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# Expert Testimony Regarding Eyewitness Identification

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**Abstract**
Increasingly, psychologists are giving expert testimony in court on the accu racy of eyewitness identification (Kassin, Tubb, Hosch, & Memon, 2001). Eyewitness experts typically are cognitive or social psychologists who have published research articles on the topic of eyewitness memory. Expert testi mony in eyewitness identification is most commonly offered by the defense in criminal cases but is occasionally countered by opposing expert testimony offered by the prosecution. The increasing use of such expert testimony owes largely to the growing recognition that mistaken eyewitness identification is the single most common precursor to the conviction of innocent people (Doyle, 2005). In addition, there is an increasingly strong case that the exist ing safeguards designed to protect defendants from erroneous conviction resulting from mistaken identification, such as motions to suppress sugges tive procedures, cross-examination, and right to counsel at live lineups, are ineffective (Van Wallendael, Devenport, Cutler, & Penrod, 2007).

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**Comments**
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CHAPTER 5

# Expert Testimony Regarding Eyewitness Identification

Brian L. Cutler and Gary L. Wells

## OVERVIEW OF EXPERT PSYCHOLOGICAL TESTIMONY ON EYEWITNESS IDENTIFICATION

Increasingly, psychologists are giving expert testimony in court on the accuracy of eyewitness identification (Kassin, Tubb, Hosch, & Memon, 2001). Eyewitness experts typically are cognitive or social psychologists who have published research articles on the topic of eyewitness memory. Expert testimony in eyewitness identification is most commonly offered by the defense in criminal cases but is occasionally countered by opposing expert testimony offered by the prosecution. The increasing use of such expert testimony owes largely to the growing recognition that mistaken eyewitness identification is the single most common precursor to the conviction of innocent people (Doyle, 2005). In addition, there is an increasingly strong case that the existing safeguards designed to protect defendants from erroneous conviction resulting from mistaken identification, such as motions to suppress suggestive procedures, cross-examination, and right to counsel at live lineups, are ineffective (Van Wallendael, Devenport, Cutler, & Penrod, 2007).

The decision to admit expert testimony is left to the discretion of the trial judge, and the likelihood of admission varies from state to state and from one federal district to another. States with favorable case law (e.g., Cal-

ifornia, Georgia, South Carolina) typically admit expert testimony when proffered. States with unfavorable case law (e.g., Florida) rarely admit expert testimony. The most commonly cited reason for not admitting expert testimony is that the testimony is merely a matter of common sense (Schmechel, O'Toole, Easterly, & Lofus, 2006).

Expert testimony is controversial in several respects. One set of controversial issues revolves around the science underlying the expert testimony. In particular, some question the reliability and external validity of the research findings. Reliability in this instance refers to whether the factors about which experts testify (e.g., stress, weapon focus, lineup procedures) demonstrate reliable effects on identification accuracy. This reliability is often determined through the application of statistical procedures within a given experiment (e.g., tests of statistical significance that rule out chance as an explanation) and through procedures that collapse findings across a large set of individual studies (e.g., meta-analyses). External validity, on the other hand, refers to the extent to which eyewitness research conducted in the laboratory generalizes to actual crimes. A second set of controversies pertains to whether expert testimony is needed or helpful to juries. These controversies address such issues as whether the testimony tells jurors something they do not already know and whether the testimony assists them in their deliberation.

## RESEARCH RELEVANT TO CONTROVERSIES

The science underlying expert testimony can be divided into two general areas: (1) research on eyewitness identification, which forms the substance of the expert testimony, and (2) research addressing the need for expert testimony and the effects of such testimony on jurors.

### Controversy 1: Research on Eyewitness Identification

Experts draw on a large body of literature on human memory in general and eyewitness memory in particular. The research on eyewitness memory has largely developed since the 1970s, though there are studies dating back over 100 years. The research on eyewitness identification uses a common methodology. Research participants, often undergraduate students, are exposed to an enacted crime or event through live staging, videotape, or another similar medium. Following the event, eyewitnesses are asked to attempt to identify the perpetrator from a perpetrator-present lineup or perpetrator-absent

lineup. The former lineup represents the situation in which the suspect is guilty, and the latter resembles the situation in which an innocent person is suspected of having committed the crime. Each study has an objective, which is normally to investigate the influence of one or more specific factors on identification accuracy. The factor of interest is systematically manipulated, participants are randomly assigned to conditions, and identification accuracy rates are compared across conditions. For example, Platz and Hosch (1988) investigated the accuracy of same- versus other-race eyewitness identifications in a field study. Black, Hispanic, and white individuals posing as customers visited convenience stores in El Paso, Texas. These customers were served by black, Hispanic, and white clerks. The customers engaged in memorable interactions with the clerks (e.g., paying for a pack of cigarettes with pennies). Following their visits, an investigator asked each clerk to identify the three customers from photographic lineups. Using these procedures, Platz and Hosch were able to compare identification accuracy rates for same-race identifications (e.g., Hispanic clerks' identifications of Hispanic customers) with other-race identifications (e.g., Hispanic clerks' identifications of white and black customers). Platz and Hosch found that cross-race identifications were significantly less likely to be accurate than same-race identifications, a finding that has been replicated numerous times in the research (Meissner & Brigham, 2001).

