

Lineup Instruction Verbiage's Effect on the Accuracy of Eyewitness Identifications: Michigan's Procedure

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ABSTRACT

Our study examined the effects of biased and unbiased lineup instructions verbiage on the accuracy of eyewitness identification in a suspect-absent photographic lineup. Seventy subjects were randomly assigned to either a biased instruction condition or an unbiased instruction condition where they watched a mocked crime video, solved word-search puzzles for five minutes, completed a suspect-absent photographic lineup, and then completed an online post-witness experience feedback questionnaire. The unbiased condition utilized photographic lineup instructions from the State Bar of Michigan's Eyewitness Identification Task Force recommended policy writing guide. For the biased condition, the instructions alluded to subjects that the suspect was present. Subjects in the unbiased condition answered correctly 45.7% of the time compared to 28.6% of those in the biased condition. Chi-square test for independence indicated no significant association between the lineup instructions verbiage and the accuracy of eyewitness identification rates. Binomial logistic regression found that the confidence level in the identification choice made, ease of making an identification, decision making time, ability to recognize the lineup appearance instructions, and group condition were not significant predictors of subjects correctly identifying the suspect. Our results would suggest that the verbiage of the lineup instructions does not increase accuracy of eyewitness identifications.

Does the verbiage (expression of wording directions) of lineup instructions affect the accuracy of eyewitness identifications in real-world settings? Large bodies of research are dedicated to investigating the extent of eyewitness misidentifications (Scheck, Neufield, and Dwyer 2000; Wright and McDaid 1996) and the factors that lead to these misidentifications, especially with the effect lineup instruction verbiage has on the accuracy of eyewitness identifications (Malpass and Devine 1981). This work is important because, as a recent report on DNA exonerations found, over 70% of wrongful convictions are due to eyewitness misidentifications (Innocence Project 2015).

These investigations have led to the development of recommendations regarding policies and procedures for unbiased wording in lineup instruction for real-world law enforcement practices (U.S. Department of Justice 1999), which states, such as Michigan, have adopted. Unfortunately, there does not appear to be much research that investigated the effectiveness of these new policies and procedures. However, this study sought to fill that gap by examining their effectiveness and strengthen the basis on which procedural recommendations for lineup instruction verbiage are made. Unfortunately, our study found that the lineup instruction verbiage did not increase the accuracy of eyewitness identifications.

Literature Review

Eyewitness Testimony

When eyewitnesses are called in by law enforcement officials for identification tests, they must rely on their memory of the crime to help law enforcement ascertain the suspect's identity. However, Elizabeth Loftus (Loftus and Palmer 1996, 305-309), a pioneer in eyewitness memory, has shown that eyewitness memory may not always be accurate. For example, she demonstrated that there are several factors that impact the malleability of memory like the creation of new, but false, memories through implanted misinformation (Loftus 2005; Loftus and Hoffman 1989). Other research has supported her findings by showing that personal and hindsight bias (Hawkins and Hastie 1990; Kappes and Crockett 2016) and leading interview questions (Loftus 1975; Shaw and Porter 2015) can have a similar effect on eyewitness memory. The potential to manipulate memories and create false memories is alarming, especially when law enforcement officials rely on these memories to obtain seemingly "accurate" eyewitness identifications. Furthermore, the results from these identifications, whether accurate or not, are major determinants of convictions in real-world cases (Devlin 1976; Scheck, Neufield, and Dwyer 2000).

