

Eyewitness Racial Attitudes and Perpetrator Identification: The Lineup Method Matters

John E. Edlund and John J. Skowronski

Northern Illinois University

Studies asking witnesses to identify perpetrators from photo lineups have usually found that witness racial prejudice is unrelated to perpetrator identification accuracy. However, these studies obtained identifications from a photoarray in which photos were presented simultaneously. Study 1 used a procedure in which photos were presented sequentially. Results showed that when perpetrators were African-American, explicitly egalitarian witnesses more often made incorrect identification decisions than racially prejudiced witnesses. There were no explicit prejudice-related differences in decision accuracy rates when perpetrators were Caucasian. Results were similar, but limited to non-African-American witnesses, when implicit prejudice was assessed. Replicating results from the traditional simultaneous identification procedure, Study 2 did not yield a relation between racial prejudice and accuracy. Potential explanations and implications are discussed.

Eyewitness identifications of perpetrators are a crucial aspect of the criminal justice system, and often are made while viewing photo spreads (Ellison & Buckhout, 1981; Wells & Loftus, 2003). Such identifications can confirm that the person in custody more than simply resembles a witness' verbal description (Fisher, Geiselman, & Raymond, 1987) and can help to provide a convincing piece of evidence in a criminal trial (Wrightman, 2000).

However, recent experience has made it clear that mistaken identifications are prevalent in the criminal justice system (Kim, 2005). One organization reports that at least 204 cases have been overturned based on DNA evidence (Innocence Project, 2007). Eyewitness identifications typically play a role in such convictions (Wells, 1993), and in over 3/4 of the overturned cases, eyewitness testimony was a major factor in the convictions (Innocence Project, 2007).

Given the knowledge that eyewitnesses are fallible, understanding the variables that contribute to eyewitness memory and perpetrator identification is crucial. One variable known to influence lineup identifications is the method used to identify suspects in photo spreads (Wrightman, 2000). Traditionally, police have administered a simultaneous lineup in which (in its most common form) the witness sees

Author info: Correspondence should be sent to: John Edlund, Department of Psychology, Northern Illinois University, Dekalb, IL 60115, jedlund@niu.edu

North American Journal of Psychology, 2008, Vol. 10, No. 1, 15-36.

© NAJP

six photos arrayed in a 2 x 3 grid. One photo is of the suspect and the other five are foils. However, recent research has offered several new recommendations for administration of line-ups (Wells, Small, Penrod, Malpass, Fulero, & Brimacombe, 1998). One of these recommendations suggests that lineup photos be presented sequentially rather than simultaneously.

In a sequential lineup (Wells, 1984), participants are presented a series of single photographs in succession. Witnesses then make a single yes/no decision for each photograph. The witness is not told the number of photographs they will potentially see, they are not allowed to change a yes/no decision once it has been made, and they are not to see a photograph more than once.

The revised sequential lineup procedure is designed to eliminate the tendency in simultaneous lineups for an eyewitness to select the person who looks *most like* the perpetrator (Wells et al., 1998). This similarity-based decision rule may produce an accurate identification when the perpetrator is in the lineup; however, when the perpetrator is not in the lineup, it will tend to produce false positive identifications. Some research suggests that the sequential lineup procedure tends to reduce the number of false identifications (Wells, 1984). Hence, the sequential presentation procedure is beginning to make its way into police practice (Perrotta, 2002).

There are a number of concerns regarding the use of sequential lineups in actual police policy. McQuinston-Surret, Malpass, and Tredoux (2006) have suggested that it might be premature to use sequential lineups in the field, noting that the evidence supporting the use of the sequential procedure is equivocal and there are numerous methodological limitations to the practice. Furthermore, recent field research (Mecklenberg, 2006) conducted in police departments in Illinois showed that use of the sequential procedure increased false positive identification rates and lowered rates of correct suspect identification.

Moreover, whether the sequential procedure is bias-free remains an open question. One concern is the extent to which eyewitness prejudice level may be related to mistaken perpetrator identification. This concern is highlighted by the fact that racial prejudice biases many judgments and behaviors. Examples include judgments of similarity (Allport, 1954), willingness to help a stranger (Gaertner, 1973), determination of guilt levels (Duncan, 1976) and willingness to parole and perceived likelihood of recidivism (Bodenhausen & Wyer, 1985).

Though prejudice has long concerned eyewitness identification researchers, only two studies (Berger, 1969; Platz & Hosch, 1988) in the Meissner and Brigham (2001) meta-analysis investigated the effect of racial attitudes on identifications. However, these studies have limited

generalizability because they employed only simultaneous photograph presentation procedures, and those presentations always included the perpetrator. It is an open question whether decision accuracy rates produced by sequential procedures will show a similar insensitivity to the prejudice level of eyewitnesses, and whether that sensitivity will depend on the presence or absence of perpetrators in the photo lineups. The present paper explores these issues.

This paper also explores whether the manner in which prejudice is measured might contribute to the relation between prejudice and accuracy in perpetrator identification. Many early measures of prejudice, such as the *Multifactor Racial Attitudes Survey* (Woodmansee, & Cook, 1967), relied on self-report. Such measures were direct and transparent, and were criticized because participant responses might be contaminated by political correctness concerns or social desirability concerns (Brigham, 1993). The *Modern Racism Scale* (McConahay, Hardee, & Batts, 1981) is a self-report scale that attempts to be less direct and transparent in its assessment of racism, asking respondents to reply to abstract questions intended to indirectly assess racial attitudes. However, this measure has also been criticized for its transparency and reactivity (Brigham, 1993).