This common methodology has many positive features. The controlled laboratory setting (or a controlled field setting) permits the investigator to designate the to-be-recognized perpetrator, so, unlike in actual crimes, the accuracy of the witnesses' identifications is known with certainty. The controlled setting permits the investigator to collect multiple observations under the same conditions—an important feature of research, and one that allows for conclusions about the reliability of phenomena. This methodology enables the investigator to hold many important factors constant while systematically manipulating one or more factors of interest and to randomly assign participant-witnesses to these conditions. Systematic manipulation and random assignment are important methods of establishing causal relationships between variables and outcomes. Thus, although it has been criticized as being unrealistic and not representative of actual crimes, the methodology has numerous advantages over investigations of actual crimes. One cannot, for example, control and manipulate conditions, conduct multiple or repeated observations, and know with certainty whether the identifications are correct in studies of actual crimes. The use of college students as participants has also been cited as a limitation, as college students do not represent the range of characteristics found in crime victims. On the other hand,

college students are better witnesses than are those who are significantly younger or older (Neuschatz & Cutler, 2008). Accordingly, college students' good visual acuity, general health, memory abilities, and intelligence will, if anything, overestimate the performance of eyewitnesses in general. Aside from these age-related factors, however, there is no reason to believe that the memory processes of college students operate in fundamentally different ways than the memory processes of the public at large.

Research on eyewitness identification can be further divided into two groups of factors: system and estimator variables (Wells, 1978). System variables are under the control of the justice system and can be modified in actual cases to influence the accuracy of identifications. Examples of system variables are the instructions given to an eyewitness prior to a lineup and the manner in which a lineup is presented to an eyewitness. Estimator variables, by contrast, are not under the control of the justice system and can only be used to estimate the accuracy of eyewitness identification. Examples of estimator variables include the stress experienced by the eyewitness and whether the eyewitness and perpetrator are of the same or difference race. The estimator–system variable distinction has been useful as a guiding principle in the research literature by focusing research efforts on factors over which the criminal justice system does or does not exert control. Table 5.1 provides a limited summary of the estimator and system variables that have been examined in the eyewitness identification research.

## Controversy 2: Expert Testimony

A second body of research has revolved around the questions of whether expert testimony is needed and whether it is helpful to jurors. This research often becomes the topic of expert testimony when the admissibility of it is challenged. The issues may be debated in briefs to the court, in an admissibility hearing (with or without expert testimony), or both. The most common reason given by judges for not admitting expert testimony is that the testimony is a matter of common sense (Benton, Ross, Bradshaw, Thomas, & Bradshaw, 2006; Schmechel et al., 2006). Considerable research has addressed this issue using a variety of methodologies, such as surveys of lay knowledge of eyewitness memory (e.g., Schmechel et al., 2006), evaluation of peoples' abilities to post-dict (i.e., when persons naive to the results of a study are asked to "guess" the results) the results of eyewitness identification experiments (e.g., Wells, 1984), and examination of mock jurors' decision making in cases involving eyewitness identification (e.g., Cutler, Penrod, & Dexter, 1990). These studies converge on the conclusion that research

**TABLE 5.1. Factors Affecting Eyewitness Identification Accuracy**

| Variable | General conclusion | Study |
|---|---|---|
| Weapon focus | Presence of weapon reduces accuracy. | Steblay (1992) |
| Disguise | Masking cues to hair and hairline reduces accuracy. | Cutler (2006) |
| Stress | Extreme stress reduces accuracy. | Deffenbacher et al. (2004) |
| Own-race bias | Accuracy is greater with own-race as compared to other-race IDs. | Meissner & Brigham (2001) |
| Exposure time | Longer viewing times increase accuracy. | Shapiro & Penrod (1986) |
| Speed of identification | Decision speed is inversely related to accuracy. | Weber et al. (2004) |
| Retention interval | Retention interval is inversely related to accuracy. | Shapiro & Penrod (1986) |
| Confidence accuracy | Relationship is modest under the best of circumstances and for witnesses who make a positive identification. | Sporer et al. (1995) |
| Distinctiveness | Distinctive perpetrator characteristics improve accuracy. | Shapiro & Penrod (1986) |
| | System variables | |
| Instructions | Unbiased instructions improve accuracy. | Steblay (1997) |
| Filler selection | Match to description strategy increases accuracy over match to suspect strategy. | Wells & Olson (2003) |
| Blind lineups | Blind procedures increase accuracy. | Russano et al. (2006) |
| Lineup presentation | Sequential presentation improves accuracy over simultaneous presentation. | Steblay et al. (2001) |
| Postidentification feedback | Increases witness confidence without increasing accuracy. | Douglass & Steblay (2006) |

on eyewitness identification is often at odds with common sense and supports the need for expert testimony. For example, jurors, when left to their own devices, may not be aware of or do not take into consideration certain factors, such as the own-race bias and extreme stress experienced by the witness. Jurors tend to assume that eyewitness identifications are the product of eyewitness memory, and they undervalue the impact of suggestive identification procedures. Furthermore, jurors place more weight on eyewitness confidence—particularly confidence long after an identification is made (e.g., confidence expressed during a trial)—than is warranted. Indeed, the

fact that well-accepted lineup procedures that have been used for decades throughout the United States have been found to be inferior to relatively simple modifications devised in the psychological laboratory is itself a form of evidence that eyewitness identification is not merely a matter of common sense (Wells & Hasel, 2008).