Due to the suggestibility of memory as well as recent DNA exonerations (Innocence Project 2015), areas of eyewitness research have focused on the way in which eyewitnesses process memories of a suspect. Wells (2009) two-process model of eyewitness decision-making explains how this is done. He theorized that a witness' ephoric experience – the quick and automatic recognition of a suspect – functions as the primary process when identifying a suspect. When an eyewitness' memory of the suspect is weak, however, they do not rely on this primary process; they must then rely on a secondary process. This secondary process is much slower, depending on a more selective and deliberative memory strategy in order to scrutinize each individual lineup member. For example, Wells (1984) found that relative judgment—a strategy used to compare lineup members with one another—is

often implemented during this secondary process. Steblay (2013) noted additional strategies eyewitnesses use: thinking harder, thinking longer, and using elimination to narrow the lineup members. It can be concluded that if the eyewitness's memory of the suspect is strong, recalling and identifying the suspect should be a faster and more automatic process (Steblay 2013, 65-86). However, if this memory is weak, the eyewitness must employ a more deliberate memory strategy to identify the suspect. This reliance on the secondary process leaves the eyewitness vulnerable to extrinsic cues, such as the wording of lineup instructions that have the potential to manipulate memories (Steblay 2013, 65-86).

Eyewitness Identification Using Lineup Instructions

Biased lineup instructions have been researched extensively in literature and how they relate to eyewitness identification rates. Malpass and Devine (1981) first defined biased instructions as occurring when the lineup administrator does not verbally inform the eyewitness that the suspect may or may not be present in the lineup. Rather, biased instructions suggest the presence of the suspect (whether s/he are present or not) by informing the eyewitness to pick the "correct suspect". These biased instructions have been found to increase eyewitness errors by 25% in suspect-absent lineups (Steblay 1997). Even if the eyewitness has a strong memory of the suspect, biased lineup instructions administered by law enforcement can still be highly suggestive (Wixted, Mickes, and Fisher 2018). For example, regardless of how confident eyewitnesses may feel in their own memory, they may feel pressured to pick the "correct suspect" due to believing that they should have no reason to doubt law enforcement's knowledge of the suspect's presence (Leippe, Eisenstadt, and Rauch 2009).

Thus, the implementation of unbiased lineup instructions is imperative. Unbiased lineup instructions are exemplified by using a "may or may not" admonition. This "may or may not" admonition has consistently demonstrated a greater likelihood of not identifying innocent suspects (Steblay 1997; Wells and Lindsay 1980; Wells and Olson 2002). A study by Quinlivan and colleagues (2012) revealed that eyewitnesses are better able to make an identification without the additional pressure of suggestive verbiage of biased instructions. Most notably, these unbiased instructions have ultimately been shown to decrease wrongful identifications by 42% (Malpass and Devine 1981). Because of this, researchers recommended that the "may or may not" admonition be explicitly included in the eyewitness instruction procedures for photograph lineups (U.S. Department of Justice 1999, 32; Wells and Bradford 1998). In keeping with this recommendation, the State Bar of Michigan Eyewitness Identification Task Force produced a policy-writing guide to provide police agencies with written policies and

procedures regarding eyewitness identifications in 2012 (Eyewitness Identification Task Force 2015). Furthermore, the Prosecuting Attorneys Association of Michigan in 2015 also published best practices recommendation that advised all law enforcement agencies adopt clear written policies on eyewitness identification and provide training to their officers to minimize contamination (Prosecuting Attorneys Association of Michigan 2019, 7-8).

Present Study

The present study investigated the effects of biased and unbiased lineup instruction wording on the accuracy of lineup identifications, a phenomenon researched by Quinlivan et al. (2012). Simultaneously, this study tested the effectiveness of Michigan's unbiased lineup instruction verbiage for photographic lineups by mirroring Michigan's procedure for in-person photograph lineups. Given the literature review, we posited that biased instruction verbiage for photographic lineups would result in more misidentifications than Michigan's unbiased instruction verbiage for photographic lineups.

Method

Subjects

For this study, 71 students who were attending a midwestern Christian university were recruited from their Behavioral Science Research Participation Pool or by word of mouth. However, one subject was not utilized due to language comprehension issues resulting in a final sample size of 70. The subjects from the research participation pool were all volunteers who chose to participate in our study by selecting a timeslot through the pool's website. These subjects were given one research credit towards a class requirement. Subjects recruited by word of mouth did not receive any form of remuneration. Of the 70 subjects, 31.4% were male, 68.6% were female, 42.9% were freshmen, 24.3% were sophomores, 15.7% were juniors, and 12.9% were seniors, while 72.9% were 20 years or younger. Approximately 30% were Asian, 28.6% were White, 14.3% were African American, 10% were Latino (Hispanic), and 17.1% were Other. There were 35 subjects in each condition.