Such criticisms have spurred the development of prejudice measures that do not rely on self-report, and that are unobtrusive, non-obvious, and implicit (Fazio, Jackson, Dunton, & Williams, 1995; Kawakami, Dion, & Dovidio, 1999; Nosek & Banaji, 2001; Payne, Cheng, Govorun, & Stewart, 2005). An example is the race-based version of the *Implicit Associations Test* (IAT; Greenwald, McGhee, & Schwartz, 1998). In this task participants make a categorical decision about names (press the “a” key on the keyboard if the name is African American and the “5” key if the name is Caucasian) and make a separate decision about words (press the “a” key if the word is pleasant and the “5” key if the word is unpleasant). These tasks are first done with the names and words on separate lists. However, the lists are then combined so that names and words appear on the same list. Responses should be easiest on such combined lists when items that provoke similarly-valenced affect (*congruent trials*) use the same response key. For example, for Caucasians the task should be easy when one key (for example, the “a” key) is used to indicate both pleasant words and Caucasian names and a second key (for example, the “5” key) is used to indicate both unpleasant words and African-American names. The task should be difficult when the same response key is used for concepts that provoke differently-valenced affect (*incongruent trials*). Thus, for Caucasians the task should be hard when one key is pressed to indicate both Caucasian names and unpleasant words and a second key is pressed to indicate African-

American names and pleasant words. Participants typically complete one set of congruent trials and a second set of incongruent trials, with an average response latency obtained for each set of trials. The extent to which latencies are slower on the incongruent trials than on the congruent trials (the difference is the *IAT effect*) is thought to reflect prejudice; the larger the difference, the larger the prejudice. Greenwald and his associates argue that this measure is desirable because it is neither transparent nor reactive. Indeed, results of recent studies suggest that the IAT measure seemingly reflects at least a portion of a participant's level of prejudice (Dambrun & Guimond, 2004; Edlund & Heider, in press; Fazio & Olson, 2003; Heider & Skowronski, 2007; Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005; McConnell & Liebold, 2001).

Despite the fact that there have been no demonstrations of how racial prejudice might affect eyewitness identifications, several mechanisms can explain how they might be related, at least under some circumstances. However, the exact nature of the relationship is unclear. Meissner and Brigham (2001) suggested that racial prejudice could be either a negative predictor or a positive predictor of identification accuracy. Their claim is supported by examination of potential mediating mechanisms. For example, prejudice might affect identification accuracy by lowering the decision criteria for judgments about suspects whose crime fits the stereotype that characterizes the suspect. This mechanism could potentially cause reduced identification accuracy for witnesses higher in racial prejudice. Alternatively, when suspect race is a stereotypic fit to the crime, witnesses who are racially prejudiced could experience enhanced fluency in visual stimulus processing, much as chess players experience fluency when patterns of chess pieces fit expected patterns (Chase & Simon, 1973). If this was the case, then one might observe a seemingly paradoxical effect; heightened perpetrator identification accuracy for those who are higher in racial prejudice.

However, discussion of mechanism may be premature in the absence of any evidence of a relation between eyewitness prejudice levels and identification accuracy. In this context, it is important to note that Meissner and Brigham's meta analyses (2001) did not find a relation between racial prejudice and identification accuracy. However, the generality of their conclusion is limited by the fact that the studies included in their meta-analyses only used simultaneous photo presentation procedures rather than the currently recommended sequential procedure. Thus, a primary goal of the two studies reported in this article was to explore whether a relation exists, and to highlight some of the conditions in which that relation emerges.

STUDY 1

Method

Participants. Participants ($N = 702^1$) were students in an Introduction to Psychology course at Northern Illinois University who received partial credit toward completion of a course requirement. Twenty-five participants were dropped from data analyses due to experimenter error, computer malfunction, or participants' failure to complete all tasks. The mean age of the final sample was 19.11 years ($SD = 2.37$), and was comprised of 376 females, 300 males and one participant who did not gender-identify. The final sample contained 424 Caucasians, 142 African-Americans, 47 Hispanics, 44 Asian-Americans, and 20 self-identified others. This sample is representative of the pool from which the participants were drawn.²



FIGURE 1 Photographs of the perpetrators used in both Studies 1 and 2.

Materials. Two seven-second video vignettes were created for this experiment. Both depicted a man walking into a room in which a woman was sitting, reading a book. The woman stood and faced the man, who then raised a gun and shot her twice. The woman fell onto a couch, and the man turned and walked out of the camera's view. The man's face was visible for about 1.5 seconds. Except for the identity of the shooter (Caucasian in one tape and African-American in the other), the vignettes were otherwise identical.

The physical appearances of the actors warrants special note. Stimulus sampling problems (Wells & Windschitl, 1999) are a concern when single targets are chosen to represent a larger class. This experiment is not immune to such concerns. However, the actors for our vignettes were chosen to be extremely similar to one another (similar

height, weight, facial hair, and hair style): the primary difference between the actors was their skin color. Figure 1 shows the photos of the actors in the vignette.

Four other short filler vignettes were shown. These were designed to mask the experiment's purpose and to impair a memory for the crucial vignette. All were motion picture clips and depicted a high-level of violence, but none featured a shooting. The race of the various actors in the vignettes was varied, and no single race was featured.

Procedure. Participants first viewed the video vignettes on a computer screen. The critical shooting video was second in the series of the five.

Participants were next asked to describe in one or two sentences what had occurred in each video clip. These responses were used to verify that the participants attended to the critical video. This task also provided a filled time delay (ranging from 3-7 minutes) between exposure to shooting clip and the identification task.

Next, following the Wells et al. (1998) procedure, participants viewed a series of photos, presented one at a time. Participants looked at each photo and attempted to determine if the person in the photo had committed the shooting. If a participant responded "yes" to a photo, the task was terminated. If a participant responded "no", a new photo was shown. Participants could view up to six photos, although no mention of the number of potential photos was made.

Six non-perpetrator photos were used in the task. These photos were of the same race and gender of the perpetrator and were chosen to closely resemble the target photo.