Another reason expert testimony is sometimes not admitted is that the judge concludes that the expert opinions are not commonly accepted among research experts. Two published surveys (Kassin, Ellsworth, & Smith, 1989; Kassin et al., 2001) of eyewitness experts have empirically addressed this conclusion. Consensus is evident in these studies, particularly in the more recent survey. For example, the Kassin and colleagues (2001) survey revealed that more than 80% of experts surveyed believed that research findings concerning unconscious transference, exposure time, simultaneous (presenting photos as a set) versus sequential presentation (presenting photos one at a time), the forgetting curve, accuracy–confidence correlation, and weapon focus were reliable enough to warrant expert testimony. Ninety percent or more of experts surveyed believed that research findings concerning the own-race bias, hypnotic susceptibility, alcohol intoxication, child suggestibility, postevent information, mug-shot-induced bias, confidence malleability, lineup instructions, and wording of questions were reliable enough for expert testimony. Comparatively lower percentages agreed about the reliability of other phenomena, for example, stress experienced by the eyewitness (60%), the influence of training for eyewitness testimony (39%), and event violence (37%). Consensus alone is a questionable criterion for admissibility because it is possible for consensus to exist in the absence of sound research. When this happens, invalid techniques or findings may be admitted in court. Likewise valid techniques and findings that are relatively new (and for which consensus has not yet developed) may be ruled inadmissible. The federal courts and many state courts now use consensus as one factor but now consider other factors as well (consistent with U.S. Supreme Court decisions in the *Daubert v. Merrell Dow Pharmaceuticals, Inc.* [1993] and *Kumho Tire Ltd. v, Carmichael* [1999] cases).

Another body of research has examined the impact of expert testimony on mock jurors' decisions, empirically addressing the concern that expert testimony will overwhelm the jury. These studies have revealed mixed findings. Most early research shows that expert testimony makes mock jurors more skeptical about eyewitness identification (Leippe, 1995). Some studies find that expert testimony improves juror sensitivity to eyewitness factors. In these studies, jurors exposed to expert testimony rely more on factors known from the research to influence eyewitness identification and less on

factors that are known to not strongly predict identification accuracy, as compared to jurors not exposed to expert testimony (Cutler, Penrod, & Dexter 1989). More recent research, however, also shows that expert testimony may have no effect (Devenport & Cutler, 2004), or its effect may be complex and qualified by other factors in the trial (Leippe, Eisenstadt, Rauch, & Seib, 2004). Hence, research on the effects of testimony by eyewitness experts has not definitively established its positive effects on jury decision making. On the other hand, other areas of expert testimony are routinely accepted without such evidence, and the eyewitness area is somewhat unique in its attempts to test the benefits hypothesis. Furthermore, serious questions can be raised about how well juries are doing *without* the benefit of eyewitness experts in light of the fact that mistaken identification accounts for over 75% of the jury convictions that were later proven wrong based on forensic DNA testing (Innocence Project, 2007). In some ways, it is arbitrary to label expert testimony as the "event" and its absence as the "nonevent" because there can be untoward consequences of the default decision to not provide jurors with expert testimony information.

## GAPS IN THE PRESENT SCIENTIFIC KNOWLEDGE

### Controversy 1: Research on Eyewitness Identification

The gaps in the research on eyewitness identification prevent the expert from providing the court with the information that it most needs. The issue before the court is whether a given eyewitness identification is correct or incorrect. Information that would be highly diagnostic of a specific eyewitness's accuracy would include base-rate information on the accuracy of eyewitnesses, knowledge about individual differences in identification accuracy (with particular reference about the witness's personal characteristics), and how the specific conditions under which the perpetrator was viewed and identified influenced identification accuracy.

Base-rate information is critical to prediction. In the case of eyewitness identification, a critical base rate for purposes of prediction is the probability that a given lineup actually contains the perpetrator. Because a proper lineup contains only one suspect (the remainder being "fillers" who are known to not be the perpetrator), mistaken identifications of a suspect occur only when the actual perpetrator is not in the lineup (otherwise the identification of the suspect would be accurate). In experiments, the base rate for the suspect being the perpetrator is commonly set at 50%. As this base rate increases, the probability that an identified suspect is the perpetrator also

increases (Wells & Lindsay, 1980). This change in the probability of error as a function of the base rate is independent of the accuracy of the eyewitnesses' memories. This happens for precisely the same reasons that a medical test (e.g., prostate test) produces many more false positives in one population (e.g., men under 40) than another population (men over 50) despite the test being equally sensitive: The base rates for the disease are higher in one population than the other. Because we do not know the real-world base rate for perpetrator-present and perpetrator-absent lineups, the science is severely limited in predicting rates of mistaken identification of suspects in the real world. It has been noted, however, that the real-world base rate is not a single figure, but instead is something that varies from one jurisdiction to another as a function of the criteria that a given police department uses to decide whether to place a suspect in a lineup (Wells, 2006; Wells & Olson, 2002).