Materials

Video. Subjects watched a 42 second mock crime video that caught a man on top of a roof making a bomb that was utilized in the Wells, Olson, and Charman (2003) study. The video scene was shot from the perspective of the witness which captured a view of the suspect coming through the rooftop

door, past the witness, and down a set of stairs after realizing he was being watched. The Wells, Olson, and Charman (2003, 45) study identified the suspect as a “21-year-old man with short, dark hair, medium build and no facial hair.”

Photographic Lineup. The six-person photo array used in our study was suspect-absent and was also taken from Wells, Olson, and Charman (2003). The persons in the photo lineup resembled the general description of the suspect but none were close enough to bear a resemblance to the suspect.

Word-Search Puzzles. Word-search puzzles (<http://word-search-puzzles.appspot.com/#>) were added to simulate the time delay between when someone could witness a crime and when they would have to identify a suspect from a photograph lineup. The word-search puzzles were not included in the Quinlivan et al. (2012) study.

Post-Witness Experience Feedback Questionnaire. The 6-item post-witness experience questionnaire was adapted from Wells and Bradfield’s (1998) post-witness experience questionnaire. The questionnaire used a seven-point Likert scale and asked questions relating to the witnessing experience, such as how much attention subjects paid to the suspect’s face (1 = none; 7 = total attention), how confident subjects were in their answer (1 = not at all confident; 7 = very confident), how good subjects’ view of the suspect was (1 = very poor; 7 = very good), how well subjects could make out the suspect’s face (1 = not at all; 7 = very well), how easy or difficult it was to make an identification (1 = extremely easy; 7 = extremely difficult), and how long they took to make an identification decision (1 = almost no time; 7 = a long time). At the end of the survey, an additional question was added that asked whether subjects remembered anything unique about their lineup instructions, which serves as a manipulation check for subjects’ awareness of the lineup instruction verbiage. The Cronbach’s alpha for this study was .67.

Group Conditions

There were two conditions to which subjects were randomly assigned for this study: biased lineup instructions (experimental group) and unbiased lineup instructions (control group). The unbiased and biased instruction answer sheets were adapted from Michigan’s Eyewitness Identification form for Photograph Lineups, based on the State of Bar of Michigan policy guide for law enforcement agencies conducting eyewitness identifications (Eyewitness Identification Task Force 2015). While Michigan’s instructions simply tell eyewitnesses to not pick any photograph if they feel the suspect is

not present, an explicit “reject the lineup” answer choice was added on the answer sheets for this study for coding purposes.

Biased Lineup Instructions (Experimental Groups). Subjects randomly assigned to the biased lineup condition were read a set of instructions from a photo lineup eyewitness instruction form by the researcher (see Appendix A) which asked them to “select the correct suspect” from the photographic lineup.

Unbiased Lineup Instructions (Control Groups). Subjects randomly assigned to the unbiased lineup condition were read a set of instructions from a photo lineup eyewitness instruction form by the researcher (see Appendix B) which advised them that the suspect involved in the crime “may or may not” be present in a photographic lineup they were about to be shown.

Procedure

After receiving Institutional Review Board approval (IRB protocol #18-128), each subject who volunteered to participate in our study met the researcher in a research cognitive lab within the Behavioral Science Department’s Research Center where they were randomly assigned to one of the two conditions – biased lineup instructions (experimental group) or unbiased lineup instructions (control group). After signing the consent form, subjects were told that the purpose of the experiment was to test the strength of their memory. Subjects were then told they would watch a video of a man on top of a roof who was caught attempting to make a bomb and tried to escape. After watching the video, subjects completed word-search puzzles for five minutes. Depending on which condition the subjects were in, they then received a sheet with instructions and answer choices for them to identify a suspect. The sheet was read aloud by the researcher as the subjects read along. Both groups received the same answer sheet with one exception: the experimental group received the biased instructional phrase to “select the correct suspect” and the control group received the unbiased instructional phrase that the suspect “may or may not be present.”

