

THE IMPACT OF MOTIVATION TO JUDGE VERACITY ON EYEWITNESSES' MEMORY

OF A SUSPECT

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HEATHER M. BAUER

DR. KERRI PICKEL, CHAIRPERSON

BALL STATE UNIVERSITY

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### The Impact of Motivation to Judge Veracity on Eyewitnesses' Memory of a Suspect

In a legal setting there are many situations in which individuals such as police officers, customs agents, or members of a jury have to use eyewitness testimony in making decisions (Kalbfleisch, 1992). According to the Innocence Project (n.d.), 75% of wrongful convictions have been overturned because of faulty eyewitness reports and misidentification. Despite these errors, eyewitness testimony is still one of the strongest pieces of evidence in the eyes of judges and juries (Douglass & Steblay, 2006; Greene, Heilbrun, Fortune, & Nietzel, 2007), thus showing the importance of understanding its limitations.

Witnesses often view live or photo lineups as part of police investigations, and their lineup decisions are presented to jurors if the case goes to trial. Witnesses are usually asked to rate their certainty in their choice. Although high certainty does not necessarily indicate accuracy, jurors tend to believe witnesses who express greater rather than less certainty (Bradfield, Wells, & Olson, 2002; Douglass & Steblay, 2006; Steblay, Dysart, Fulero, & Lindsay, 2001).

Along with certainty ratings, witnesses may also be asked to make other testimony-relevant judgments based on the recommendations of the U.S. Supreme Court (*Neil v. Biggers*, 1972). These judgments can be classified into three different categories: retrospective judgments, judgments regarding the identification experience, and summative judgments (Douglass & Steblay, 2006). Retrospective judgments deal with witnesses' recollection of the qualities of the target event, such as the level of attention directed to the event and their ability to make out the perpetrator's facial features. Judgments about the identification experience include witnesses' certainty in the accuracy of their identification and their estimate of the amount of time it took to make their decision. Summative judgments are overall evaluations, such as witnesses' estimates

of their ability to remember strangers' faces and their willingness to testify. Testimony-relevant judgments are not recorded at the time of the target event but instead are asked at the time of the police interview and are solely based on the memory of the eyewitnesses and their perception of their lineup task performance. These judgments are important because police and prosecutors consider them when deciding whether to pursue a case and jurors use them to evaluate the accuracy of a witness's report, despite the fact that these measures do not necessarily indicate accuracy (Quinlivan, Neuschatz, Douglass, & Wetmore, 2011, Wells & Bradfield, 1998).

Wells and Bradfield (1998) examined the impact of post identification confirming feedback on testimony-relevant judgments and eyewitnesses' overall reports regarding the witnessing experience. Participants observed a perpetrator in a video and later tried to identify him in a photo lineup. Some witnesses were told they chose the right person, and others were given no feedback. Confirming feedback inflated witnesses' certainty and other perceptions of their experience (e.g., ratings of the quality of their view of the suspect's face). However, witnesses' judgments were not correlated with their actual accuracy in the identification task. Because all witnesses were induced to choose someone from the target-absent lineup, all were inaccurate in their identification.

Nevertheless, there are variables that actually relate to eyewitness accuracy, such as divided attention at encoding. Pickel and Staller (2012) found that trying to comprehend a foreign accented versus unaccented message impairs witnesses' memory for a perpetrator's appearance. This study established that performing another task while observing the perpetrator may be so cognitively demanding that some information related to the perpetrator is not encoded at all or is encoded less accurately. The findings from this study can be explained by multiple resource theory (Wickens, 2008), which states that individuals have a limited amount of

cognitive resources available at any given moment. The theory describes three main variables that affect the encoding process and performance on a task: task demand (i.e., easy, difficult), resource overlap (e.g., visual or auditory), and allocation of resources. In order for individuals to perform two tasks simultaneously, they must have enough resources to support both, or else performance on the task that was not prioritized will suffer.

Another task that witnesses might perform concurrently with observing the perpetrator is trying to determine whether the perpetrator is being deceptive. Detecting deception commonly occurs in day-to-day occurrences as well, such as when trying to determine whether individuals are providing truthful information, while watching the news or when buying a used car. Overall, detecting deception can benefit individuals in a variety of ways (Vrij, Granhag, & Porter, 2010). However, people are not very good at detecting deception, and it is a difficult task that demands a large amount of cognitive resources, which is why it impairs memory performance, as explained by multiple resource theory (Wickens, 2008). Vrij, Granhag, and Porter reviewed research on observers' inability to detect lies well. Research has shown that there are no nonverbal and verbal cues consistently and uniquely related to deceit, and most cues observers use are the wrong ones. For example, many people incorrectly believe that gaze aversion and grooming gestures indicate deception (The Global Deception Team, 2006; Taylor & Hick, 2007; Vrij, Akehurst, & Knight, 2006).

Because judging veracity is cognitively demanding, performing this task while simultaneously observing a target individual might impair subsequent memory for that person. Pickel, Kulig, and Bauer (in press) found support for this hypothesis. In their first experiment, participants were asked to adopt the role of a bank manager and to watch a video of a robber making demands while concurrently performing a secondary memory task. The robber stated to

have accomplices and weapons. Participants in the experimental condition were also asked to determine whether the robber was lying about whether he had accomplices and weapons, whereas controls merely watched the video. The experimental group performed worse than controls on the secondary memory task, which was remembering the suspect's appearance and message, thus showing that the veracity judgment task was more cognitively demanding than merely watching a video. A follow-up experiment extended these findings by showing that judging veracity decreased participants' accuracy in recalling the robber's message and appearance. The researchers also incorporated a second experimental condition, in which participants judged the veracity of the robber after being made suspicious about him (i.e., participants were told "...he might be bluffing about having accomplices and weapons to gain cooperation"). The suspicion manipulation exaggerated the effect of the veracity judgment task on witnesses' memory of the perpetrator. These findings were also systematically replicated in a third experiment conducted by Pickel et al. (in press) where they asked participants to adopt the role of a store manager and to watch a video of a suspected female shoplifter. Overall, they were able to find the same pattern of results, thus showing that judging veracity impairs witnesses' memory for the suspect's message and appearance, with suspicion amplifying the effect.