Furthermore, eyewitness researchers sometimes deliberately calibrate their studies to produce accuracy rates around 50% because this maximum variability in accuracy allows them to detect influence of the variables of interest. Thus, it would be a gross exaggeration to conclude that laboratory research *demonstrates* that eyewitnesses are about 50% accurate. Eyewitness researchers can demonstrate any level of accuracy by manipulating the conditions under which the crime occurred or the identification is made, including mistaken identification rates of nearly 100% (cf. Wells & Bradfield, 1998). The base rate of correct or mistaken identification in actual cases is unknown.

Although it is not possible to know the base rate for the identification of innocent suspects in actual cases, there is a very interesting type of statistic that has been collected from samples of actual police lineups that has some bearing on the issue. Specifically, when a lineup is conducted properly, it is composed of one suspect (who might or might not be the perpetrator) and the remaining lineup members are merely fillers. Fillers are not suspects, and if they are identified by an eyewitness it is immediately clear that the eyewitness has made a mistake. Hence, it can be instructive to find out how often eyewitnesses identify fillers in actual cases. Several studies of this type have now been published that report the rate of filler identifications made by actual eyewitnesses to crimes. Behrman and Davey (2001) found a filler identification rate of 24%; Behrman and Richards (2005) reported a rate of 15%; Slater (1994) reported a rate of 22%; Valentine, Pickering, and Darling (2003) reported a rate of 22%; Wright and McDaid (1996) reported a rate of 20%; and Wright and Skagerberg (2007) reported a rate of 21%. Averaging across these studies yields an estimated filler identification rate

of around 21%. In other words, 21% of eyewitnesses to actual crimes picked fillers when shown a lineup. Although we do not know how many of those who picked a suspect were also mistaken, the filler identification rate clearly shows that the chances for an innocent suspect being mistakenly identified are not trivial. In fact, an innocent suspect often stands a higher risk of mistaken identification than does a typical filler because of a variety of biases in the structure of the lineup and cues that the lineup administrator might inadvertently leak to the eyewitness regarding which person is the suspect and which are fillers. For example, if the fillers were chosen based on their resemblance to the suspect, the innocent suspect will inevitably look more like the perpetrator than will the fillers. As another example, if an investigator influences the eyewitness advertently or inadvertently, the influence is more likely to encourage the eyewitness to select the suspect than a filler.

The accuracy of eyewitness identification is also dependent upon individual differences. Put simply, some people are better than others at identifying strangers. Some research has attempted to identify individual characteristics that are associated with identification accuracy, such as self-reported face recognition skill, training in eyewitness identification, demographic characteristics, personality factors, and intelligence. Cutler and Penrod (1995) reviewed this literature and found few witness characteristics that reliably predicted identification accuracy. There are some notable exceptions. Young children (e.g., preschoolers) are more susceptible to mistaken identification than are older children and adults (e.g., Parker & Ryan, 1993), and own-race identifications are more likely to be accurate than other-race identifications (Meissner & Brigham, 2001). Thus, the research literature does not permit us to diagnose identification accuracy from personal characteristics with a high degree of accuracy.

As mentioned above, there is a wealth of research examining how the conditions surrounding the crime and the identification influence identification accuracy. Most of this research examines main effects of specific factors or at most two-way interactions between factors. By main effects we mean the effect of a given factor on identification accuracy while holding all other factors constant or averaging across their effects. The summary statements in Table 5.1 describe main effects of specific factors. Witnessing conditions and identification procedures, by contrast, involve combinations of factors, not main effects. Although some research has examined interactions between factors, we have relatively little knowledge about how these factors work in combination. For example, we know that other-race identifications are more likely to be incorrect than own-race identifications. We also

know that the difference between own-race and other-race identifications is exacerbated by brief as compared to longer exposure time to the perpetrator (Meissner & Brigham, 2001). We do not know, however, the extent to which the magnitude of the own-race bias is further qualified by such factors as the amount of stress experienced by the witness, the suggestiveness of the lineup instructions, and the degree of resemblance between the suspect and the other persons in the lineup. Our lack of knowledge about interactions among and between witnessing conditions and lineup procedures limits our ability to assess identification accuracy given a specific set of conditions.

Another factor that would have to be considered in estimating the chances that a given eyewitness is accurate or not in a given case is the "pleading effect," recently described by Charman and Wells (2006) and by Wells, Memon, and Penrod (2006). The pleading effect refers to the fact that approximately 80% of those charged with a serious crime plead guilty and, hence, do not go to trial. Assume that those pleading guilty are almost all guilty, whereas those who are not guilty instead take their case to trial. This means that if only 4% of the suspects identified are innocent (and hence all go to trial), whereas a mere 20% of the 96% who are guilty go to trial (the remaining pleading guilty), then at trial level the rate of mistaken identification is over 17%. Using this same logic, if 10% of the identified suspects are innocent and all go to trial, whereas a mere 20% of the 90% who are guilty go to trial, then the rate of mistaken identification at the trial level leaps to more than 35%.

In summary, the gaps in the research literature on eyewitness identification include lack of knowledge about (1) the base rates of accurate and mistaken eyewitness identification, (2) individual difference factors affecting eyewitness identification, (3) interactions between variables, and (4) the unique characteristics of cases that actually proceed to trial. We turn now to gaps in the research on expert testimony.

