From the Lab to the Police Station

A Successful Application of Eyewitness Research

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The U.S. Department of Justice released the first national guide for collecting and preserving eyewitness evidence in October 1999. Scientific psychology played a large role in making a case for these procedural guidelines as well as in setting a scientific foundation for the guidelines, and eyewitness researchers directly participated in writing them. The authors describe how eyewitness researchers shaped understanding of eyewitness evidence issues over a long period of time through research and theory on system variables. Additional pressure for guidelines was applied by psychologists through expert testimony that focused on deficiencies in the procedures used to collect the eyewitness evidence. DNA exoneration cases were particularly important in leading U.S. Attorney General Janet Reno to notice the eyewitness literature in psychology and to order the National Institute of Justice to coordinate the development of national guidelines. The authors describe their experience as members of the working group, which included prosecutors, defense lawyers, and law enforcement officers from across the country.

Every chapter and sub-chapter of sense-psychology may help clear up the chaos and the confusion which prevail in the observations of witnesses. (Münsterberg, 1908, p. 33)

The U.S. Department of Justice recently issued a document titled *Eyewitness Evidence: A Guide for Law Enforcement* (Technical Working Group for Eyewitness Evidence, 1999). This document (the *Guide*) represents the first set of national guidelines in the United States for the collection and preservation of eyewitness evidence for criminal cases. Psychological research played a strong role in making the case that such guidelines were needed, and it provided the scientific foundations for the content of the guidelines. Psychological researchers (the authors of the current article) participated in writing the *Guide*. The purpose of this article is to chronicle this unusual collaboration between psychological science and the justice system.

This article is divided into four sections. First, we review the major events in the development of a scientific literature in psychology on eyewitness evidence. By treating eyewitness reliability as a research area, psychologists were able to do for the justice system what the justice system could not do for itself, namely, conduct scientific experiments that isolated cause–effect relations. Second, we describe the efforts of psychologists to make a case for changes in legal policy on eyewitness evidence on the basis of the research findings. Third, we describe the important role played by forensic DNA analyses in the 1990s in corroborating the general thesis of research psychologists that eyewitness evidence can be at once highly persuasive to jurors and yet completely mistaken. Finally, we describe the events leading Attorney General Janet Reno to call for the development of national guidelines as well as our experiences in working with law enforcement officers, defense lawyers, and prosecutors in developing the *Guide*.

DEVELOPMENT OF A SCIENTIFIC LITERATURE ON EYEWITNESSES

Well-known applied psychologist Hugo Münsterberg recognized in the early 1900s that psychology had the potential to inform the criminal justice system about the nature of errors in eyewitness accounts. It was not until the 1970s, however, that psychological researchers began to launch research programs specifically designed to study eyewitness errors. The demonstration-type studies in the mid-1970s by Robert Buckhout (1974) and the carefully crafted and theoretically provocative eyewitness experiments of Elizabeth Loftus (e.g., Loftus & Palmer, 1974) were unique in their time. By 1995, there were over 2,000 publications

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in psychology addressing eyewitness reliability issues (Cutler & Penrod, 1995).

A major difference between Münsterberg's approach and the modern eyewitness literature concerns the distinction between system variables and estimator variables (Wells, 1978). Münsterberg (1908) described the potential contribution of psychology in terms of postevent assessment (i.e., assessing the validity of an individual eyewitness account at the trial phase). Münsterberg emphasized how psychologists might identify eyewitness errors after they have already occurred. Beginning in the late 1970s, a new perspective emerged that described psychology's contribution as preventing eyewitness errors from occurring in the first place rather than postdicting errors after the fact (Wells, 1978). This new perspective argued that some variables (*system variables*) affect the accuracy of eyewitness accounts over which the justice system has control, whereas other variables (*estimator variables*) are beyond the control of the justice system. For example, laboratory experiments indicate that the presence of a weapon draws attention away from a perpetrator's face and lowers the chances that witnesses can later identify the perpetrator (Kramer, Buckhout, & Eugenio, 1990; Loftus, Loftus, & Messo, 1987; Maas & Kohnken, 1989). The weapon effect, however, is an estimator variable because the justice system can only estimate (not control) the influence that stress might have had on an eyewitness. The structure of a lineup, on the other hand, is a system variable because the system controls how lineups are structured, which in turn has an effect on the accuracy of the eyewitness. Research on both types of variables has been important to psychologists' understanding of eyewitness errors. However, the development of a scientific literature on system variables was unique in being able to inform the justice system of ways to increase the accuracy of eyewitness statements in general and decrease the frequency of identification errors in particular.