Motivation to judge veracity is another variable that may have an effect similar to suspicion. Like suspicion, high motivation should increase the cognitive demands of the veracity judgment task, leaving fewer resources available for encoding details about the target individual (Wickens, 2008). Reinhard and Sporer (2008) manipulated participants' motivation to perform a veracity judgment task by varying their involvement (i.e., they emphasized the importance of making careful judgments to high-involvement participants but not to those in the low-involvement condition). High involvement participants were told that the study was very

important for future psychological research, whereas the low involvement participants were told that the study was to simply obtain data for an introductory psychology course. According to dual process models of credibility attribution, highly motivated participants should allocate more cognitive resources to the veracity judgment task than less motivated participants. They should demonstrate more effortful “central” processing (Petty & Wegener, 1999), using both verbal and nonverbal cues, which are more difficult to monitor; whereas the less motivated participants should rely exclusively on nonverbal cues (“peripheral” processing), which are easier to monitor. The researchers’ findings were consistent with their predictions. Using similar means of manipulating participants’ motivation, Forrest and Feldman (2000) obtained the same pattern of results.

In the current study, participants watched a video of a target individual delivering a brief message. Control participants were asked to simply watch the video. However, a second group (Judge Veracity condition) was instructed to judge the veracity of the target, and a third group was instructed to judge veracity under high motivation (Judge Veracity/Motivation condition). In the latter condition, participants were told that some people are especially skilled at judging veracity and if they try to do well, three participants who perform the best will be rewarded with a monetary incentive. Previous researchers (Porter, McCabe, Woodworth, & Peace, 2007) have used similar methods to motivate participants. The current study extends Pickel et al.’s (in press) previous findings by using a new stimulus video with a different target, message, and scenario. Extending these findings with new stimuli is important because it would allow for stronger external validity and generalizability of the findings. The goal was to establish that, across contexts and target individuals, similar effects are found that apply to the experiences of real witnesses in real-life crime scenarios. The current study also includes a lineup identification task

and supplemental testimony-relevant judgments as dependent variables, which is important because it mimics what witnesses are required to do in a criminal investigation after witnessing a crime. This research also examines whether high motivation, like suspicion, increases the ability of the veracity judgment task to impair eyewitness memory.

I hypothesized that, compared to the witnesses who judged veracity, the control witnesses would show better performance in remembering the suspect because they were not asked to complete a concurrent task while encoding information about the suspect. Moreover, because highly motivated witnesses should allocate more cognitive resources (Wickens, 2008) to the veracity judgment task than the witnesses who were not motivated (Forrest & Feldman, 2000; Reinhard & Sporer, 2008), the former group should less accurately remember the suspect's message and appearance and should be less likely to identify him in a lineup. Because the control group is using fewer cognitive resources they should show the best performance in remembering the suspect because they have more resources available to encode information related to the target.

Porter et al. (2007) showed that highly motivated observers judge veracity less accurately but with more certainty. The motivated witnesses in the present study should scrutinize the target for cues related to deception, which may give them the feeling that they have paid close attention to the target, although actually they have not encoded details commonly requested by police investigators, such as the target's hair color or body build. Therefore, predictions were made that the Judge Veracity/Motivation witnesses' testimony-relevant judgments should express greater certainty compared to those of the Judge Veracity witnesses and the control witnesses.

Typically, people exhibit a truth bias when judging veracity, meaning that they are more likely to decide a target is truthful than deceptive. However, Porter et al. (2007) found no change in response bias as a function of motivation. Therefore, a tentative prediction of the current study was that motivation would not affect the truth bias based on Porter et al.'s previous findings. The control condition was not examined because they did not know that they would have to later make a veracity judgment. Previous studies examining the truth bias have only studied this effect on participants who were expected to judge veracity.

## **Method**

### **Participants**

One hundred and twenty-five Ball State University undergraduates acted as witnesses. They ranged in age from 18 to 33 years ( $M = 19.26$ ,  $SD = 1.99$ ), and most were female (65%) and White (80%).

### **Materials and Procedure**

In groups of up to 10, the witnesses were instructed, "Imagine that you are the vice principal at a school called Stony Creek High School" (see Appendix A). The experimenter then read background information to the witnesses regarding the school and the duties associated with being vice principal. They were told that one of their responsibilities is to make sure that the school remains safe. Therefore, all visitors must check in with them upon entrance into the school, sign the visitor registry, and explain the purpose of their visit.

All participants then were told they would watch a video of an individual visiting a high school. They were randomly assigned to one of three conditions. The control participants were told simply to watch the video carefully. Those assigned to the Judge Veracity condition were instructed, "You will need to decide whether the man in the video is being truthful or lying about

the reason he wants to enter the school, and you will answer questions about your decision later. Please watch the video carefully.” Participants assigned to the Judge Veracity/Motivation condition were instructed, “You will need to decide whether the man in the video is being truthful or lying about the reason he wants to enter the school, and you will answer questions about your decision later. We are offering a \$50 monetary reward to the three people who perform the best at this task this semester. Previous research has shown that some people are very good at judging whether another person is lying, especially if they try hard to do their best. You may be one of these people. Please watch the video carefully.”

After receiving instructions, participants watched a video depicting a male actor as a visitor to a high school (see Appendix B); in the video his head, torso, and arms can be seen. He explains to the vice principal that the reason for his visit is to see the art teacher. He describes how he knows her, the purpose for coming, and the estimated duration of his visit. After viewing the video, participants completed a written form with five sections (see Appendix C). The first section asked witnesses to judge whether the visitor was truthful or lying regarding the reason for his visit to the high school. Witnesses then rated their certainty in that decision on an 11-point scale, where higher numbers represented greater certainty. Another question was a manipulation check for the motivation variable. Witnesses rated the amount of effort they put into making their veracity judgment decision on an 11-point scale, where higher numbers represented greater effort. The second section asked various open-ended and multiple choice questions regarding the witnesses’ ability to recall details of the visitor’s appearance, such as clothing (e.g., shirt style, color, and accessories) and physical features (e.g., race, height, and age). The third section was an open-ended question asking the witnesses to recall the visitor’s message.

