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Eyewitness Identification

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Abstract

Eyewitness identifications play an important role in many police investigations and courtroom decisions. Identification decision accuracy is shaped not only by the quality of a witness's memory but also by social-influence variables. Some variables can be categorized as general impairments, whereas others produce biases against a specific suspect. We review some of the key variables in each category and consider postidentification indicators of identification accuracy. Finally, we highlight what we think are some of the major directions for future research. These include addressing some of the significant limitations of past research, examining variables that are not directly related to memory or social influence, and developing some radical new directions for identification tests.

Keywords

eyewitness identification, eyewitness memory, confidence

Witnesses to crimes are sometimes asked to view a police lineup to see if they can identify the culprit. Using experimentally created events, psychological researchers have long warned that eyewitness identification evidence is less reliable than people seem to believe. Corroborating the concerns of psychologists, since the advent of forensic DNA testing in the 1990s, 258 people convicted by juries in the United States have been freed based on exculpatory DNA tests, and 200 of these were cases of mistaken eyewitness identification (Innocence Project, 2010). Examination of the reasons for these mistaken identifications has provided rich avenues of investigation guided by cognitive and social perspectives. Here we focus on (a) variables that produce general impairments of identification accuracy, (b) postidentification indicators of identification accuracy, and (c) variables that result in biases against the suspect.

General Impairments of Identification Performance

Numerous variables have been shown to shape (a) whether witnesses make positive or negative lineup decisions (i.e., choices or rejections) and (b) the accuracy of those decisions. Not surprisingly, witnesses are likely to assume that the culprit is in the lineup; when explicitly warned that the lineup may or may not contain the culprit, witnesses are less likely to make a selection (Brewer & Wells, 2006). Identification accuracy is impaired under encoding conditions likely to undermine memory strength, such as divided attention, short exposure duration, and long viewing distance (e.g., Lindsay, Semmler, Weber, Brewer, & Lindsay, 2008; Palmer, Brewer, McKinnon, & Weber, 2010). Some conditions, such as identifying a culprit of a different race or one who was wearing a disguise (e.g., Meissner & Brigham, 2001), undermine encoding and/or lineup discrimination performance. Other conditions such as lengthy retention intervals are associated with diminished memory strength (Deffenbacher, Bornstein, McGorty, & Penrod, 2008).

Indicators of Identification Accuracy

Because an identification decision is often the key evidence against a suspect, characteristics of identification decisions that might discriminate accurate from inaccurate decisions have been explored. Decision confidence (Brewer & Wells, 2006), latency (Weber, Brewer, Wells, Semmler, & Keast, 2004) and phenomenological reports (Palmer et al., 2010) have all been found to discriminate for positive decisions but not for lineup rejections. Highly confident decisions, rapid decisions, and decisions accompanied by relevant recollection (i.e., recall of contextual information relevant to discriminating the culprit) are more likely to be accurate than are decisions made with low confidence, slowly, or without relevant recollection.

Although we cannot specify absolute latencies or amounts of relevant recollection associated with accurate decisions,

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eyewitness confidence can provide a valuable pointer to the accuracy of an individual identification decision. It is not uncommon for psychologists to express the view that there is no meaningful relation between confidence and accuracy for identifications, a position based on the usually modest (at best) confidence–accuracy (CA) correlations that have been reported. However, recent research has shown that the CA correlation does not provide a comprehensive picture of the CA relation. Researchers who have used a calibration approach (which involves charting the proportion of accurate responses for each confidence level) to assess the CA relation across a variety of stimuli, exposure and attention conditions, and retention intervals, have shown that, when measured immediately after an identification, confidence does provide a meaningful guide as to the likely accuracy of decisions made by adult (but not child) witnesses (Brewer & Wells, 2006; Keast, Brewer, & Wells, 2007; Sauer, Brewer, Zweck, & Weber, 2010)—a finding that is at odds with oft-stated positions in the literature. These research outcomes signal that police investigators should attend carefully to witness confidence when evaluating whether an identified suspect warrants continued investigation or whether they should perhaps target other possible suspects.