## Controversy 2: Expert Testimony

In some respects, it is ironic that gaps in the research on expert testimony are used as a basis for denying admissibility. The irony stems from the fact that no other scholarly discipline in which experts testify (i.e., outside of psychology) has empirically addressed the admissibility arguments and their impact on juries. Specifically, psychologists, as noted above, have conducted scientific research on such questions as whether the knowledge gleaned from the research exceeds common sense, whether scholars with

relevant expertise agree on the reliability of research conclusions, and the extent to which expert testimony assists or prejudices the jury. Nevertheless, having trained our microscopes on these empirical issues, the scientific methods underlying these studies are fair game for scrutiny. Shortcomings associated with the research have been identified, and the quality of the research has been a basis for cross-examination and argument in admissibility hearings.

Consider the argument that expert testimony should be admitted because lay jurors need to be educated about the factors that influence identification accuracy. The research supporting this assertion relies on general knowledge tests of the public, studies in which participants are asked to estimate the outcomes of scientific experiments on eyewitness identification, and studies of mock juror decisions. Surveys of lay knowledge have been criticized because the act of completing a survey does not resemble the task facing an actual juror. The knowledge tests themselves (i.e., the wording of the questions and the scoring of the answers) have been the subject of critique. Mock juror studies have been criticized because the studies often rely on college students rather than the kinds of people who serve on juries. Furthermore, mock trials by necessity rely on abbreviated trial materials, including written narratives, and have therefore been criticized for not being realistic. The decisions of mock jurors have no real consequences for the defendant. In short, both the surveys of general knowledge and the trial simulation research lack the trappings of an actual court case, and some are unwilling to conclude that the research can be generalized to actual trials. The gap in the literature is research showing that actual jurors judging actual cases lack the requisite knowledge for evaluating the accuracy of eyewitness identification.

In a similar fashion, there are gaps in the research on general acceptance. Indeed, there are only two surveys of experts, both conducted by the same lead investigator (Kassin et al., 1989, 2001). When these studies are reviewed by an expert witness during an admissibility hearing, the methods and conclusions of the research are scrutinized. Cross-examination has focused on such issues as how "experts" are defined in the survey studies. The surveys included only eyewitness experts, but should it have included other cognitive psychologists with expertise on human memory? The sample size (64 in the 2001 study) is small, and therefore the margin of error is substantial. To what extent are the experts' opinions influenced by their vested interest in the admissibility of expert testimony? Were experts whose opinions are known to differ from the consensus included in the survey?

## MYTHS AND MISCONCEPTIONS

Several myths and misconceptions about expert testimony are associated with the above-noted gaps in the scientific knowledge and are harbored by the various players within the justice system. First, many defense attorneys would like to believe that citizens make poor eyewitnesses and that eyewitness identifications are usually incorrect. There is no scientific basis for this belief. The research clearly demonstrates that mistaken eyewitness identifications occur and that the likelihood of mistaken identification is systematically influenced by certain factors associated with the crime and identification (see Table 5.1), but the research provides no firm base rate of mistaken identifications. Earlier we noted that laboratory studies yield about a 50% accuracy rate, but this figure should not be mistaken for the base rate in actual cases because laboratory conditions are often *designed to achieve* about a 50% accuracy rate. Prosecuting attorneys occasionally attack expert testimony based on misconceptions, and judges' often deny proffers of expert testimony based on these same misconceptions. These misconceptions include the beliefs that eyewitness research is not generally accepted within the scientific community, the research findings are a matter of common sense, and the research does not apply to actual crimes. Citizens, who serve as jurors, are known to have misconceptions about how certain factors influence identification accuracy. These misconceptions are revealed in surveys of lay knowledge about eyewitness memory and include such mistaken beliefs as extreme stress improves identification accuracy, and eyewitness confidence is strongly related to identification accuracy (Schmechel et al., 2006).

## THE STATE OF THE SCIENCE

In discussing the scientifically supported and unsupported use of expert testimony, it is helpful to review the distinction between "social fact" and "social framework" expert testimony as articulated by Monahan and Walker (2002). Social fact testimony refers to testimony about the specific fact in question (e.g., whether the eyewitness identification is accurate). Social framework testimony may be offered when an issue in question is an instance of a scientific finding or theory (e.g., research on the relation between stress experienced by the eyewitness and identification accuracy may be relevant to the ultimate issue of whether the identification is correct). In short, social

framework testimony is a scientifically supported use, whereas social fact testimony is a scientifically unsupported use.

## Scientifically Supported Uses

Expert testimony has several scientifically supported uses. The main scientifically supported use is to educate jurors and judges about basic processes in human memory and about the factors that are known from the research to predict (and the factors that are known not to predict) the accuracy of eyewitness identifications (i.e., social framework expert testimony). For example, a review of the police reports might reveal the potential for extreme stress and weapon focus to have influenced the accuracy of the identification in the case. If so, it would be reasonable to testify about the research findings concerning the effects of extreme stress and weapon focus.