Prior to the task, participants were explicitly warned that the shooter might not be in the lineup. For some participants, the shooter was the third target photo in the six that were presented. For other participants, the shooter was not present in the photo array. The same non-perpetrator photo was always used in place of the perpetrator's photo in the target absent lineup.³

The next task encountered was a computerized race version of the *Implicit Associations Test* (Farnham, 1998; Rudman, Greenwald, Mellott, & Schwartz, 1999). The IAT was presented in five steps. During each of the steps participants responded to stimuli by pressing one of two keys on a computer keyboard. In the first step, a list of first names was presented (individually) on a computer screen. Participants distinguished between target concepts by pressing one key to identify a name as African-American and another key to identify a name as Caucasian. In the second step, a list of words was presented (individually) on the screen. Participants distinguished between word valence concepts, pressing one key for unpleasant words and another key for pleasant words. In the third

step, the stimuli from steps 1 and 2 were presented, one at a time, in a mixed list. Participants identified African-American names and pleasant words by pressing one key, and identified Caucasian names and unpleasant words by pressing the other key (incongruent trials). In step four, step two was repeated but with response key assignments reversed. In step five, step three was repeated, but with new key pairings; one key was pressed to identify Caucasian names and pleasant words, and the other key was pressed to identify African-American names and unpleasant words (congruent trials). The order in which participants executed steps three and five was counterbalanced across participants, as was key assignment. The primary dependent variable, termed the *IAT effect*, is obtained by computing the difference between the mean response latencies in steps three and five, with response latencies for congruent trials subtracted from latencies for incongruent trials. The extent to which latencies are slower on the incongruent trials than on the congruent trials (the difference is the *IAT effect*) is thought to reflect prejudice, the larger the difference, the larger the prejudice.

Each participant next completed an explicit measure of prejudice – the *Quick Discrimination Index* (QDI; Ponterotto, Burkard, Rieger, Grieger, D’Onofrio, Dubuisson, et al., 1995). The QDI was selected for the study because it is supposedly applicable to all participants, regardless of their race. After providing demographic information, participants were debriefed, thanked, and given credit for their participation.

Results

We created a prejudice index from responses to the QDI. This index, (which we term the QDI-M), included items from the QDI’s racial intimacy and multiculturalism subscales.⁴ Because of our focus on race, we excluded the QDI’s gender-relevant items from the index. The mean score on the QDI-M was 66.2 ($SD = 10.78$) and it had an acceptable level of internal consistency ($\alpha = .85$).

IAT scoring procedures followed the Rudman et al. (1999) recommendations. Response latencies of less than 300ms were recoded as 300ms and response latencies of 3000ms or greater were recoded as 3000ms. Further, participants who had a block-wise error rate higher than 50% were excluded from analyses. After executing these procedures, the mean IAT score was 229.3ms ($SD = 226.40$).

In this study, there was a weak negative correlation between the QDI-M and the IAT difference score, $r = -.205$, $p < .05$, suggesting that it was appropriate to perform one set of analyses that included only the explicit prejudice variable and a second set of analyses that included only the implicit prejudice variable.

Analyses Using the Explicit Variable

We logistically regressed the accuracy of each perpetrator identification decision (1 = correct; 0 = incorrect)⁵ onto four variables and their interactions; the race of the perpetrator (Caucasian or African-American), the race of the witness (Caucasian or non-Caucasian),⁶ the presence of the perpetrator in the lineup (present or absent), and the explicit prejudice level of each witness (from high to low, treated as a continuous measure with low values indicative of high prejudice). A four step hierarchical procedure was used to conduct the analyses. The first step included only the main effects; the second included main effects and two-way interactions; the third included main effects, two-way and three-way interactions, and the fourth included main effects, two-way interactions, three-way interactions, and the four-way interaction. We report results only from the highest-level effects included in each step of these analyses.

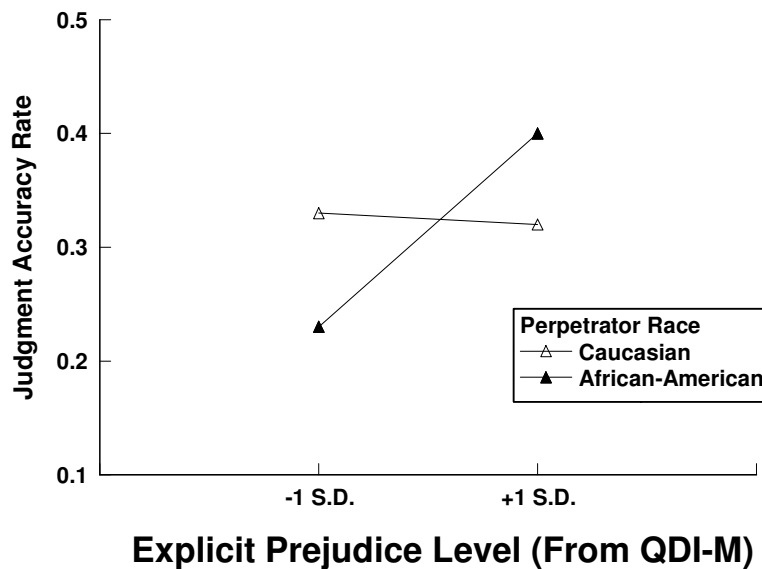


FIGURE 2 Identification Accuracy Rates for the Perpetrator Race X Explicit Prejudice Level interaction in Study 1. To construct figure, QDI-M scores were reversed so that higher QDI scores reflect higher explicit prejudice.

The interaction between the explicit prejudice level of the witness and the race of the perpetrator approached significance, $b = .033$, $S.E.b = .017$, Wald (1 df) = 3.706, $p = .054$. Figure 2 depicts this relationship.

When perpetrators were African-American, explicitly prejudiced witnesses made more accurate perpetrator identification decisions than those who were more egalitarian in their views. Witness explicit prejudice level was unrelated to identification decisions made about Caucasian perpetrators.⁷

The analyses also yielded an interaction involving the variables of perpetrator race and perpetrator presence, $b = -1.419$, $S.E.b = .356$, Wald (1 df) = 15.856, $p < .01$. When perpetrators were African-American, decision correctness rates were unrelated to the presence of the perpetrator in the lineups (present $M = .30$, absent $M = .33$). When perpetrators were Caucasian, participants were less often accurate when the perpetrator was in the lineup ($M = .16$) than when he wasn't ($M = .48$).

An interaction involving the variables of perpetrator presence and witness race also emerged from the analyses, $b = 1.078$, $S.E.b = .507$, Wald (1 df) = 4.510, $p < .05$. African-American witnesses were more often correct when perpetrators were absent than when perpetrators were present (present $M = .16$, absent $M = .44$). This difference was smaller when witnesses were not African-American (present $M = .26$, absent $M = .40$).