Before beginning the fourth section of the questionnaire, each participant individually viewed a simultaneous target-present photo lineup at a designated area in the back of the room. The lineup was constructed according to experts' recommendations (Technical Working Group, 1999). When constructing photo lineups, investigators should use fillers that fit the witness' description but do not look so similar to the suspect that it is difficult to discern the difference between the two. All lineups should include a minimum of five fillers that are non-suspects.

In order to ensure confidentiality all witnesses were positioned with their backs facing the other participants while completing the identification task, therefore, obstructing the view of the photos from the other witnesses. While each photo was placed in a 3 x 2 format on the desk, witnesses were instructed to identify one of the six individual photos as the visitor in the previously viewed video by pointing to the correct photo.

To avoid the complication of having some witnesses choose a member of the lineup and some fail to choose, witnesses were given directions similar to Wells and Bradfield's (1998), instructing them to select the person in the lineup who appeared in the video. This wording implies to witnesses that the suspect is actually present in the photo lineup. A choice of "not present" was not offered, therefore inducing all witnesses to make a choice. Failing to choose anyone from a lineup has different legal consequences than identifying a filler.

After making their decision, witnesses completed the two remaining sections of the questionnaire. In the fourth section witnesses were asked to make several testimony-relevant judgments, which mimic real world applications when witnesses are asked to make testimony-relevant judgments after their identification of a suspect (*Neil v. Biggers, 1972*). This section included three questions concerning their certainty regarding the accuracy of the information they provided about the perpetrator's appearance and message, and their lineup decision.

Witnesses used 11-point scales, where higher numbers represented greater certainty. The remaining eight questions in this section asked for additional judgments, such as participants' speed of identification, quality of view, ability to see facial features, level of attention, ability to make a decision based on enough information, the difficulty of the task, willingness to testify, memory for strangers' faces, and overall clarity of the visitor's face. Witnesses made their ratings on 11-point scales, where higher numbers represented greater quantities. The final section asked for basic demographic questions including age, gender, and race.

### **Results**

Except where noted, all dependent variables in this section were analyzed using a one-way analysis of variance. When the main effect of condition was significant, a Student Newman-Keuls post hoc procedure with alpha set at .05 was used to determine which groups differed significantly. This procedure maximizes power and holds error rate down while comparing means between three or more groups.

#### **Manipulation Check**

A one-way ANOVA was run to determine whether witnesses in the Judge Veracity/Motivation condition viewed the task as more effortful than those in the other two conditions. There was a significant difference between the groups,  $F(2, 122) = 12.98, p < .001, \eta^2 = .18$ , such that witnesses who were in the Judge Veracity/Motivation condition ( $M = 7.90, SD = 1.99$ ) viewed the task as more effortful compared to both the Judge Veracity ( $M = 6.12, SD = 2.00$ ) condition and control ( $M = 5.69, SD = 2.31$ ) condition. The Judge Veracity and control conditions did not significantly differ.

#### **Memory for the Suspect's Appearance**

Using a scoring key that identified the correct details related to the man's appearance, two coders independently determined the number of correct and incorrect details witnesses reported on the questionnaire (any detail not identified on the scoring key was counted as incorrect). As an example, the man wore khaki pants, so "khaki" was one correct detail a witness could have reported when describing the pants. Interrater reliability based on a sample of 50 questionnaires was high,  $r = .98$ .

For the number of correct details (see Table 1), a significant difference was found,  $F(2, 122) = 38.38, p < .001, \eta^2 = .39$ , such that witnesses who judged veracity while motivated reported fewer correct details for the man's appearance than those who performed the task without motivation, who in turn reported fewer than the control group. For the number of incorrect details, a significant effect was also found,  $F(2, 122) = 20.07, p < .001, \eta^2 = .25$ , such that witnesses who judged veracity while motivated reported the most incorrect details about the man's appearance, followed by the Judge Veracity condition, and the control condition reported the fewest incorrect details.

### **Memory for the Suspect's Message**

Using a scoring key that identified the correct details related to the man's message, two coders independently determined the number of correct and incorrect details witnesses reported on the questionnaire (any detail not identified on the scoring key was counted as incorrect). As an example, the man stated that he wanted to see the art teacher, so "teacher" was one correct detail a witness could have reported. Interrater reliability based on a sample of 50 questionnaires was high,  $r = .96$ .

For the number of correct details (see Table 1), a significant difference was found,  $F(2, 122) = 9.70, p < .001, \eta^2 = .14$ , such that witnesses who judged veracity while motivated

reported fewer correct details for the man's message than those who performed the task without motivation, followed by controls. For the number of incorrect details, a significant difference was also found,  $F(2, 122) = 12.99, p < .001, \eta^2 = .18$ , such that witnesses who judged veracity while motivated reported more incorrect details about the man's message than those in the other two conditions, which did not differ.

### **Timing Effects**

Because witnesses performed the lineup identification task individually, it was important to make sure lineup accuracy and the testimony-relevant judgments were not affected by the amount of time that elapsed between observing the suspect and completing the lineup task. The correlations between time and all the dependent measures were low,  $ps \geq .15, rs \leq .13$ . Therefore, it does not appear that elapsed time influenced witnesses' testimony-relevant judgments or their accuracy when making an identification.

### **Lineup Accuracy**

A chi-square test of independence revealed a difference across the three conditions in the proportion of witnesses who correctly identified the man in a simultaneous photo-lineup,  $\chi^2(2, N = 125) = 6.86, p < .05$ , Cramer's  $V = .23$ . A high percentage (83.33%) of control witnesses correctly identified the suspect. In contrast, only 68.29% in the Judge Veracity condition correctly identified him, and merely 57.14% in the Judge Veracity/Motivation condition did. An additional chi-square analysis comparing the Judge Veracity condition with the Judge Veracity/Motivation condition revealed no significant difference,  $p = .29$ , Cramer's  $V = .12$ . The same result was found when comparing the Judge Veracity and control conditions,  $p = .11$ , Cramer's  $V = .18$ . However, it can be concluded that the control witnesses completed the lineup task more accurately than those in the Judge/Veracity Motivation condition,  $\chi^2(1, N = 125) =$

6.89,  $p = .009$ , Cramer's  $V = .29$ , with the Judge Veracity witnesses' performance falling between the other two groups' and differing from neither.