Confidence is not, however, an infallible index of accuracy. The calibration research summarized above indicates that, under many conditions, very high levels of confidence may exceed the probability of an accurate identification, with confidence levels of 90% to 100% often associated with lower accuracy rates around 75% to 90%. Further, as we discuss later, confidence breaks down as a marker of accuracy under certain conditions.

Variables Known to Produce Specific Suspect Biases

Eyewitness researchers have found it useful to distinguish between variables that impact general performance (as in the previous section) and variables that create a specific bias against the suspect (Wells & Loftus, 2003). Poor lighting conditions or cross-racial identification situations, for example, impair eyewitness identification performance, but no more so for one member of a lineup (e.g., one of the fillers) than for another (e.g., the suspect). Of course, the suspect might or might not be the perpetrator, so any factors that bias witness responses toward the suspect are of great concern. Psychologists have long called for double-blind lineups to prevent the lineup administrator from inadvertently cueing the witness toward the suspect (Wells, 1988), but only recently have experiments more carefully teased apart these cueing dynamics (Clark, Marshall, & Rosenthal, 2009; Greathouse & Kovera, 2009). A powerful suspect-bias influence can also occur after the witness makes an identification if the witness receives confirming feedback (e.g., ''Good, you identified the suspect''). Confirming postidentification feedback dramatically inflates witnesses' reports of their certainty, view, attention, and other variables (Semmler, Brewer, & Wells, 2004; Wells, Olson, & Charman, 2003). Of course, an innocent suspect can stand out in a lineup for a variety of reasons, including the presence of fillers who do not fit the description of the culprit. But there are other variables that create bias against a suspect, such as misattributed familiarity. Misattributed familiarity can occur because of repeated identification procedures such as having seen the person in a mugshot search prior to a lineup or confusing a bystander with the perpetrator.

Understanding suspect-bias variables is an important direction in eyewitness identification research. In virtually every trial involving contested eyewitness identification, the to-be-explained issue is not merely why the witness has a weak memory or whether witnesses are unreliable. Instead, the question is, ''Why did the witness choose the suspect, rather than one of the fillers, from the lineup?'' General impairment variables play an important role, but only suspect-bias variables answer that question. Research examining this latter category of variables has yielded many practical guidelines for lineup conduct (Wells, Memon, & Penrod, 2006).

Some Major Directions

We identify four main research directions that we believe can advance this field. The first is not at all exciting, as it will involve researchers going back over some old ground. There is a tendency in this field to speak with certainty about the variables that explain the variations in identification performance. Yet we are not convinced that the knowledge base is as robust as is sometimes assumed. Traditionally, eyewitness identification experiments yield one data point per subject from either a culprit-present or a culprit-absent condition. Even with what may appear to be large sample sizes for psychology experiments, statistical power is a major, and often underestimated, issue, as has been clearly demonstrated by Brewer, Weber, and Semmler (2005). Additionally, the levels sampled for the independent variables are necessarily restricted, as is the range of stimuli sampled. Meta-analyses can address some of these issues, but when studies that have employed a same–different face recognition paradigm (to provide stimulus variability and more data points) are set aside, there are very few identification test studies examining specific variables (e.g., exposure duration). These limitations mean that we do not have detailed knowledge about the influence of individual variables or the likely complex interactions between variables, a point illustrated by Lindsay et al.'s (2008) field study, using multiple stimuli, of the effects of viewing distance (and other variables) on identification performance. One impediment to the sorts of studies we are calling for might appear to be the capacity to access sufficiently large participant samples. Several recent field studies (e.g., Lindsay et al., 2008; Sauer et al., 2010) reveal some effective and relatively inexpensive solutions to this problem.

Second, there is a relative dearth of work examining the interactions between general-impairment variables and suspect-bias variables. An emerging theoretical view is that suspect-bias variables have a more powerful influence when general-impairment variables are present (Charman & Wells,

2006). In recent years, computational modeling has been applied to lineup identification behaviors, and this has been useful in fleshing out the assumptions behind some of the ''mini-theories'' that have been used to explain eyewitness identification errors (Clark, 2008). With a better data base of how general impairment variables and suspect-bias variables interact, these computational models could become more sophisticated and lead to better theories.