After marking that they understood the identification task, the subjects were presented with six photos of potential suspects, one-by-one, but never at the same time. They had up to a minute to look at each photo and could request to look at a photograph again after the sequence concluded. Subjects responded by selecting a specific photograph or by choosing “reject the lineup” on their respective answer sheet. Unbeknownst to the subjects, the photograph lineup was suspect-absent (i.e. the suspect was not present in any of the photographs). Therefore, the “reject the lineup” answer choice was the correct answer.

TABLE 1. "Means, Standard Deviations and Correlations between Post-Witness Experience Questionnaire Items (N = 70)"

Measure	M	SD	1	2	3	4	5	6
1. Confidence	4.67	1.16	-					
2. View	4.74	1.33	.29*	-				
3. Face	4.13	1.08	.32**	.50***	-			
4. Attention	4.74	1.32	.24*	.31**	.37**	-		
5. Ease	3.39	1.21	.26*	.20	.25*	.27*	-	
6. Length	4.40	1.18	.20	.23	.02	.08	.30*	-

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

After selecting an answer, subjects indicated at the bottom of the sheet that they would not share their results or discuss the experiment with anyone. The researcher then directed subjects to complete a demographic form and the post-witness experience feedback questionnaire through an online survey link. After completing the questionnaire, the researcher thanked and debriefed the subjects about the true nature and purpose of the study. Subjects were also given the opportunity to receive additional information on the research topic (Stebly 2013, 65-86).

Results

Table 1 shows the post-experience feedback correlations between how confident subjects were in their responses with the five other measures (see Table 2 for the questionnaire's descriptive statistics for each condition). Although four of the five measures had small significant positive correlations with a subject's confidence level in their response to the photographic lineup (i.e., view of the suspect, $r = .29$, $p = .014$; how could make out suspect's face, $r = .32$, $p = .006$; attention paid to the suspect's face, $r = .24$, $p = .048$; and ease of making an identification, $r = .26$, $p = .032$), the results indicate the relational importance of confidence and factors of perceived accuracy of eyewitness identification testimony. Furthermore, a strong significant positive correlation was observed between how clear the view was of the suspect's face and how well the suspect's face could be made out ($r = .50$, $p < .001$). In other words, the more one is able to clearly see a suspect's face during the commission of a criminal act, the more likely the suspect's face can be recognized.

TABLE 2. "Group Conditions, Groups Size, Mean, Median, Standard Deviation, Standard Error for the Post-Witness Experience Feedback Questionnaire"

	Condition	N	Mean	Median	SD	SE
Confidence	Biased	35	4.91	5.00	1.067	0.180
	Unbiased	35	4.43	5.00	1.22	0.206
View	Biased	35	4.83	5.00	1.124	0.190
	Unbiased	35	4.66	5.00	1.51	0.256
Face	Biased	35	4.11	4.00	0.963	0.163
	Unbiased	35	4.14	4.00	1.19	0.201
Attention	Biased	35	4.80	5.00	1.183	0.200
	Unbiased	35	4.69	5.00	1.45	0.245
Ease	Biased	35	3.43	4.00	1.170	0.198
	Unbiased	35	3.34	3.00	1.26	0.213
Length	Biased	35	4.49	5.00	1.197	0.202
	Unbiased	35	4.31	4.00	1.18	0.200

Note. Mean levels for questions in the post-questionnaire survey were relatively the same in both groups.

In regards to making a correct identification, those in the unbiased condition answered correctly 45.7% of the time and those in the biased condition answered correctly 28.6% of the time (Figure 1). While the rate for misidentifications is higher for those in the biased condition, a chi-square test for independence indicated no significant association between lineup instruction condition and identification rates, $\chi^2(1, n = 70) = 2.20, p = .138$. The effect size for this finding, Cramer's V , was weak, .18 (Cohen, 1988).