### **Testimony-Relevant Judgments**

Factorial ANOVAs were performed on each testimony-relevant judgment as a function of condition and lineup accuracy; when a main effect of condition was significant, Student Newman-Keuls post hoc tests were used to determine the differences between pairs of conditions.

***Certainty about memory for suspect's appearance.*** A significant main effect of veracity condition was found when analyzing witnesses' certainty that the information they reported regarding the man's appearance was accurate,  $F(2, 124) = 11.73, p < .001, \eta^2 = .17$ . Witnesses in the Judge Veracity/Motivation condition were more certain than those in the Judge Veracity condition, followed by the control witnesses. All conditions differed significantly from one another (see Table 2). There was also a significant main effect of lineup accuracy,  $F(1, 124) = 3.88, p = .05, \eta^2 = .03$ , such that witnesses who correctly ( $M = 7.15, SD = 1.82$ ) identified the man in the photo lineup reported more certainty in their memory for the suspect's appearance than those who incorrectly ( $M = 6.87, SD = 1.68$ ) identified him. The interaction between condition and lineup accuracy was not significant,  $p = .30, \eta^2 = .02$ .

***Certainty about memory for suspect's message.*** A significant main effect of veracity condition was found when analyzing witnesses' certainty that the information they reported regarding the man's message was an accurate description of what he said,  $F(2, 124) = 10.98, p < .001, \eta^2 = .16$ . Witnesses in the Judge Veracity and the Judge Veracity/Motivation condition were significantly more certain than the control witnesses. There was no significant difference between the two experimental conditions. No other effects were significant,  $ps \geq .10, \eta^2 s \leq .04$ .

***Certainty about identification accuracy.*** A significant main effect of veracity condition was found when analyzing witnesses' certainty that their lineup decision was accurate,  $F(2, 124) = 20.63, p < .001, \eta^2 = .26$ . Witnesses in the Judge Veracity/Motivation condition were significantly more certain than those in the Judge Veracity condition, followed by the control witnesses. There was also a significant main effect of lineup accuracy,  $F(1, 124) = 4.92, p = .03, \eta^2 = .04$ , such that witnesses who correctly ( $M = 6.53, SD = 2.44$ ) identified the man reported more certainty compared to those who made an incorrect ( $M = 6.21, SD = 2.27$ ) identification. An interaction between condition and lineup accuracy was not found,  $p = .73, \eta^2 = .01$ .

***Time to make an identification.*** A significant main effect of lineup accuracy was found when analyzing witnesses' estimates of the amount of time that it took them to make their lineup decision,  $F(1, 124) = 4.74, p = .03, \eta^2 = .04$ . Witnesses who correctly ( $M = 3.10, SD = 2.11$ ) identified the man reported taking less time compared to witnesses who incorrectly ( $M = 4.18, SD = 1.92$ ) identified him. No other effects were significant,  $ps \geq .24, \eta^2 s \leq .02$ .

***Quality of view.*** A significant main effect of veracity condition was found when analyzing witnesses' perceptions regarding how good their view was of the man in the video,  $F(2, 124) = 6.57, p = .002, \eta^2 = .10$ . Witnesses in the Judge Veracity and Judge Veracity/Motivation condition provided significantly higher ratings compared to the control condition. There was no significant difference between the two experimental conditions. There was also a significant main effect of lineup accuracy,  $F(1, 124) = 7.13, p = .009, \eta^2 = .06$ , such that witnesses who correctly ( $M = 7.51, SD = 1.70$ ) identified the man in the photo lineup reported a better quality of view of the man in the video compared to those who made an incorrect ( $M = 6.89, SD = 1.86$ ) identification. An interaction between condition and lineup accuracy was not found,  $p = .19, \eta^2 = .03$ .

**View of facial features.** No significant effects were obtained regarding witnesses' ability to make out specific features of the man's face,  $ps \geq .10$ ,  $\eta^2 s \leq .02$ .

**Level of attention.** A significant main effect of veracity condition was found when analyzing witnesses' perceptions of how much attention they paid to the man's face,  $F(2, 124) = 23.18$ ,  $p < .001$ ,  $\eta^2 = .28$ . Witnesses in the Judge Veracity/Motivation condition rated their level of attention as significantly higher than the Judge Veracity condition, who in turn provided significantly higher ratings than the control group. There was also a significant main effect of lineup accuracy,  $F(1, 124) = 6.40$ ,  $p = .01$ ,  $\eta^2 = .05$ , such that witnesses who correctly ( $M = 7.05$ ,  $SD = 1.89$ ) identified the man in the photo lineup reported greater levels of attention to the man's face compared to those who made an incorrect ( $M = 6.76$ ,  $SD = 2.17$ ) identification. The interaction between condition and lineup accuracy was not significant,  $p = .44$ ,  $\eta^2 = .01$ .

**Basis of information.** No significant effects were obtained regarding witnesses' judgments about how good of a basis they had to provide information regarding what the man looked like and said,  $ps \geq .25$ ,  $\eta^2 s \leq .01$ .

**Difficulty of remembering.** No significant effects were obtained regarding witnesses' ratings of how difficult or easy it was to remember what the man in the video looked like and said,  $ps \geq .40$ ,  $\eta^2 s \leq .02$ .

**Willingness to testify.** A significant main effect of veracity condition was found for witnesses' ratings of their willingness to testify in court,  $F(2, 124) = 3.58$ ,  $p = .03$ ,  $\eta^2 = .06$ , with those in the Judge Veracity/Motivation condition being significantly more willing than those in the other two conditions. No other effects were significant,  $ps \geq .47$ ,  $\eta^2 s \leq .01$ .

**Memory for strangers' faces.** No significant effects were obtained regarding witnesses' rating of how good their memory is for faces of strangers that they have seen only once,  $ps \geq .23$ ,  $\eta^2s \leq .02$ .

