, 8, 9, 11, 12 randomly chosen to be incorrectly keyed.

NAME:
Participant number:
Experimenter name: RA 4

Test Trial:	Correct Answer:	Participant's Answer:	Participant's Confidence:
1	B		
2	A		
3	A		
4	B		
5	B		
6	A		
7	A		
8	B		
9	A		
10	B		
11	B		
12	A		

*Confidence is rated on a scale of 50%-100%. 50% meaning their choice was a guess and 100% meaning participant is absolutely sure of their choice.
Note: 4, 6, 8, 9, 11, 12 randomly chosen to be incorrectly keyed.