A binomial logistic regression was performed to assess the impact of several factors on the likelihood that subjects would correctly identify the suspect (Table 3). The model contained seven predictor variables (subject's confidence level in their identification, subject's ability to make out the suspect's face, subject's attention to the suspect's face, subject's ease of making an identification, subject's decision making time, subject's view of the suspect, subject's ability to recognize their respective lineup instructions, and subject's group condition). The full model was not statistically significant, $\chi^2(7, n = 70) = 7.02, p = .427, \Phi = .18$, indicating that the model was not able to distinguish between subjects who did correctly

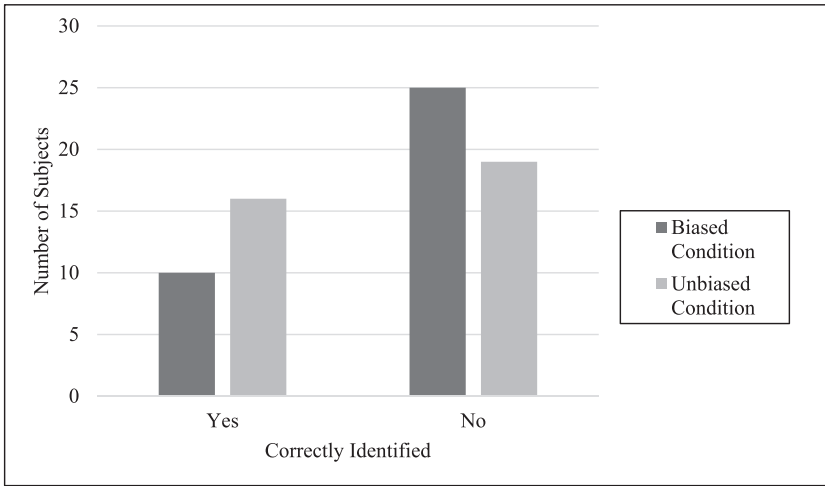


FIGURE 1. “Number of Correct Identifications by Subjects in the Biased and Unbiased Conditions”

identify suspect-absent and those who did not. However, the subject’s view of the suspect in the video was statistically significant ($\beta = .51, p < .05$). Although the model was insignificant, the odds ratio for the unbiased condition revealed that subjects receiving the unbiased instructions were 2.1 times more likely to correctly identify the was suspect absent from the photographic lineup than were subjects who received the biased instructions. Unfortunately, our results also showed that subjects who received the unbiased instructions (54.3%) had a higher rate of not correctly identifying that the suspect was absent from the photographic lineup compared to subjects (45.7%) who were correctly able to do so.

Discussion

Our study examined the effects of biased and unbiased lineup instruction verbiage (the expression of words which provide directions) on the accuracy of eyewitness identification in a suspect-absent photographic lineup. Seventy subjects were randomly assigned to either a biased (experimental) condition or an unbiased (control) condition where they watched a mocked crime video, solved word-search puzzles for five minutes, completed a suspect-absent photographic lineup, and then completed an online post-witness experience feedback questionnaire. We hypothesized that biased instructions would lead to more misidentifications than unbiased instructions. However, results showed that this hypothesis was not supported.

TABLE 3. “Binominal Logistic Regression Factors Impacting Likelihood of Correctly Identify the Suspect”

Predictor	β	SE	Z	p	Odds ratio	95% Confidence Interval	
						Lower	Upper
Confidence	-0.1943	0.272	-0.713	0.476	0.823	0.483	1.40
Face	0.2530	0.319	0.794	0.427	1.288	0.689	2.41
Attention	-0.4321	0.247	-1.748	0.080	0.649	0.400	1.05
Ease	0.1246	0.246	0.507	0.612	1.133	0.700	1.83
Length	-0.2884	0.256	-1.127	0.260	0.749	0.454	1.24
View	0.5094	0.257	1.983	0.047	1.664	1.006	2.75
Correctly Noticed Instructions:							
Yes – No	0.0956	0.659	0.145	0.885	1.100	0.302	4.01
Condition:							
Unbiased – Biased	-0.9843	0.660	-1.492	0.136	0.374	0.103	1.36