Another scientifically supported use is to evaluate the quality of identification tests, such as show-ups and lineups. An evaluation can take several forms. A review of the file might reveal that a lineup was given with or without a set of written instructions and that the lineup was not blind (i.e., the investigator who conducted the test knew which photo was of the suspect). One scientifically supported use, therefore, is to testify about the research addressing the effects of instructions and blind administration procedures on identification accuracy. A second method of evaluating identification procedures involves comparing the procedures used in the case with those embodied in scientifically determined best practices (Wells et al., 1998). The procedures used can also be compared against practices recommended by the Department of Justice, American Bar Association, and state- or department-level guidelines. A third method involves empirical assessments of lineups. An empirical assessment may be conducted when there is a concern that the photo of the suspect stands out in such a way that it is obvious which photo in the array is that of the suspect. The photo could stand out because of its similarity to the perpetrator relative to the other photos or because of nature of the photograph itself (e.g., unique background for the photo). There exists a technology for assessing the fairness of lineup composition and metrics for summarizing lineup fairness (Malpass & Lindsay, 1999; Tredoux, 1998; Wells, Leippe, & Ostrom, 1979). Generally, this technology involves providing individuals (non-eyewitnesses) with the eyewitness's description of the perpetrator and asking them to attempt to identify the suspect from the lineup. If the suspect's photo stands out because it is the only one that matches the description of the perpetrator, the "mock witnesses" will be able to identify the perpetrator. This is a sign of a

biased lineup. If the suspect's photo does not stand out, the mock witnesses should identify the suspect photo only at chance levels.

## Scientifically Unsupported Uses

The main value of expert testimony is to educate the jury about eyewitness memory and the research findings. The state of the science, as summarized above, does not permit an assessment of the accuracy of an individual eyewitness. Accordingly, an opinion that a witness in a specific set of circumstances is unlikely to be accurate (i.e., social fact expert testimony) is not a scientifically supported use of expert testimony. At first glance it may seem as if we have made a straw man argument, for, by law, determination of the accuracy of a witness is the responsibility of the jury, and the judge should not even allow such an expert opinion. Based on this fact, the expert should never be put in the position to give an opinion about the accuracy of an individual eyewitness even if he or she desired to do so. In practice, however, judges vary considerably in their interpretations of what is and what is not allowable. For example, in one case in which the first author testified, the judge expressed surprise and disappointment that the expert was not prepared to give an opinion about the accuracy of the witness. Some judges may allow such an opinion even though it seems at variance with the law. If the judge does not allow it, a clever attorney may find a way to broach the subject, such as with the use of a hypothetical question (e.g., "If a person was robbed by a perpetrator of another race under extremely high stress conditions and was shown a suggestive lineup, is it likely that the victim would make a mistaken identification?"). The judge may permit such a question, thus allowing the expert to given an opinion that may be generalized to the specific witness in the trial. Put bluntly, any statement that allows the jury to infer that the expert believes a specific witness to be inaccurate, whether in response to a direct or hypothetical question, is a scientifically unsupported use of expert testimony. A related scientifically unsupported use of expert testimony is to convey the opinion (directly or indirectly) that an identification procedure is incapable of producing a correct identification. Suggestive identification procedures or procedures that do not meet best practice standards are quite capable of producing correct identifications.

Another category of scientifically unsupported testimony would be testimony that is at odds with the scientific research. As in any field, expert testimony should be limited to conclusions that are based on sound science. General acceptance of the research conclusions is usually a good indictor of the soundness of the underlying science. For a summary of generally

accepted findings in the research on eyewitness memory, see Kassin and colleagues (2001).

### Scientifically Controversial or Untested Issues

Although the research literature on eyewitness identification is substantial and mature, it is not exhaustive, and it has not examined the effects of all of the factors and combinations of factors that are found in actual crimes. Accordingly, experts may occasionally find themselves in the position to testify about factors that have not been subjected to scientific research or have been studied but with mixed findings. Some, for example, maintain that the research base is not adequate to support testimony that simultaneous presentation yields a greater rate of mistaken identifications than sequential presentation because the potential qualifying conditions have not been sufficiently examined in research (McQuiston-Surrett, Malpass, & Tredoux, 2006). When faced with such situations, the expert might take a conservative approach and offer no testimony about an unstudied phenomenon, or the expert might extrapolate from related research. In the latter case, the expert should, of course, explain the basis for and limits of his or her testimony.

We have discussed scientifically supported uses of expert testimony (explanations of how factors influence accuracy in the research and assessments of identification tests), scientifically unsupported uses of expert testimony (opinions about the accuracy of individual eyewitnesses), and scientifically untested issues (explanations of factors that have not been studied in research or that have mixed findings). Most expert testimony content can be classified into these three categories, and there is little else with respect to the content of testimony that might be labeled controversial. The controversial aspect of this type of expert testimony is whether it should be allowed in the first place, as discussed above.

## COMMUNICATING CONSENSUS AND CONTROVERSIES IN EYEWITNESS TESTIMONY

### Circumstances in Which Expert Testimony Is Helpful

Having articulated the state of the science underlying expert testimony, we now turn to the manner in which expert testimony is presented. Before providing advice concerning the content of testimony and reports, however, we must consider the more general issue of the conditions under which expert

testimony is more or less useful to the jury. This discussion requires that we distinguish between what Wells and Loftus (2003) refer to as "general impairment" and "suspect-bias" factors. General impairment factors roughly correspond to estimator variables; they are the factors that would lead to a general impairment of the eyewitness's ability to encode a perpetrator's characteristics—for example, exposure time, stress experienced by the eyewitness, and cross-race recognition.