Third, there is an emerging type of research that is very important to eyewitness identification evidence in the real world that is not directly related to memory or to social influence yet is being conducted by psychologists. One example of such research concerns the influence of the base rate for which the actual culprit is in the lineup (e.g., does the culprit appear in 90% of lineups or 50% of lineups?). Psychologists have drawn attention to the fact that this base rate is an important factor in the chances of mistaken identification. Two other examples of important nonmemory variables relevant to mistaken identification have also been identified recently. One is the problem of estimating likelihoods of guilt based on the consistent and inconsistent behaviors of multiple witnesses to the same event. Clark and Wells (2008) used data from a wide variety of experiments to estimate how probabilities of guilt rise and fall as a function of agreement and disagreement among witnesses in their lineup identifications. More work needs to be done to take account of nonindependence among witnesses. Another example is the ''pleading effect,'' which results in vastly different chances of mistaken identifications to be expected at the lineup versus in the courtroom. Wells et al. (2006) noted that 85% of guilty suspects in the United States plead guilty. Therefore, suppose 95% of suspects who are identified from lineups are guilty and 5% are innocent. The pleading effect means that 85% of the 95% guilty will not go to trial whereas almost 100% of the 5% innocent will go to trial rather than plead guilty. Hence, the proportion of identified suspects going to trial who are innocent would be greater than 33%. These are not memory variables, but they are important to study because they have a great impact on our understanding of how to calculate the chances of mistaken identifications surfacing at various junctures in the justice system.

Fourth, with the exception of the development of sequential lineup (in which the witness views one lineup member at a time; Lindsay & Wells, 1985), the eyewitness identification research paradigm has seldom departed from the traditional simultaneous lineup (i.e., all lineup members appear together) used by police in criminal investigations. The extant lineup paradigm demands that witnesses either choose from among the members of the lineup or reject them, a decision that is influenced by an array of social and metacognitive variables independent of the witness' memory strength and the degree of match between their memory and the lineup members. Although research has identified a number of procedural variables that can reduce error in the traditional lineup, experimental psychologists should be able to develop alternative procedures that provide a more sensitive index of the likelihood that the suspect is indeed the culprit. One example of such a procedure is Sauer, Brewer, and Weber's (2008) use of patterns of witnesses' confidence judgments to indicate the lineup member who most resembles the culprit and whether that person is the offender. Classification algorithms exploiting the confidence judgments assigned to each lineup member were used to identify a confidence criterion that optimized the classification of witnesses' responses as accurate or inaccurate. This approach produced culprit-present and culprit-absent accuracy rates that exceeded the accuracy of the traditional binary identification test decision.

A likely reaction to such radical approaches is that police and the courts would never accept a form of identification evidence that doesn't actually involve the witness picking, or rejecting, the suspect. Our response is that any procedure that reduces the likelihood that culprits go free and innocent people are convicted warrants serious attention from a research perspective and from the perspective of giving away psychological science.

Recommended Reading

Brewer, N., & Weber, N. (2008). Eyewitness confidence and latency: Indices of memory processes not just markers of accuracy. *Applied Cognitive Psychology*, *22*, 827–840. A position paper arguing for a focus on eyewitness decision confidence and latency in theory development about eyewitness memory.

Brewer, N., Weber, N., & Semmler, C. (2005). (See References). A chapter that reviews the eyewitness identification literature and highlights some key methodological issues.

Brewer, N., & Wells, G.L. (2006). (See References). An article applying the confidence–accuracy calibration approach to eyewitness identification.

Sauer, J.D., Brewer, N., & Weber, N. (2008). (See References). An article examining a radical alternative to the traditional eyewitness identification task.

Wells, G.L., & Quinlivan, D.S. (2009). Suggestive eyewitness identification procedures and the Supreme Court's reliability test in light of eyewitness science: 30 years later. *Law and Human Behavior*, *33*, 1–24. An extensive review of suggestive influences on eyewitness identification and how the findings call into question the U.S. Supreme Court's 33-year-old law on how courts should evaluate eyewitness identification evidence.

Declaration of Conflicting Interests

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