Note. Estimates represent the log odds of “Correctly Identified = no” vs. “Correctly Identified = yes”

Our study was influenced by the Quinlivan et al. (2012) study which found that a pre-admonition suggestion increased false identification in an unbiased lineup condition. Previous literature has indicated that biased instructions, as well as law enforcement suggestibility can increase eyewitness identification error rates (Leippe, Eisenstadt, and Rauch 2009; Steblay 1997; Wixted, Mickes, and Fisher 2018). Furthermore, unbiased instructions were found to reduce wrongful eyewitness identifications (Malpass and Devine 1981). Unfortunately, our study was not able to replicate the phenomena found in the Quinlivan et al. (2012) study, nor was it able to strengthen the previous literature regarding the use of unbiased eyewitness instructions.

One explanation for our contrary findings may come from the manipulation check at the end of the questionnaire. Interestingly, almost every subject in the biased condition did not notice their instructions. Specifically, they did not accurately remember that they were told to choose the “correct suspect.” This is surprising considering that previous research (Steblay 2013, 65-86; Leippe, Eisenstadt, and Rauch 2009; Steblay 1997; Wells 1984) has strongly supported this implicit, suggestible nature of biased

instructions. Therefore, it may be possible the literal verbiage, or semantic meaning, of the instructions may not be as vitally important as once thought. Even in the unbiased condition, while many may have correctly noticed the instructions more often than those in the biased condition, over half of the subjects in the unbiased condition still misidentified a suspect in the suspect-absent photographic lineup. However, it is important to note that subjects were cued to the task-at-hand prior to viewing the video and may have paid less attention to the eyewitness instructions to focus more on confirming their preconceived notions about what they had to do. If this is true, the eyewitness identification process should not rely on written instructions alone to reduce misidentifications. In other words, the results of this study would seem to suggest that wording is not important. However, best practices based on prior literature strongly recommend the implementation of eyewitness identification procedural practices (i.e., utilizing blind or double-blind lineup administration, adopting a standard set of easily understood instructions and training law enforcement officers in the use of eyewitness identification) remains an effective strategy in reducing the exposure of witnesses to cues from law enforcement officers that could influence suspect identification (National Academy of Sciences 2014; Prosecuting Attorneys Association of Michigan 2019).

Perhaps a more plausible explanation comes from the literature on the role of noise in visual memory formation, as well as exposure duration and the retention interval (the amount of time that has passed from when the criminal act has occurred). First, the National Academy of Sciences (2014) report noted that noise factors (i.e., the structure of the visual environment where the crime occurred and its impact on optical and neural processing, along with distracting sounds or signs not relevant to the observer's goals) may lead to uncertainty on the part of the observer regarding whether informative visual signals about the external world are present. In our study, subjects were exposed to a 42 second mock crime video that was of poor quality. The poor quality of the video more likely may have been a form "noise" that could have affected a subject's ability to recall the necessary information to make a correct eyewitness identification. This finding was supported in our study based on the subject's view of the suspect in the video was a significant predictor on the likelihood that subjects would correctly identify the suspect. Second, the report also indicated that higher rates of correct identification by a witness is a combination of having a lengthier exposure to a crime event, having a prolonged retention interval, and having a strong and high quality memory encoding of the event. In our study, subjects were exposed to a short 42 second mock crime video that was of poor quality, followed by completing word-search puzzles for five minutes to simulate a time delay before participating in the photographic lineup. The

brief exposure to a poor viewing of the criminal act and short retention interval timeframe, more likely effected the strength of the memory encoding of the crime event, thereby contributed to the higher rates of misidentification of the suspect-absent photographic lineup among the unbiased condition subjects.