Suspect-bias factors are a subset of system variables pertaining to structural features of a photo array or lineup procedure that individuate the suspect among the fillers and increase the likelihood that the suspect will be identified regardless of whether he is the perpetrator. Suspect-bias factors can best be understood in the broader context of the lineup as a forensic test of the hypothesis that the suspect is the perpetrator (see Wells & Luus, 1990, for a similar and more thorough theoretical analysis of lineups). A valid test is one that maximizes the likelihood that the identification is a product of the eyewitness's memory and minimizes the likelihood that the identification is due to other factors. What are those "other" factors that could explain a positive identification of an innocent suspect? We identify five such suspect-bias factors: (1) the suspect has a close physical resemblance to the perpetrator; (2) the eyewitness identified the suspect by guessing; (3) some visual characteristic of the lineup makes the suspect stand out relative to the fillers (e.g., if the suspect is the only one who matches the description of the perpetrator); (4) the suspect is not the perpetrator but is otherwise familiar to the eyewitness (e.g., from having seen the suspect or his or her photo in a prior identification test), and the eyewitness confuses the source of this familiarity; and (5) the eyewitness is influenced by the lineup administrator to select the suspect. Good lineup tests are those that minimize the likelihood that an eyewitness's identification can be explained by one or more of these five suspect-bias factors.

Expert testimony is most helpful when suspect-bias factors are in play. As noted in Table 5.1, experts have a good deal to say about how such factors as lineup instructions, composition, presentation, and investigator bias can increase the likelihood that suspect identifications are due to reasons other than the eyewitness's memory of the perpetrator. In these cases, it is helpful to have the expert address both general impairment and suspect-bias factors. General impairment factors speak to the strength of the eyewitness's memory of the perpetrator, and suspect-bias factors help explain why an eyewitness with a weak memory of the perpetrator might nevertheless identify a suspect and come to believe strongly in the identification. For example, an eyewitness who had minimal opportunity to encode the perpetrator's face

due to short exposure time and high stress might identify the suspect from a lineup because the investigator inadvertently conveyed the suspect's identity to the eyewitness during the lineup procedure.

When suspect-bias factors are not in play, however, expert testimony is of limited usefulness, even in the presence of general impairment variables. Consider, for example, a case in which an eyewitness who had only a short time to encode a perpetrator's characteristics identifies the suspect from a lineup conducted by an investigator who is blind to the suspect's identity and uses unbiased lineup instructions and photos of fillers that match the eyewitness's description of the perpetrator presented sequentially to the eyewitness (i.e., a procedure reflecting modern "best practices"). In this case, the expert's explanation of the importance of general impairment factors is not very helpful because it begs the question of why the eyewitness identified the suspect and not one of the fillers. The use of a good lineup procedure minimizes the likelihood that suspect-bias factors explain the eyewitness identification and maximizes the likelihood that the eyewitness identification is explained by the eyewitness's memory of the perpetrator. In this circumstance, therefore, the jury is not helped very much by testimony concerning general impairment factors. In the absence of suspect-bias factors that might explain away a positive identification, the jury would reasonably conclude that the eyewitness's memory, no matter how impaired, was sufficient to produce a positive suspect identification *from memory*. In sum, expert testimony is most helpful in cases in which suspect-bias variables might explain the eyewitness identification and least helpful in cases in which suspect-bias variables are not relevant.

To this point we have focused on cases involving lineup identifications. Some cases, however, involve show-up identifications. Show-ups involve the presentation of a single suspect (or single photo) to the eyewitness. Whereas show-up procedures can vary with respect to the degree to which they are contaminated by suspect-bias factors (e.g., instructions to the eyewitness, influence by the show-up administrator), suspect-bias factors are always present and can explain positive identifications. Because there is only one suspect, the suspect's identity obviously stands out to both the eyewitness and the investigator before any "test" is conducted. In cases that are based on show-ups, therefore, testimony about general impairment factors is helpful. An eyewitness who has a weak memory of the perpetrator can identify the suspect from a show-up by guessing, deduction, or investigator influence, and it is impossible to rule out these explanations even when show-ups are conducted according to best practices.

## Content of Reports and Testimony

The requirements and recommended practices for reports and courtroom testimony differ substantially. Written reports usually serve one of two purposes. One purpose is to proffer the expert testimony. The report normally (1) summarizes the proposed content of testimony and the empirically demonstrated need for the proposed expert testimony and (2) describes the witnessing and lineup factors that will comprise the testimony (with scholarly references). The report also summarizes the research showing that the factors in the proposed testimony are based on sound science, generally accepted in the scientific community, and not merely a matter of common sense. In anticipation of concerns by the ruling judge, the report should also clearly indicate that the expert will not offer an opinion about the accuracy of the eyewitness.