The logistic regression analyses also yielded main effects for witness explicit prejudice level, $b = -.014$, $S.E.b = .008$, Wald (1 df) = 2.824, $p = .093$, and perpetrator presence, $b = -.827$, $S.E.b = .171$, Wald (1 df) = 23.352, $p < .01$. The former effect shows that highly prejudiced witnesses were more often accurate than less prejudiced witnesses; the latter effect shows that correct decisions were more often made when the perpetrator was absent ($M = .41$) than when he was present in the lineup ($M = .23$). However, interpretations of both of these effects are obviously qualified by the significant interactions described above.

Analyses Using the Implicit Variable

A second set of logistic regression analyses explored relations between witness implicit prejudice and the accuracy of perpetrator identifications. Except for replacing the explicit witness prejudice variable with the implicit witness prejudice variable, the analyses were otherwise performed in an identical manner to those using the explicit witness prejudice measure. Twenty-one participants were excluded from IAT analyses due to excessively high IAT error rates.

The analyses yielded a significant interaction between perpetrator race and witness prejudice, $b = -.002$, $S.E.b = .001$, Wald (1 df) = 4.976, $p < .05$. The form of this interaction converged with the interaction observed for the explicit prejudice variable: When perpetrators were African-American, implicitly prejudiced witnesses made more accurate

perpetrator identification decisions than those who were not implicitly prejudiced, but when perpetrators were Caucasian, witness implicit prejudice level was unrelated to identification decisions. However, the results of the analyses also suggested that this effect was limited to non-African-American witnesses. This was suggested by a decomposition of the significant three-way interaction between implicit witness prejudice level, perpetrator race, and witness race, $b = -.006$, $S.E.b = .002$, $Wald (1 df) = 5.568$, $p < .05$. This decomposition showed that for the non-African-American group, the two-way relationship between perpetrator race and implicit witness prejudice was significant $b = .005$, $S.E.b = .002$, $Wald (1 df) = 4.531$, $p < .05$. This interaction is depicted in Figure 3. Decomposition analyses showed that this interaction was not statistically reliable for African-American witnesses.

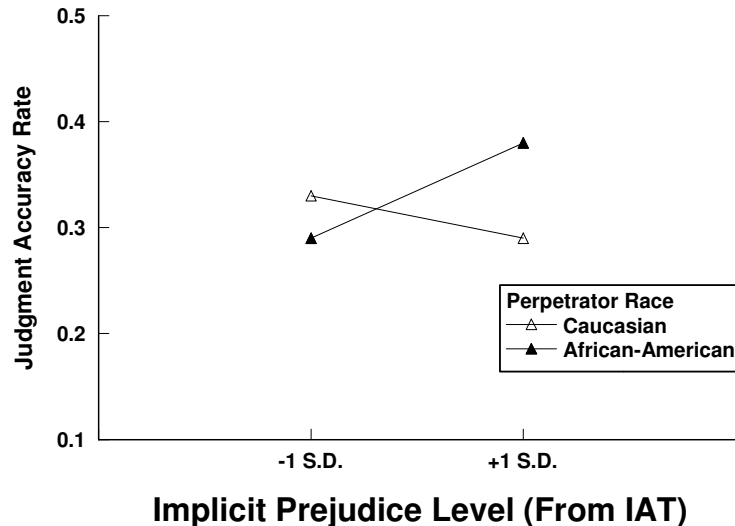


FIGURE 3 Identification Accuracy Rates for the Perpetrator Race X Implicit Prejudice Level interaction in Study 1; non-African-American witnesses only. Higher implicit prejudice is reflected in higher IAT index scores.

Two other effects were output by the analyses, duplicating results reported in the analyses that included the explicit witness prejudice measure. These was a significant interaction between perpetrator race and perpetrator presence, $b = -1.508$, $S.E.b = .359$, $Wald (1 df) = 17.664$, $p < .01$, and a significant main effect of perpetrator presence, $b = -.864$,

$S.E.b = .169$, Wald (1 df) = 24.746, $p < .01$. These results were described in detail in the *Analyses Using the Explicit Prejudice Variable* section of this article, so we do not duplicate those descriptions here.

Discussion

Though a number of studies (Sommers & Ellsworth, 2001) suggest that prejudice affects the criminal justice system, such effects have not often been observed in the eyewitness identification domain. Hence, it is noteworthy that in Study 1 we detected a relation between prejudice and the accuracy of identification decisions made about African-American perpetrators. Surprisingly, this was not a bias effect; it was an *enhanced accuracy* effect. Those who were high in explicit prejudice (measured via the QDI-M) were more accurate in their identification decisions about African-American perpetrators than those who were low in prejudice. Similarly, non-African-American witnesses who were high in implicit prejudice were more accurate in their identification decisions about African-American perpetrators than those who were low in prejudice. Importantly, these results do not reflect a guessing bias; if prejudiced eyewitnesses were simply more likely to provide a guilty decision when presented with photos of African-American suspects, they should have shown degraded accuracy when the perpetrator was not in the photo set. Instead, highly prejudiced people were *more likely* to correctly identify the perpetrator when he was in the lineup, but were also *less likely* to falsely identify a foil when the perpetrator was not in the lineup.

There are several potential reasons why these effects could have occurred in our study, whereas they have not been found in other studies. One explanation is that this finding is a Type I error. However, given that the same pattern of accuracy emerged in the two separate waves of data collection that were conducted for this study (see footnote 1), this explanation seems unlikely.

Another potential explanation is that the prejudice measures used in this experiment, which are not often used in other eyewitness identification studies, caused our unique findings. Again, this explanation seems unlikely. A number of studies have shown the QDI and IAT to be valid measures of prejudice, in that they are correlated with other prejudice measures (Greenwald et al., 1998; Greenwald et al., 2003; Ponterotto et al., 1995; Ponterotto, Potere, & Johansen, 2002). One might also argue that the manner in which we used the subscales of the QDI (e.g., the QDI-M) might have contributed to our effects. However, given that we simply excluded any items that did not pertain to race, this explanation seems unlikely. Moreover, the interaction between prejudice and perpetrator race approached significance ($p < .1$) in a subsidiary

analysis in which a participant's prejudice level was derived from all their responses to the QDI.