Another possible explanation for our study's dearth of significant findings is based on the attention paid to the weapon that was present during the crime. Based on the report from the National Academy of Sciences (2014), the presence of an object such as a weapon has been found to impair the visual perception and memory formation of key features of a criminal incident, including the facial features of the suspect. In our study, subjects were prompted about the type of weapon that was involved and then watched a mock crime video of a suspect making a bomb that was of poor quality, which in turn, may have led subjects to pay more attention to the bomb making behavior in order to clarify this act. This may have impaired their ability to recall the facial features of the suspect. As a result, this may have more likely led to an increase number of misidentifications.

The National Academy of Sciences (2014) report has suggested that such estimator variables as high emotional states and race and ethnicity can impair recall and identification accuracy. Our study provided an introductory prompt that alerted subjects that the study was about testing their memory and the video they were about see involved the criminal act of bomb making. This may have caused subjects to have an elevated state of anxiety, thereby impairing their ability to recall the necessary information to make an accurate identification when presented with the photographic lineup task.

In regards to ethnicity and race, the theory of own-race bias suggests that the faces of people of races different from the eyewitness are harder to discriminate by people of the same race which makes it harder to accurately identify faces of the opposite race (Malpass and Kravitz 1969). Over 30% of subjects in our study were Asian and were asked to identify a White suspect in the photographic lineup task. Although this phenomenon was not specifically analyzed, it is reasonable to assume that own-race bias may have contributed to an increase in misidentifications.

Finally, the literature has indicated that expressed confidence levels have been reported as influencing the accuracy of correct identifications; specifically, higher expressed levels of confidence in a lineup selection are associated with more specific (conservative) responses (National Academy of Sciences 2014; Steblay 1997; Wixted and Wells 2017). In our study, the mean expressed confidence levels in both conditions were virtually the same and in the middle (neither less confident nor more confident in their identification).

Limitations

One limitation of this study is the inability to detect a difference between the two conditions, thus suggesting that the study was underpowered. This finding was empirically supported through the weak effect size reported by Cramer's *V*. Future research should focus on increasing the number of participants per condition in order to better detect a difference between the two conditions. Another limitation involves utilizing five minute word-search puzzles to simulate a time delay between witnessing the mock crime video and the task of asking participants to identify a potential suspect through a photographic lineup which was not conducted in the Quinlivan et al. (2012) experiment. However, in a real-world setting, a significant amount of time may have elapsed by the time an eyewitness is asked to participate in a photographic lineup where a potential suspect may have been identified based on the law enforcement investigative process, thereby affecting the accuracy of the memory being recalled for identification purposes. Research on recall has indicated that it is an active and constructive process that is guided by a person's knowledge at the time of retrieval, and the longer the delay in an attempt to recall the memory the more likely interference from various estimator variables and factors (i.e., new learning, state of arousal at the time of the incident, interactions with law enforcement, legal counsel, family, friends, etc.) may affect recall accuracy (Lacy and Stark 2013; National Academy of Sciences 2014; Ross 1989, Wells, Olson and Charman 2003). Based on their findings regarding the provision of immediate or delayed feedback during eyewitness identification, Wells, Olson and Charman's (2003) conclusion supported the implementation of a standardized double-blind photographic lineup procedure and securing a confidence statement at the time of the identification is well-founded prior to providing any feedback that may influence eyewitness recall. Future research should implement a time-series design to compare the use of a standardized photographic lineup procedure with time intervals to evaluate the effectiveness of the procedure in reducing eyewitness misidentification.