The development of a scientific literature on eyewitness system variables began in the late 1970s and flourished in the 1980s and 1990s. This research can be placed into two broad categories corresponding roughly to recall and recognition memory but usually dubbed *event memory* and *identification memory*. Event memory refers to the ability of eyewitnesses to describe details of a critical event, such as whether a perpetrator used the right hand or left hand to hold a gun, the color of a getaway car, or a style of clothing worn by a perpetrator. Identification memory refers to the ability of eyewitnesses to select a perpetrator from a set of photos or a live lineup.

Event Memory System Variables

Eyewitness researchers have identified several system variables that affect the accuracy and completeness of eyewitness accounts of events. Loftus's (1979) early work, for example, showed that eyewitness accounts can be affected by exposure to misleading questions, a system variable. Loftus's influential work was provocative because it depicted eyewitness memory as being malleable and shaped by events that occur *after* a person witnesses an event. Psychologists directed considerable amounts of research at the misleading question effect for several important theoretical reasons that were largely independent of a concern over system variables. For instance, the misleading question effect went to the very heart of the question of whether long-term memories were stored permanently in the brain or were subject to alteration or replacement after being stored (see Loftus & Loftus, 1980). Several researchers offered alternative interpretations of the effect's cause, such as compliance, competing memories, and so on (e.g., see Berkerian & Bowers, 1983; McCloskey & Zaragoza, 1985). Some of the theoretical controversy on these matters remains unresolved today, but from a system-variable perspective the issues are not controversial at all. The scientific proof is compelling that eyewitnesses will make systematic errors in their reports as a function of misleading questions (or as a result of other incorrect postevent sources of information). From a system-variable perspective, it matters little whether this effect is a result of introducing new memories or altering old memories or whether this is a compliance phenomenon. The important point is that witnesses will extract and incorporate new information after the witnessed event and then testify about that information as though they had actually witnessed it.

In the 1980s, Ronald P. Fisher and Ed Geiselman attempted to apply psychological research to eyewitness event memory in a way that could be used directly by police investigators. Their analysis of American police interviews of cooperative eyewitnesses revealed that police make systematic, avoidable errors that limit the amount of information they elicit (Fisher, Geiselman, & Raymond, 1987; see also George & Clifford, 1992, for similar errors by British police). Some of the more flagrant errors are (a) asking too many closed-ended questions and too few open-

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ended questions, (b) frequently interrupting eyewitnesses in the middle of narrative responses, and (c) asking questions in a predetermined, inflexible order. In hindsight, it is not surprising that police interviewing procedures are poor, given that officers receive little or no formal training in conducting interviews with cooperative eyewitnesses (Rand Corporation, 1975; Sanders, 1986). Given the importance of eyewitness evidence and the poor quality of police interviewing procedures, Fisher and Geiselman set out to design a set of interview guidelines, based on principles of cognitive and allied areas of psychology (hence the name *cognitive interview*), to enhance the recollection and reporting of cooperative eyewitnesses. In contrast to the other suggestions in the *Guide*, many components of the cognitive interview are intended to increase the amount of correct eyewitness testimony rather than to eliminate incorrect testimony.