One other possible explanation lies in the low rate of decision accuracy that emerged in our studies. This low accuracy rate may reflect the difficulty of the identification task. This difficulty might result either from the brief time that perceivers could view the perpetrator, or to the fact that the crime vignette was not highlighted, buried in a series of other violent vignettes. The brief exposure idea would be consistent with a perceptual fluency view of the enhanced accuracy effect observed for prejudiced participants. That is, one might expect that fluency would matter only when viewing conditions were not ideal, when the exposure time was brief.

STUDY 2

However, another relatively obvious potential methodological contributor to the results obtained in Study 1 was the sequential identification method used to obtain perpetrator identifications. The studies that did not find such effects (Berger, 1969; Platz & Hosch, 1988) used a simultaneous presentation method. To explore this possibility, a second study was conducted. This study was identical to Study 1, except that it asked participants to use the traditional simultaneous lineup procedure to identify the perpetrator of the shooting.

Method

Participants. Participants ($N = 501$) were students in an Introduction to Psychology course at Northern Illinois University who received partial credit toward completion of a course requirement. Twenty-seven participants were dropped from analyses due to experimenter error, computer malfunction, or participant failure to complete all tasks. The mean age of the sample was 18.96 years ($SD = 1.75$). There were 254 females and 220 males. There were 279 Caucasians, 102 African-Americans, 35 Hispanics, 40 Asian-Americans, and 18 self-identified others. This sample is representative of the pool from which the participants were drawn.

Procedure. With one exception, the materials and procedure used in this study were identical to those employed in Study 1. The exception was that participants in Study 2 attempted to identify the perpetrator of the shooting from arrays of six simultaneously presented perpetrator photos. The photos were presented in two rows of three photos. In the perpetrator present condition, the perpetrator was always in the upper-right position of the first row. In the perpetrator absent condition the perpetrator photo was replaced with the same non-perpetrator photo used in Study 1.

Results

Responses to the QDI were used to calculate the QDI-M index in the same manner described in Study 1. The mean score on the QDI-M was 65.9 ($SD = 10.81$) and the index had an acceptable level of internal consistency ($\alpha = .85$). The same scoring procedure that was applied to the IAT data in Study 1 was also used to prepare the IAT data for Study 2. After such preparation, the mean score on the IAT was 210.9ms ($SD = 238.91$).

In this study, there was a weak negative correlation between the QDI-M and the IAT index, $r = -.186$, $p < .05$. This result suggests that it was appropriate to perform one set of analyses that included only the explicit prejudice variable and a second set of analyses that included only the implicit prejudice variable. Accordingly, we conducted two sets of analyses in which we logistically regressed identification accuracy onto four variables (perpetrator race, witness race, presence of perpetrator in the lineup, and witness prejudice level) and their interactions. Logistic regression analyses were conducted in the same hierarchical manner described in Study 1.

Analyses including the explicit prejudice measure yielded no significant effects involving that variable. Instead, the analyses yielded an effect of perpetrator presence, $b = -1.314$, $S.E.b = .220$, Wald (1 df) = 35.539, $p < .01$: The decision accuracy rate was higher in the perpetrator absent condition ($M = .42$) than in the perpetrator present condition ($M = .16$). The analyses also yielded an interaction between perpetrator race and perpetrator presence that approached significance, $b = .801$, $S.E.b = .457$, Wald (1 df) = 3.068, $p = .08$. When the perpetrator was present in the photospread, participants more often made correct decisions when the perpetrator was Caucasian (Caucasian $M = .20$, African-American $M = .12$). However, when the perpetrator was not present in the photospread, participants were slightly more accurate when the perpetrator was African-American (Caucasian $M = .41$, African-American $M = .44$).

Seventeen participants were excluded from implicit prejudice analyses due to excessively high IAT error rates. Analyses including the implicit prejudice measure also yielded no significant effects involving that measure. Instead, only the same two effects yielded by the analyses that included the explicit measure emerged: the perpetrator presence effect, $b = -1.307$, $S.E.b = .223$, Wald (1 df) = 34.217, $p < .01$, and the interaction between perpetrator race and perpetrator presence, $b = .917$, $S.E.b = .456$, Wald (1 df) = 3.891, $p < .05$.

Discussion

There were no significant results involving the prejudice variable in Study 2. This finding replicates previous results reported in the

eyewitness identification literature, which generally suggests that racial prejudice does not have an impact on eyewitness identification accuracy. Moreover, the results of Study 2 suggest that the prejudice-identification accuracy relation observed in Study 1 was not solely caused by the crime tape, the perpetrator or foil photos, the overall difficulty of the identification task, or the prejudice measures used. Instead, the results suggest that the relation between prejudice and the accuracy of perpetrator identification observed in Study 1 was a partial or entire consequence of the sequential photo identification procedure that was employed in that study.

GENERAL DISCUSSION

Witnesses viewed depictions of a shooting. One version of the shooting depicted an African-American perpetrator; the second depicted a Caucasian perpetrator. Witnesses who were high in explicit prejudice were more accurate in identifying the African-American perpetrator than witnesses who were low in explicit prejudice. This effect did not emerge for the Caucasian perpetrator. Similarly, non-African-American witnesses who were high in implicit prejudice level were more accurate in identifying the African-American perpetrator than non-African American witnesses who were low in explicit prejudice level. This effect did not emerge for Caucasian perpetrators, nor did it emerge for African-American witnesses.

Importantly, these effects emerged only when the identification task involved *sequential* photo presentation (Study 1); they did not emerge when the identification task involved *simultaneous* photo presentation (Study 2). Hence, these results replicate past research showing that explicit prejudice is unrelated to perpetrator identification accuracy when identifications are made using standard simultaneous photo presentation procedures, and extends those null results to implicit prejudice. However, these results also show that prejudice *is* related to identification accuracy, but only when identifications are made using the sequential photo presentation procedure. This is a new result that has not previously been reported in the literature.