**Clarity of image in memory.** A significant main effect of veracity condition was found when analyzing witnesses' ratings of the clarity of the image in their memory of the man they viewed in the video,  $F(2, 124) = 7.33, p = .001, \eta^2 = .11$ . Witnesses in the Judge Veracity/Motivation condition rated the image as clearer than control witnesses. The mean for the Judge Veracity witnesses fell between the other two and did not differ from either. There was also a significant main effect of lineup accuracy,  $F(1, 124) = 8.60, p = .004, \eta^2 = .07$ , such that witnesses who correctly ( $M = 6.74, SD = 1.74$ ) identified the man reported greater clarity compared to those who made an incorrect ( $M = 6.08, SD = 1.75$ ) identification. An interaction between condition and lineup accuracy was not found,  $p = .96, \eta^2 = .001$ .

### **Veracity Judgments**

A chi-square analysis test of independence was used to compare the proportion of witnesses who judged the man as deceptive across the experimental conditions. The test revealed a difference across the three conditions,  $\chi^2(2, N = 125) = 6.14, p < .05$ , Cramer's  $V = .22$  (see Table 3). In order to determine whether motivation affected the truth bias, an additional chi-square analysis was run using only the two experimental conditions. In contrast to the tentative prediction, motivation did affect the truth bias,  $\chi^2(1, N = 83) = 4.03, p < .05$ , Cramer's  $V = .22$ . Among witnesses who expected to judge veracity, those who were highly motivated were more likely to decide the man was lying.

A one-way ANOVA revealed a significant effect for witnesses' certainty regarding their veracity judgment,  $F(2, 122) = 12.17, p < .001, \eta^2 = .17$ . Witnesses who judged veracity while

motivated ( $M = 7.31$ ,  $SD = 1.79$ ) reported significantly more certainty in their judgment (either truthful or deceptive) than those in both the control ( $M = 5.55$ ,  $SD = 1.64$ ) and Judge Veracity ( $M = 6.07$ ,  $SD = 1.60$ ) conditions. The control and Judge Veracity conditions did not differ significantly from one another.

### Discussion

Replicating Pickel et al.'s (in press) results, I found that performing a secondary task (judging veracity) is so cognitively demanding that witnesses ability to remember information related to a suspect, such as his or her message and overall appearance, as accurately as they otherwise would was impaired. The current study also extended Pickel et al.'s by showing that witnesses' lineup performance is likewise impaired as a function of judging veracity.

When witnesses were asked to judge the veracity of a suspect, they had fewer resources available for encoding details about the target individual. Wickens' (2008) model supports this finding, proposing that people have a limited amount of cognitive resources available at any given moment in order to complete a task. Selected tasks can interfere with each other depending on the difficulty and the type of resource required for the task (i.e., visual or auditory). At times, individuals may be able to perform two tasks concurrently, but that can occur only when the difficulty of both tasks is low or resources are drawn from separate perceptual modalities (i.e., visual or auditory). When individuals try to perform two difficult tasks concurrently, like our witnesses did, performance will suffer on the task that was not prioritized. In the current study, encoding details regarding the suspect's message and appearance was not the prioritized task for witnesses in the experimental conditions because they were instructed to adopt the role of a vice principal screening visitors to a school. Thus, deciding whether the

suspect was being truthful or lying about the reason he wanted to enter the school became more important.

Overall, witnesses' memory reports were impaired when they judged the veracity of the suspect. Pickel et al. found a similar effect, which was amplified when witnesses were induced to be suspicious about the suspect's truthfulness. The current study extends these findings by examining a new independent variable, motivation to judge veracity. When witnesses were asked to judge the veracity of the suspect and to perform that task as accurately as possible, motivation, like suspicion, intensified the memory impairment effect. Motivation caused witnesses to expend more cognitive effort in detecting deception (Forrest & Feldman, 2000; Reinhard & Sporer, 2008), which even further decreased the resources available to encode details about the suspect's message and appearance.

In addition to examining witnesses' memory, the current experiment also studied their testimony-relevant judgments. Witnesses asked to judge the veracity of the suspect reported being more certain in the accuracy of their description of the suspect's appearance and message and in the accuracy of their lineup performance when compared to those who were asked simply to watch the video. Those who judged the veracity of the man also inflated their judgments about how good of a view they had of the suspect and how much attention they paid to his face.

Motivating witnesses enhanced some of these effects. Compared to those in the Judge Veracity condition, motivated witnesses reported even more certainty in the accuracy of their description of the suspect's appearance and in their lineup performance. Giving witnesses a motivating incentive also made them report that they had paid closer attention to the suspect.

There were two testimony-relevant judgments that were significantly influenced by judging veracity, but only when witnesses were also highly motivated. Compared to the control

group, motivated witnesses who judged the veracity of the suspect reported a greater willingness to testify in court that the information they provided was accurate, and they reported having a clearer image of the suspect in their memory. In sum, judging veracity, especially under high motivation, tended to inflate witnesses' testimony-relevant judgments, even while impairing their memory of the suspect.

These findings were expected; based on previous research I anticipated that judging veracity would induce witnesses to scrutinize the suspect for deception cues (Pickel et al., in press), with motivation leading them to do this to an even greater extent (Reinhard & Sporer, 2008). I predicted that increased scrutiny would then give witnesses the false sense that they had paid close attention to forensically-relevant details, thus inflating their testimony-relevant judgments.

Like Bradfield et al. (2002), I discovered that witnesses who correctly rather than incorrectly identified the man in the photo lineup reported more certainty in the accuracy of their identification and reported taking less time when identifying the suspect. They also said they paid closer attention to him, had a better view, and had a clearer image of his face in their memory. These results are consistent with previous findings by Bradfield et al., who also reported that accurate witnesses gave higher certainty ratings on judgments directly related to the identification task (e.g., certainty about lineup accuracy). These results make sense because witnesses who correctly identify suspects probably have some ability to evaluate their lineup performance, even if it is not always perfect. However, Bradfield et al. were surprised that they also found a significant effect of accuracy on retrospective judgments that were less connected to the lineup task (e.g., "How much attention were you paying to the man's face?") Bradfield et al. suggested that these findings could have occurred because witnesses are not able to recall details

about the suspect but probably compare the image of the man in their memory to the photo of him they identified in the lineup. If these images match, as they would for accurate witnesses, witnesses will then make inferences about their certainty ratings on requested retrospective testimony-relevant judgments. For example, witnesses may say, “I must have had a good view of the suspect because my memory of him closely matches the man I identified.” This could lead witnesses to report increased confidence and higher ratings on judgments about the witnessing experience.