A second purpose of a report is to satisfy discovery requirements. In some jurisdictions, the opposing counsel is entitled to a written report summarizing the content of the proffered testimony. The reporting requirements vary by jurisdiction. In some jurisdictions, a brief memo summarizing the factors to be discussed is sufficient; in others, a signed affidavit with more elaborate summary and references may be required. The opposing counsel is entitled to depose the expert in advance of the trial in some jurisdictions.

From the perspective of the court, expert testimony about eyewitness memory is a unique form of *psychological* expert testimony. Often when psychologists testify as experts, the testimony is based on psychological assessment of a specific individual, such as a defendant's competence. The eyewitness expert, however, conducts no assessment of the individual eyewitness, offers no opinion about the individual eyewitness, and instead testifies about general research conclusions (though the expert might offer an opinion about the quality of identification procedures used in the case). Because expert testimony concerns research conclusions, it behooves the expert to take special care in formulating testimony content that will be understood by laypeople. The discourse should be geared toward the level of a college freshman enrolled in and Introductory Psychology course. Scientific concepts that experts use routinely, such as independent variable, manipulated factor, confound, and statistical significance, are terms that may be lost on the jury. The use of concrete examples to illustrate such concepts as manipulated factors and confounding variables is advisable.

A common dilemma for the expert is the level of detail to provide about the research. On one extreme, the expert might offer the conclusions

about the research (e.g., eyewitnesses make more mistakes when attempting to identify perpetrators of another race than perpetrators of their own race) without much detail about the research. At the other extreme, the expert might offer much more detail, including sample studies, mean differences between conditions, and effect-size estimates. There are benefits and costs of each approach. The less detailed approach has the advantage of simplicity and efficiency but may leave the jurors wanting more information. The more detailed approach provides the additional information but adds complexity that may be misunderstood and therefore has a greater potential to mislead the jury. For example, a jury might conclude that the magnitude of mean differences between two conditions observed in a laboratory would generalize to the specific situation in the trial, but this is not an appropriate conclusion. The content of the testimony is also dependent upon the preferences of the attorney who is conducting the direct examination, and some attorneys ask for more detail, others ask for less.

In our experience, the attorneys who hire eyewitness experts often do not have previous experience with this form of expert testimony and yet sometimes approach the task with preconceived notions of the content of the testimony. The expert, therefore, must educate the attorney about the scientifically supported and unsupported aspects of expert testimony and work with him or her to develop questions for direct examination that allow the expert to convey the science accurately and in a manner that can be understood by the jury.

## CONCLUSIONS

We have divided the territory concerning expert testimony into two subtopics: controversies about the research and controversies about expert testimony. With respect to the former, there is a large body of research on human memory and social influence for experts to draw on to assist the jury in evaluating eyewitness identification (see Table 5.1). Gaps in the literature exist. These gaps include not knowing the base rates of mistaken identification, individual differences, interactions between variables, and characteristics of cases that go to trial.

A large body of research now addresses expert testimony on eyewitness identification itself. Some of this research speaks directly to legal standards of admissibility. The *Frye* test (*Frye v. United States*, 1923), for instance, is concerned with whether the opinion is based on knowledge or techniques that are generally accepted in the expert's field. The survey literature that

we described (e.g., Kassin et al., 2001) suggests that eyewitness identification research passes the *Frye* test on most variables. But general acceptance is only one factor in legal admissibility of expert testimony. The more predominant admissibility test today, the *Daubert* (1993) ruling, inquires whether the expert testimony is based on methods and principles that are likely to produce valid opinions. The experimental methods that are used in eyewitness research tend to guarantee internal validity, so the issue is largely one of external validity. We have explained how eyewitness experts can restrict their conclusions (e.g., not claiming that absolute rates of misidentification in experiments are directly applicable to a specific case) and focus instead on descriptions of relations among variables (e.g., cross-race identifications are less reliable than are within-race identifications). A third broad legal consideration for admissibility of expert testimony is relevancy. We have reviewed data indicating that the kind of information eyewitness experts convey appear not to be mere common sense and that expert testimony appears to affect how mock jurors reason about the evidence, suggesting that such expert testimony is relevant to the jury.

We have reviewed scientifically supported and unsupported uses of expert testimony. Scientifically supported uses of expert testimony include educating judges and juries about eyewitness memory and the factors known to influence eyewitness memory, such as those summarized in Table 5.1. Scientifically unsupported uses include offering an opinion about the accuracy of a specific eyewitness. We explained that when suspect-bias factors are not in play, the helpfulness of expert testimony about general impairment factors is limited, and we offered suggestions for how to effectively convey expert knowledge in expert reports and testimony.

We have identified some important factors for eyewitness researchers to consider if they proffer expert testimony, and we have identified some limits to what we think experts can and cannot claim based on the research. At the same time, we have refrained from taking a position as to whether courts are always wrong when they deny admission of expert testimony or are always right when they admit expert testimony. In general, we caution young eyewitness researchers to not be overly eager to proffer expert testimony. The justice system's adversarial structure is a poor fit with the scientist's normal experiences in dealing with other scientists. Some defense attorneys, for instance, are not forthright with information contrary to their client's case. Regardless of which side retains the expert's services, there is pressure to go further than the science itself justifies. And, money from expert fees has the potential to lure the expert to satisfy the retaining attorneys or to win the case instead of educating the jury.

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