There are several possible limitations to our results that require mention. One is the use of a single Caucasian perpetrator and a single African-American perpetrator in the stimulus tapes. One could legitimately argue that this practice reflects inadequacy of stimulus sampling (Wells & Windschitl, 1999), limiting the generalizability of the results. Despite the fact that we took great care in selecting our perpetrators so skin tone was the primary difference in their appearance, we acknowledge the validity of this argument. However, we also note that the potency of this argument is blunted somewhat by the fact that the

effects that we observed occurred with only sequential photo presentations, and not with simultaneous presentations. One might have conjectured that if our effects were caused by our stimuli, then such effects should have emerged across both photo presentation formats. Nonetheless, we agree that convergent validity is desirable, and that future research should replicate our findings using a wider array of perpetrators.

Another potential limitation to the conclusions drawn from our research is that our conclusions about the conditions under which a prejudice-accuracy relation emerges (and when it does not) are derived from two separate studies. Some might argue that it would have been better to use both lineup presentation formats in a single study and to demonstrate a statistical interaction of prejudice with lineup format on the judgment accuracy measure. While we acknowledge this idea, we note that it reflects considerable hindsight. We did not know (and had no empirical reason to believe) that a prejudice-accuracy relation would emerge in the sequential lineup condition. Only after the emergence of such an effect did it become apparent that we needed to explore whether the lineup presentation method was a potential contributor to the effect. At that point, especially given large sample sizes necessitated by the relatively low power of the design, replication of the sequential presentation condition as one component of a presentation type variable seemed impracticable. Moreover, one time-honored research strategy is to investigate alternative conditions in which an effect can be turned “on” or “off,” an approach that often occurs across studies (rather than with the same study – see Carlston & Skowronski, 1994; Carlston & Skowronski, 2005; Mae, Carlston, & Skowronski, 1999).

Nonetheless, we acknowledge that it would be somewhat cleaner to explore the effects obtained in simultaneous presentation and sequential presentation conditions in the context of a single design, if for no other reason than to eliminate the variables of time and characteristics of the subject sample as alternative explanations for the differing prejudice-accuracy results obtained in Studies 1 and 2. Replication of the outcomes that we describe in the present article from such a design would encourage development and pursuit of theoretical ideas that would help to explain the outcomes.

Another possible limitation, limited to Study 1, is a consequence of the “stop rule” employed as a part of the sequential identification procedures used in that study. In Study 1, participants stopped viewing photographs once they identified a perpetrator. As such, participants in Study 1 were not necessarily exposed to the same number of photographs as other participants in Study 1, or as in Study 2 (in which everyone saw the same number of photos). While this non-equivalence might affect

interpretation of Study 1's results, we note that such consequences are unavoidable if one designs the sequential lineup procedure so that it is in keeping with recommendations offered by the National Institute of Justice (1999) for the optimal administration of lineups. Nonetheless, the effect of seeing differing numbers of photos on identification accuracy should be assessed in future research.

Another limitation that deserves some discussion is our particular use of the IAT. We used the Farnham IAT program (Farnham, 1998), which provided only summary data from experimental blocks and an overall error rate. Improved algorithms (Greenwald, Nosek, & Banaji, 2003) have been developed for the traditional IAT that incorporate a penalty for errors and uses data from the practice blocks. Another improvement over the original IAT is to use a "personalized" version of the IAT (Olson & Fazio, 2004). This method of administering the IAT reduces contamination provided by the negative portrayal of minorities by society.

Finally, the presentation of the IAT shortly after the stimulus tapes were viewed leaves open the question of whether the implicit attitudes of witnesses were affected by the eyewitness task. This is an issue because recent studies show that there is some degree of malleability in responses to the IAT (Boysen, Vogel, & Madon, 2006; Dasgupta & Greenwald, 2001). The same question can be asked of responses to the QDI. Ideally, one would collect the identification task data at a time separate from the assessment of racial prejudice. All of these potential changes would be desirable in future replications and extensions of the research described in the present article.

The studies that we performed were largely driven by the question of whether prejudice was related to the accuracy of eyewitness perpetrator judgments. Our results suggest that it is, at least for some people, under some circumstances. However, these results lead to questions about the mechanisms that underlie the effects that we obtained. Our studies were not designed to explore these mechanisms, so the explanations that we offer are entirely post-hoc. However, these explanations can easily be testable in future research.

First, why might it be the case that people who are high in prejudice are more accurate (at least some of the time) in their identification of African-American perpetrators than those who are low in prejudice? One possibility is that racially prejudiced perceivers are highly fluent in processing crime scene information in which the perpetrator's race (e.g., African American) fits the nature of the crime (e.g., a shooting). In comparison to non-prejudiced perceivers, such fluency would allow prejudiced perceivers to store a relatively detailed perceptual memory trace of the African-American perpetrator's appearance. This hypothesis

would fit the observation that prejudiced perceivers were both more likely to *correctly identify* African-American perpetrators when photos of those perpetrators appeared in the lineups, but were also more often able to *avoid falsely accusing* African-American foils when the perpetrator was not present in the sequentially presented set. This result fits with research examining the effects of expectations on perceptual fluency. For example, chess players experience fluency, as reflected in heightened memory, when patterns of chess pieces fit expected patterns (Chase & Simon, 1973).

Why did this effect not generalize across different methods of lineup presentation? One might speculate that the enhanced perceptual trace derived from fluency may provide a weak benefit that may be detectable only when an eyewitness can fully concentrate and focus on comparing an external stimulus to the internally-stored appearance representation, conditions corresponding to those observed in a sequentially-presented photo array. When confronted with a simultaneously presented array of six African-American photos, prejudiced perceivers may become overloaded with information and may be unable to fully focus on a comparison of each photo to the stored mental representation of the perpetrator's appearance. Thus, the benefit of an enhanced perceptual representation of a perpetrator's appearance may be difficult to detect in such conditions.

At least two sets of experiments would be necessary to verify such speculations. The first would focus on the idea that explicitly prejudiced individuals might have more detailed appearance representations of African-American perpetrators than egalitarians. This idea might be tested by examining identification accuracy of prejudiced perceivers in response to brief exposures to stereotype-consistent and stereotype-inconsistent crimes. It may be that the enhanced decision accuracy of prejudiced perceivers for African-American perpetrators may disappear when confronted with a non-stereotypic crime (e.g., computer fraud).