Another limitation of this study is the poor video quality of the mock crime incident. We attempted to replicate the Quinlivan et al. (2012) study utilizing Wells et al. (2003) video and photographic lineup materials from over 15 years ago. Since the video was dated and of poor quality, it may have reduced our subjects' ability to fully engage in the experiment, thus effecting the potential reliability of the results. Another limitation is that our study was conducted under artificial laboratory conditions utilizing college students, and therefore, does not reflect the conditions and threats that are realistic to an actual criminal event that may be observed by a witness. This limits the variability of the data, as well as reduces the generalizability of our findings. A final limitation is the use of a sequential photograph

lineup, following the State Bar of Michigan's Eyewitness Identification Task Force procedure, instead of a simultaneous photograph lineup that was used in the original study (Quinlivan et al. 2012). There is debate in the literature about which photographic lineup produces fewer identification errors and should be used (Amendola and Wixted 2017; Basu and Savani 2018; Meisters, Diederhofen, and Much 2018; National Academy of Sciences 2014; Pozzulo et al. 2016; Sporer 1993; Wells, Dysart, and Steblay 2015). In fact, the Prosecuting Attorneys Association of Michigan (2019) do not recommend or require a simultaneous or sequential lineup procedure due to the unsettled nature of the research, but rather recommend that law enforcement agencies adopt identification procedures that are fair, reliable and based on best practices.

Implications

Although our study did not provide empirical support for using unbiased instruction wording for photographic eyewitness identification, it is still important for law enforcement agencies to adopt identification procedures that reduce misidentifications. The National Academy of Sciences (2014) recommends that law enforcement agencies adopt standardized eyewitness procedures that instruct witnesses that the suspect "may or may not" be in the photographic lineup. This is supported by Prosecuting Attorneys Association of Michigan (2019) which recommends the implementation of best practices that include adopting clear written policies and a standard set of procedures and instructions to minimizing inaccurate identifications and officer training on such protocols.

Conclusion

In conclusion, the current study appears to challenge current theories surrounding the suggestible nature of biased lineup instruction verbiage (Leippe, Eisenstadt, and Rauch 2009; Steblay 2013, 65-86; Wells 1984). While previous research has substantiated the use of unbiased lineup instruction verbiage (Malpass and Devine 1981) and recommendations have thus followed (U.S. Department of Justice 1999, 32; Wells et al. 1998), supported protocols still may not guarantee accurate eyewitness identifications. Future research should continue to assess photographic lineup instruction wording utilizing state procedures and national best practice protocols.

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****Biased Instructions Sheet****
Eyewitness Identification Form: Photo Lineup

Eyewitness Number: _____

Instructions:

In a moment I'm going to show you some photographs. Please select the correct suspect. You will be shown all of the photographs and will have 1 minute to view each photograph. In addition, you must also view every photograph. If you wish to move on before the 1 minute is up or view a photo again at the end of the sequence, please let the investigator know.

If you see the person who committed the crime or was present at the scene of the crime, pick that photograph. If not or if you are unsure, select "reject the lineup".

Do you understand these instructions?

___ yes ___ no

ANSWER: (mark with an "x")

___ 1

___ 2

___ 3

___ 4

___ 5

___ 6

___ Reject the Lineup

Finally, I understand that I should not talk to other people about the photos or tell them which photo I picked, if any.

Do you understand the above instructions regarding photo disclosure?

___ yes ___ no

APPENDIX A. "Biased Instruction Sheet for Photo Lineup Eyewitness Identification"

***Unbiased Instructions Sheet**
 Eyewitness Identification Form: Photo Lineup

Eyewitness Number: _____

Instructions:

In a moment I'm going to show you some photographs. A photograph of the person who is involved in the crime may or may not be among them. You will be shown all of the photographs and will have 1 minute to view each photograph. In addition, you must also view *every* photograph. If you wish to move on before the 1 minute is up or view a photo again at the end of the sequence, please let the investigator know.

If you see the person who committed the crime or was present at the scene of the crime, pick that photograph. If not, or if you are unsure select "reject the lineup".

Do you understand these instructions?

___ yes ___ no

ANSWER: (mark with an "x")

___ 1

___ 2

___ 3

___ 4

___ 5

___ 6

___ Reject the Lineup

Finally, I understand that I should not talk to other people about the photos or tell them which photo I picked, if any.
 Do you understand the above instructions regarding photo disclosure?

___ yes ___ no

APPENDIX B. "Unbiased Instruction Sheet for Photo Lineup Eyewitness Identification"