In addition to giving testimony-relevant judgments after the identification task, witnesses were also asked to make a veracity judgment (to decide whether the man was being truthful or deceptive). My tentative prediction that motivation would not affect the truth bias was not supported. Based on Porter et al.’s (2007) finding that motivating participants did not affect the response bias, I anticipated that the motivated participants would not be more likely than those in the Judge Veracity condition to decide the target was deceptive (the control condition was not included in the analysis because there is no clear prediction for witnesses who are unaware that they would later judge the veracity of the suspect). In contrast to my hypothesis, a significant difference was found between the two experimental conditions, with 61% of those in the Judge Veracity condition deciding that the man was deceptive compared to 81% of witnesses in the Judge Veracity/ Motivation condition. Because there was only one previous study conducted regarding the impact of motivation on the truth bias, my prediction was only based on minimal evidence. Motivation may have led witnesses to scrutinize the suspect more closely, and this greater attention may have made them more likely to discover cues that they associated with deception.

### **Limitations and Future Research**

Future research could examine whether the manipulation of motivation hinders witnesses' ability to perform cognitive tasks and judgments in other contexts. In the present study, a monetary motivation was used; further examination of other forms of incentives should be explored (e.g., financial loss, grades, and safety). For example, suppose one day a woman is at a park having a picnic with her two children. A man passing by approaches her and asks if he can borrow her cell phone so that he can call his father who is supposed to meet him for lunch. The man states that he left his phone in his apartment and is unable to locate his father. The woman is now faced with the decision to see if the man is lying or telling the truth regarding the real purpose of borrowing her phone (e.g., to make a call or to steal it). The mother's financial investment in her smart-phone and her children's safety is now a motivating factor in judging the veracity of the man who is requesting the favor. If she lets the man borrow her phone and he is lying about his purpose and is actually going to steal it, the woman would then experience a financial loss by having to purchase a new phone and would jeopardize her family's safety by allowing a criminal to get close to her children while she is unable to call for help. If the man did steal the woman's phone, it would be important for her later to recall details about his appearance and message in order to help the police catch him. I would predict that the re-examination of different forms of motivation related to more personal loss, such as financial loss, could find a similar effect on memory impairment, like the current study did with a monetary incentive.

I measured participants' memory and performance on the lineup identification task in one experimental session that lasted approximately 30 to 40 minutes total. Even after this short amount of time, judging veracity substantially impaired witnesses' performance on this task. It would be interesting to measure witnesses' memory of the suspect's message, appearance, and

lineup performance at different increments of time, such as five hours, 24 hours, and 72 hours after the critical event to see if similar effects are found. I would predict that performance would become even worse over time. Witnesses' memory of the motivating incentive may decrease over larger increments of time, but that should not matter because the incentive exerts its effect on memory performance at the moment of encoding. Testing participants after longer intervals of time would be more applicable to what real witnesses experience in a criminal investigation. The findings obtained from this investigation could further showcase the limitations of eyewitness memory.

In the current study, participants made retrospective estimates regarding how much time they thought it took them to make their identification, but their actual time was not measured. However, previous research shows that witnesses who make an identification more quickly are more likely to be accurate (Dunning & Perretta, 2002). Thus, the current results combined with ones from previous research indicate that accurate witnesses are not only faster, but they also report being faster. It appears that the testimony-relevant judgment regarding time is a good indicator of accuracy. It does not seem to be as malleable as some of the others, as it was not affected by the veracity judgment task (or motivation). One might suppose this is because some testimony-relevant judgments (e.g., how long do you estimate it took you to make a lineup decision?) are more objective than others (e.g., how much attention did you pay to the suspect's face?). But lineup accuracy is also objective, and in the current study witnesses' certainty about their lineup performance was influenced by making a veracity judgment. Future researchers could examine why some testimony-relevant judgments were affected by the veracity judgment task (and motivation) but others were not.

### **Implications**

Police personnel, judges, and jurors could utilize the current results when considering testimony from eyewitnesses. These findings do not discredit eyewitness identification; however, they do highlight its limitations. It is crucial to understand that greater certainty does not indicate greater accuracy, which was also found by Bradfield et al. (2002) and Douglass and Steblay (2006).

These results, especially those associated with the testimony-relevant judgments, have important applications to real world cases. Re-examination of the U.S. Supreme Court decision in *Neil v. Biggers* (1972) is highly recommended. The justices recommended that police, prosecutors, and jurors assess witnesses' testimony-relevant judgments as a way to determine whether their identifications and reports are reliable. However, findings from the current study are not consistent with the initial reasoning that supported the Court's decision. A large amount of new research has been conducted since 1972, and in my opinion the information that the justices used to develop their ruling is outdated, lacks supporting evidence, or contradicts the current study's results as well as other findings (e.g., Wells & Bradfield, 1998). Continued research in this area is necessary for the possibility of moving forward to understand eyewitness memory and identification better, in hopes of implementing better training for those who work within the legal system, especially those directly working with witnesses to crimes.

The current findings also mimic how witnesses in real-life crime situations would possibly respond. During actual crime events, we naturally have high motivation to judge veracity in order to protect ourselves. Therefore, we can assume that real witnesses would act more like those in the Judge Veracity/Motivation condition than those in the Judge Veracity condition, and the former tended to be the most extreme group compared to controls in the analyses of memory performance and testimony-relevant judgments. Therefore, other motivating

situations, similar to real-life scenarios could be further explored to see if similar effects are discovered.