A second set of studies would focus on how the nature of the information-processing environment during the photo array task might affect the accuracy of eyewitness identifications. The notion that a prejudiced participants' ability to focus might be related to their ability to optimally use their representation of a perpetrator's appearance during the photo task might be tested by imposing a cognitive load during the identification task. It may be that the imposition of such a load may complicate the information-processing task enough in sequential lineup conditions to eliminate the perceptual representation advantage that might be possessed by prejudiced perceivers. Hence, under such conditions the decision accuracy rates of prejudiced perceivers may be similar to those exhibited by egalitarian participants.

We conclude this article by pointing to an encouraging practical implication of the results described in this article. Our results suggest that, unlike other areas (Bodenhausen & Wyer, 1985; Duncan, 1976), high racial prejudice does *not* seem to cause bias *against* African-American perpetrators (e.g., more frequent false accusations) when identifications are made using photo spreads (at least when all targets in the photo spread are the same race, an important qualification). While this was an existing result for studies using the simultaneous lineup perpetrator identification procedure, our results extend this conclusion to the sequential identification procedure, to at least one additional measure of explicit prejudice (the QDI) and to an implicit prejudice measure (the IAT). Hence, while the American criminal justice system may, in general, be biased against African-Americans (Kim, 2005), photo spread identification techniques in which all photos depict individuals of the same race do not appear to contribute to such bias.

REFERENCES

- Allport, G.W. (1954). *The nature of prejudice*. Cambridge, MA: Addison-Wesley.
- Berger, D.G. (1969). They all look alike. Unpublished Doctoral Dissertation, Vanderbilt University.
- Bodenhausen, G.V., & Wyer, R.S. (1985). Effects of stereotypes on decision making and information processing strategies. *Journal of Personality and Social Psychology*, 48, 267-282.
- Boysen, G.A., Vogel, D.L., & Madon, S. (2006). A public versus private administration of the implicit associations test. *European Journal of Social Psychology*, 36, 845-856.
- Brigham, J.C. (1993). College students' racial attitudes. *Journal of Applied Social Psychology*, 23, 1933-1967.
- Carlston, D.E., & Skowronski, J.J. (2005). Linking versus thinking: Evidence for the different associative and attributional bases of spontaneous trait transference and spontaneous trait inference. *Journal of Personality and Social Psychology*, 89, 884-898.
- Carlston, D.E., & Skowronski, J.J. (1994). Savings in the relearning of trait information as evidence for spontaneous inference generation. *Journal of Personality and Social Psychology*, 66, 840-856.
- Chase, W.G. & Simon, H.A. (1973). Perception in chess. *Cognitive Psychology*, 4, 55-81.
- Dambrun, M., & Guimond, S. (2004). Implicit and explicit measures of prejudice and stereotyping: Do they assess the same underlying knowledge structure. *European Journal of Social Psychology*, 34, 663-676.
- Dasgupta, N. & Greenwald, A.G. (2001). On the malleability of automatic attitudes: Combating automatic prejudice with images of admired and disliked individuals. *Journal of Personality and Social Psychology*, 81, 800-814.

- Duncan, B. L. (1976). Different social perception and attribution of intergroup violence: Testing the lower limits of stereotyping blacks. *Journal of Personality and Social Psychology*, 34, 590-598.
- Edlund, J.E. & Heider, J.D. (In press). The relationship between modern and implicit prejudice. In: M.A. Morriison & T.G. Morriison (Eds.), *The Psychology of Modern Prejudice*. New York: Nova Science Publishers.
- Ellison, K.W., & Buckhout, R. (1981). *Psychology and criminal justice*. New York: Harper & Row.
- Farnham, S. D. (1998). The Farnham Implicit Association Test (FIAT; Version 2.3) [Computer program]. Seattle, WA: University of Washington.
- Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual Review of Psychology*, 54, 297-327.
- Fazio, R.H., Jackson, J.R., Dunton, B.C., & Williams, C.J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology*, 69, 1013-1027.
- Fisher, R.P., Geiselman, R.E., & Raymond, D.S. (1987). Critical analysis of police interview techniques. *Journal of Police Science and Administration*, 15, 177-185.
- Gaertner, S.L. (1973). Helping behavior and racial discrimination among liberals and conservatives. *Journal of Personality and Social Psychology*, 25, 335-341.
- Greenwald, A.G., McGhee, D.E., & Schwartz, J.L.K. (1998). Measuring individual differences in implicit cognition: The implicit associations test. *Journal of Personality and Social Psychology*, 74, 1464-1480.
- Greenwald, A.G., Nosek, B.A., & Banaji, M.R. (2003). Understanding and using the implicit associations test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, 85, 197-216.
- Heider, J.D., & Skowronski, J.J. (2007). Improving the predictive validity of the Implicit Association Test. *North American Journal of Psychology*, 9, 53-76.
- Hofmann, W., Gawronski, B., Gschwender, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between the implicit association test and explicit self-report measures. *Personality and Social Psychology Bulletin*, 31, 1369-1385.
- Innocence Project (2007). The Innocence Project. Retrieved July 3, 2007, from <http://www.innocenceproject.org>.
- Kawakami, K., Dion, K.L., & Dovidio, J.F. (1999). Implicit stereotyping and prejudice and the primed Stroop task. *Swiss Journal of Psychology*, 58, 241-250.
- Kim, G. (February 7th, 2005). Police lineups' flaws spur new approach. *Chicago Tribune*.
- Mae, L., Carlston, D.E., & Skowronski, J.J. (1999). Spontaneous trait transference to familiar communicators: Is a little knowledge a dangerous thing? *Journal of Personality and Social Psychology*, 77, 233-246.
- McConahay, J.B., Hardee, B.B., & Batts, V. (1981). Has racism declined in America? It depends on who is asking and what is asked. *Journal of Conflict Resolution*, 25, 563-579.