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Condition	Appearance Details		Message Details		<i>n</i>
	Correct	Incorrect	Correct	Incorrect	
Control	23.62 (4.36) <sub>a</sub>	3.71 (1.64) <sub>a</sub>	37.24 (10.24) <sub>a</sub>	1.19 (1.04) <sub>a</sub>	42
Judge Veracity	19.93 (2.10) <sub>b</sub>	5.20 (1.78) <sub>b</sub>	32.24 (9.14) <sub>b</sub>	1.51 (1.52) <sub>a</sub>	41
Judge Veracity/ Motivation	17.50 (2.76) <sub>c</sub>	6.57 (2.63) <sub>c</sub>	27.38 (11.25) <sub>c</sub>	2.95 (2.26) <sub>b</sub>	42

*Note.* For each condition, means are reported with standard deviations in parentheses. Means in the same column that do not share the same alphabetical subscript differ significantly,  $p < .05$ .

Table 2  
*Testimony Relevant Judgments*

Condition	Lineup	Appearance	Message	Identification	Time	Qty. View	Facial Feat.	Attention	Basis	Difficulty	Testify	Memory	Clarity
Control	Wrong	5.86 (.69)	6.29 (1.25)	4.71 (1.38)	3.71 (1.50)	6.00 (1.16)	5.43 (2.22)	5.29 (1.60)	6.71 (1.50)	6.29 (1.89)	5.86 (2.41)	5.14 (2.67)	5.00 (1.83)
	Correct	6.26 (1.72)	6.06 (1.26)	5.17 (1.60)	3.09 (2.12)	6.71 (1.76)	6.77 (2.29)	5.74 (1.69)	7.20 (2.00)	6.63 (2.33)	5.60 (2.42)	7.03 (2.12)	6.06 (1.47)
	<b>Total</b>	<b>6.19 (1.60)<sub>a</sub></b>	<b>6.10 (1.25)<sub>a</sub></b>	<b>5.10 (1.60)<sub>a</sub></b>	<b>3.19 (2.03)<sub>a</sub></b>	<b>6.60 (1.68)<sub>a</sub></b>	<b>6.55 (2.31)<sub>a</sub></b>	<b>5.67 (1.66)<sub>a</sub></b>	<b>7.12 (1.92)<sub>a</sub></b>	<b>6.57 (2.24)<sub>a</sub></b>	<b>5.64 (2.39)<sub>a</sub></b>	<b>6.71 (2.30)<sub>a</sub></b>	<b>5.88 (1.57)<sub>a</sub></b>
Judge Veracity	Wrong	6.77 (1.79)	6.54 (2.50)	5.38 (2.26)	3.69 (1.38)	7.15 (1.99)	6.31 (2.29)	5.92 (2.36)	6.62 (2.18)	5.69 (2.32)	5.15 (1.63)	6.00 (3.06)	5.92 (1.89)
	Correct	7.00 (1.76)	7.96 (2.47)	6.39 (2.83)	2.89 (2.18)	7.46 (1.53)	6.11 (2.39)	7.36 (1.47)	6.82 (1.49)	5.54 (2.24)	6.07 (1.90)	5.43 (3.24)	6.79 (1.93)
	<b>Total</b>	<b>6.93 (1.75)<sub>b</sub></b>	<b>7.51 (2.54)<sub>b</sub></b>	<b>6.07 (2.68)<sub>b</sub></b>	<b>3.15 (1.98)<sub>a</sub></b>	<b>7.37 (1.67)<sub>b</sub></b>	<b>6.17 (2.33)<sub>a</sub></b>	<b>6.90 (1.90)<sub>b</sub></b>	<b>6.76 (1.71)<sub>a</sub></b>	<b>5.59 (2.24)<sub>a</sub></b>	<b>5.78 (1.85)<sub>a</sub></b>	<b>5.61 (3.15)<sub>a</sub></b>	<b>6.51 (1.94)<sub>ab</sub></b>
Judge Veracity/ Motivation	Wrong	7.33 (1.74)	8.33 (1.33)	7.39 (2.00)	4.72 (2.30)	7.06 (1.96)	6.00 (2.09)	7.94 (1.59)	6.61 (2.12)	5.61 (2.30)	6.78 (1.73)	6.50 (2.71)	6.61 (1.46)
	Correct	8.63 (.92)	8.21 (1.14)	8.67 (1.20)	3.38 (2.08)	8.71 (1.04)	7.13 (1.73)	8.58 (1.18)	7.25 (1.65)	6.25 (2.52)	6.75 (1.87)	6.92 (2.43)	7.67 (1.44)
	<b>Total</b>	<b>8.07 (1.47)<sub>c</sub></b>	<b>8.26 (1.21)<sub>b</sub></b>	<b>8.12 (1.69)<sub>c</sub></b>	<b>3.95 (2.25)<sub>a</sub></b>	<b>8.00 (1.70)<sub>b</sub></b>	<b>6.64 (1.95)<sub>a</sub></b>	<b>8.31 (1.39)<sub>c</sub></b>	<b>6.98 (1.87)<sub>a</sub></b>	<b>5.98 (2.42)<sub>a</sub></b>	<b>6.76 (1.79)<sub>b</sub></b>	<b>6.74 (2.53)<sub>a</sub></b>	<b>7.21 (1.52)<sub>b</sub></b>

*Note:* For each testimony-relevant judgment, means are reported with standard deviations in parentheses. Ratings were made on an 11-point Likert scale with higher numbers representing greater quantities of the rated variable, except for time, for which higher numbers represent a longer duration. Means in the same column that do not share the same alphabetical subscript differ significantly,  $p < .05$ .

Condition	Judgment		Certainty
Control	Truthful	18	5.55 (1.64) <sub>a</sub>
	Deceptive	24	
Judge Veracity	Truthful	16	6.07 (1.60) <sub>a</sub>
	Deceptive	25	
Judge Veracity/ Motivation	Truthful	8	7.31 (1.79) <sub>b</sub>
	Deceptive	34	

*Note.* For the veracity judgment column, the numbers of witnesses who viewed the man as truthful and deceptive are reported. The certainty column represents the witnesses' reported level of certainty regarding their veracity judgment task; means are reported with standard deviations in parentheses. Values that do not share the same alphabetical subscript differ significantly,  $p < .05$ .

## Appendix: A

Instructions to participants

Experimenter reads this to subjects during testing sessions:

“We’re ready to begin now. We will be finished in 60 minutes or less. I’m going to play a video for you. I want you to imagine that you are the vice principal at a school called Stony Creek High School. You and the other administrators want to make sure everyone at the school stays safe. Although there has never been a violent incident, there have been a few thefts of computer equipment, including iPads, as well as some cases of vandalism. The school system can’t afford surveillance cameras, but recently the administrators created a procedure for screening visitors to the building in an effort to keep unauthorized individuals out and to protect students, teachers, and school property. Visitors must enter through the main door; none of the other doors will open from the outside. Once inside, visitors must check in with you, the vice principal and explain the purpose of their visit. They must also sign the “visitor registry,” although they don’t have to show ID. They can leave the building through any door when they’ve finished with their visit.

One morning while you are working in the front office on a school day, a man enters through the main door. As the vice principal, you are responsible for questioning him about why he’s here. The video you will watch shows the responses he gave when questioned.”

[If subjects should be told to judge veracity, these instructions will be stated.]

***“You will need to decide whether he is being truthful or lying about the reason he wants to enter the school, and you will answer questions about your decision later. Please watch the video carefully.”***

[If subjects should be told to judge veracity with Motivation, these instructions will be stated.]

***“You will need to decide whether he is being truthful or lying about the reason he wants to enter the school, and you will answer questions about your decision later. We are offering a \$50 monetary reward to the three people who perform the best at this task this semester. Previous research has shown that some people are very good at judging whether another person is lying, especially if they try hard to do their best. You may be one of these people. Please watch the video carefully.”***

## Appendix: B

## Video Script

**The target says this:**

“I’m here to see the art teacher, Ms. Tolbert. She’s expecting me. My cousin knows her and said she might assign a project where the kids will make things out of cardboard boxes. My family owns a store, and we have lots of boxes left over from the shipments we get, so we can donate them. I know the art room is that way [points], so I’ll go down there and find Ms. Tolbert and ask her what size of boxes she wants, and when. I want to write that information in my planner. It should take just a few minutes, and then I’ll leave through the door by the back parking lot.”

[The target could be shown carrying a messenger bag or backpack, so it looks like he would have a way of carrying off iPads if he was there to steal.]



Section 2

Please think about the man in the video you just watched. If some of the details asked about were not visible, please write “not visible.”

1. Think about the top the man was wearing.

A. What kind of a top was it? If he was wearing more than one top, please indicate that.

\_\_\_\_\_ shirt \_\_\_\_\_sweater \_\_\_\_\_jacket \_\_\_\_\_sweatshirt \_\_\_\_\_ other; describe:

B. What color(s) was the man’s top?

C. Was the top long-sleeved or short-sleeved?

D. How would you describe the style? (For example, T-shirt, ski jacket, football jersey, etc.)

E. Were there any other visible details, such as pockets, buttons, a zipper, rips, lettering or graphics, some type of collar, a type of fabric that you can identify, etc.?

2. Think about the pants or shorts the man was wearing.

A. Were they pants or shorts? \_\_\_\_\_pants \_\_\_\_\_shorts

B. Can you describe more specifically what kind they were? For example, if you said they were pants, were they jeans, track pants, dress pants, khakis, or some other kind?

C. What color(s) were the man's pants or shorts?

D. Were there any other visible details, such as pockets, buttons, rips, lettering, etc.

3. Was the man wearing glasses? \_\_\_\_yes \_\_\_\_no If you said yes, please describe them (color and shape of frames; were they sunglasses or regular eyeglasses?):

4. Was the man wearing a hat or any kind of headgear? \_\_\_\_yes \_\_\_\_no If you said yes, please describe it. What color was it? What kind (e.g., cowboy hat)?

5. A. What kind of footwear was the man wearing?

\_\_\_\_athletic shoes/tennis shoes \_\_\_\_boots \_\_\_\_casual shoes \_\_\_\_dress shoes \_\_\_\_sandals  
\_\_\_\_other; describe:

B. Refer to your answer above. What color was the footwear? Also can you describe more specifically what kind of footwear he wore? For example, if you said boots, were they hiking boots, cowboy boots, or some other kind? Did they lace up or slip on? Was a brand name visible?

6. Was the man wearing gloves? \_\_\_\_no \_\_\_\_yes (if yes, what color?)

7. Was the man wearing any jewelry, such as a wristwatch, earring, a necklace, a bracelet, rings, or a nose ring? If you say yes, please describe the color, type, and any other details you can recall.

8. What was the man's ethnicity?

\_\_\_\_white \_\_\_\_black \_\_\_\_Hispanic/Latino \_\_\_\_Asian \_\_\_\_Middle Eastern \_\_\_\_other; describe

9. About how tall was he? Please write down a specific height in feet and inches.

10. How would you describe his body type?

thin  medium build  overweight  muscular

11. What color was his hair?

light brown  dark brown  red  black  gray  blonde  other;  
describe:

12. How long was his hair?

shaved  short (above the ears and collar)  about collar-length  
 long (over the shoulders)

13. Exactly how old do you think he is (please write down a specific number of years)?

\_\_\_\_\_ years old

14. Did the man have any tattoos that you could see?  yes  no

If yes, please describe where they were on his body and what they looked like:

15. Did the man have any scars or birthmarks that you could see?  yes  no

If yes, please describe where they were on his body and what they looked like:

16. Did the man have any facial hair?  yes  no

If yes, please describe what it looked like:

Section 3

What did the man in the video say? Please write down what he said in as much detail as possible so you can show that you remember his statement.

**When you're done with this section, please wait quietly. The next part of the experiment will begin shortly. Thank you!**





Section 5

Please provide some general information about yourself.

A. How old are you?

B. Are you male or female?    \_\_\_male    \_\_\_female

C. What is your race? For example, are you white, black/African-American, Latino/Latina, Asian-American, biracial,...?

**You are finished with the questionnaire. Please wait quietly. Thank you**