- McConnell, A.R., & Leibold, J.M. (2001). Relations among the implicit associations test, discriminatory behavior, and explicit measures of racial attitudes. *Journal of Experimental Social Psychology*, 37, 435-442.
- McQuinston-Surrett, D., Topp, L.D., & Malpass, R.S. (2006). Use of facial composite systems in US law enforcement agencies. *Psychology, Crime, and Law*, 12, 505-517.
- Mecklenberg, S.H. (2006). *Report to the legislature of the state of Illinois: The Illinois pilot program on sequential double-blind identification procedures*. Springfield, IL.
- Meissner, C.A., & Brigham, J.C. (2001). Thirty years of investigating the own-race bias in memory for faces. *Psychology, Public Policy, and Law*, 7, 3-35.
- National Institute of Justice (1999). *Eyewitness Evidence: A Guide For Law Enforcement*. Washington, DC: US Department of Justice.
- Nosek, B. A. & Banaji, M. R. (2001). The go/no-go association task. *Social Cognition*, 16, 625-666.
- Olson, M.A., & Fazio, R.H. (2004). Reducing the influence of extrapersonal associations on the implicit associations test: Personalizing the IAT. *Journal of Personality and Social Psychology*, 86, 653-667.
- Payne, B.K., Cheng, C.M., Govorun, O., & Stewart, B.D. (2005). An inkblot for attitudes: Affect misattribution as implicit measurement. *Journal of Personality and Social Psychology*, 89, 277-293.
- Perrotta, T. (2002, April 29th). First sequential lineup is held in Staten Island. *New York Law Journal*, 1, 3.
- Platz, S.J., & Hosch, H.M. (1988). Cross racial/ethnic eyewitness identification: A field study. *Journal of Applied Social Psychology*, 18, 972 – 984.
- Ponterotto, J.G., Burkard, A., Rieger, B.P., Grieger, I., D'Onofrio, A., Dubuisson, A., et al (1995). Development and initial validation of the Quick Discrimination Index (QDI). *Educational and Psychological Measurement*, 55, 1016-1031.
- Ponterotto, J.G., Potere, J.C., & Johansen, S.A. (2002). The quick discrimination index: Normative data and user guidelines for counseling researchers. *Journal of Multicultural Counseling and Development*, 30, 192-207.
- Rudman, L.A., Greenwald, A.G., Mellott, D.S., & Schwartz, J.L.K. (1999). Measuring the automatic components of prejudice: Flexibility and generality of the implicit associations test. *Social Cognition*, 17, 437-465.
- Sommers, S.R., & Ellsworth, P.C. (2001). White juror bias: An investigation of prejudice against black defendants in the American courtroom. *Psychology, Public Policy, and Law*, 7, 201-229.
- Wells, G.L. (1984). The psychology of lineup identifications. *Journal of Applied Social Psychology*, 14, 89-103.
- Wells, G.L. (1993). What do we know about eyewitness identification? *American Psychologist*, 48, 553-571.
- Wells, G.L. & Loftus, E.F. (2003). Eyewitness memory for people and events. In Alan M. Goldstein (Ed). *Handbook of Psychology: Forensic Psychology* (pp. 149-160). Hoboken, NJ: John Wiley & Sons.
- Wells, G.L., Small, M., Penrod, S., Malpass, R.S., Fulero, S.M., & Brimacombe, C.A.E. (1998). Eyewitness identification procedures: Recommendations for lineups and photospreads. *Law and Human Behavior*, 22, 1-47.

- Wells, G.L. & Windschitl, P.D. (1999). Stimulus sampling in social psychological experimentation. *Personality and Social Psychology Bulletin*, 25, 1115-1125.
- Wrightsmann, L.S (2000). *Forensic Psychology*. Wadsworth: Connecticut.
- Woodmansee, J.J., & Cook, S.W. (1967). Dimensions of racial attitudes: Their identification and measurement. *Journal of Personality and Social Psychology*, 7, 240-250.

Authors' Note: This research was supported in part by a grant for the Society for the Psychological Study of Social Issues. We wish to thank Dan Kuehner for his helpful comments on an earlier draft, helpful comments from anonymous reviewers, and all of the research assistants who helped with the data collection process.

Footnotes

¹Initially, we ran 500 participants through the protocol. However, given our unexpected findings with respect to the prejudice variable we decided to collect another smaller sample to verify our initial results. The data patterns across both subsamples were highly similar, so we collapsed analyses across data collection sessions.

²For all of our analyses, we ran two parallel sets of analyses. One set included only African Americans and Caucasians, and the second set included all participants. As the results converged, we report the results from the most complete set of participants.

³We gratefully acknowledge the assistance of Sgt. Todd Henert of the Northern Illinois University Police Department. He provided all of the photos that were used in the studies, and was of great assistance in demonstrating how the photos are used in photo identification tasks.

⁴Items numbers from the original QDI that were included in the QDI-M were 3, 4, 5, 8, 9, 11, 12, 13, 15, 17, 18, 19, 21, 22, 23, 24, 26, 27, 28, and 29.

⁵We also explored biases in decisions by exploring whether a decision was made or not, regardless of accuracy. These analyses did not yield any novel findings.

⁶Inferences drawn from analysis results would be unchanged if only Caucasian witnesses were included in the analyses; however, results were stronger when all witnesses were included, justifying their inclusion.

⁷Because of the possibility of a ceiling effect QDI-M scores, it is debatable as to whether analyses using the QDI-M as a categorical measure might be more appropriate than analyses that use the QDI-M as a continuous measure. For example, for one set of analyses participants who scored above 67 on the QDI-M were placed into a high explicit prejudice group; other participants were placed into a low explicit prejudice group. In analyses using this categorical explicit prejudice variable, the Explicit Prejudice Level x Perpetrator Race interaction was statistically reliable, $b = .435$, $S.E.b = .507$, $Wald (1 df) = 4.979$, $p < .05$. The form of the interaction duplicates that depicted in Figure 2. Moreover, in these analyses the relationship between prejudice and identification was also significant

$b = .401$, $S.E.b = .181$, Wald (1 df) = 4.893, $p < .05$. Correct decisions were more often made by high prejudiced individuals ($M = .36$) than by low prejudiced individuals ($M = .28$). However, interpretation of this latter effect is obviously qualified by the significant interaction.

Copyright of North American Journal of Psychology is the property of North American Journal of Psychology and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.