The cognitive interview represents an attempt to enhance eyewitness recall by improving three elements of the interview: (a) the social dynamics between the interviewer and the eyewitness, (b) the eyewitness's (and also the interviewer's) memory and other cognitive processes, and (c) communication between the interviewer and the eyewitness. The following is a thumbnail sketch of the key elements of the cognitive interview that were incorporated into the *Guide*. Many other components were not incorporated into the *Guide*, typically because of their complexity and the need for the document to be compact and easily understood. For a complete description of the cognitive interview, see Fisher and Geiselman (1992).

Social Dynamics

A common element shared by the cognitive interview and many psychotherapeutic techniques involves both developing rapport with eyewitnesses and allowing them to talk freely about their experiences (e.g., Rogers, 1942). Eyewitnesses can be encouraged to talk freely by using open-ended questions liberally and by giving eyewitnesses time to complete their answers. This contrasts with the more typical police interviewing approach of making only a minimal effort to establish rapport and then discouraging eyewitnesses from volunteering information freely (Fisher, Geiselman, & Raymond, 1987). By dint of their assertive questioning style, which is replete with rapid-fire, closed-ended questions, police often create a passive eyewitness from whom information is extracted rather than an active eyewitness who freely generates information. Indeed, research comparing the two interviewing styles shows that the typical police interviewer is perceived as being more manipulative than is the cognitive interviewer (Fisher, Mello, & McCauley, 1999).

Memory–Cognition

Recalling the details of a traumatic event is a difficult task for eyewitnesses. As such, it (a) requires focused concentration and (b) can benefit from the application of mnemonic principles. Just the opposite, police interviewers typically disrupt eyewitness concentration by asking too many questions, thereby forcing eyewitnesses to deflect their attention to the interviewer (Fisher, Geiselman, & Raymond, 1987). By contrast, the cognitive interviewer encourages eyewitness concentration by (a) conducting the interview at a slow pace and (b) asking few and primarily open-ended questions.

Another concern is that police interviewers rarely provide any assistance when eyewitnesses cannot recall a critical detail. In contrast, cognitive interviewers offer mnemonic instructions intended to facilitate memory, such as reinstating the context of the original event (e.g., Godden & Baddeley, 1975) and encouraging the eyewitness to recall the event from many different retrieval pathways (Anderson & Pichert, 1978). These procedures are known to facilitate memory by taking advantage of the encoding specificity principle (Tulving & Thomson, 1973) and the multidimensional character of complex events (Bower, 1967). The cognitive interviewer also is trained to ask questions that are sensitive to individual differences across eyewitnesses. That is, because each eyewitness mentally represents the crime in a different way, the cognitive interviewer is trained to ask questions that are compatible with each specific eyewitness's mental representation. This is more difficult than the typical police interview, in which all eyewitnesses are asked the same questions in a fixed order, but it also promotes better recall.

Communication

For an investigative interview to be effective, the interviewer must communicate his or her investigative needs to the witness, and the witness must communicate his or her knowledge to the investigator. One reason why police interviewers elicit less information than they could is that they rarely convey their investigative needs explicitly to the eyewitness: how much information they need, at what level

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of detail, and so on (Fisher, Geiselman, & Raymond, 1987). Not surprisingly, eyewitnesses have difficulty meeting unstated needs. Even if eyewitnesses know exactly what information to convey, they may have difficulty expressing this knowledge. The cognitive interviewer attempts to facilitate this aspect of communication by encouraging eyewitnesses to use nonverbal means to express their knowledge (e.g., sketching figures or scenes) and especially to use those output modes that most closely match their mental representation of the event (on the basis of Greenwald's, 1970, ideo-motor theory).

The cognitive interview has been tested in many laboratory experiments, in which eyewitnesses (typically, but not always, college students) see a videotape or a live simulation of a crime and later are asked to describe the crime events. The interview is conducted either as a typical police interview or as a cognitive interview. Across dozens of such studies, the cognitive interview has elicited between 35% and 75% more information than have typical police interviews, without increasing the proportion of responses that are incorrect (see Fisher & McCauley, 1995, for a review and Kohnken, Milne, Memon, & Bull, 1999, for a meta-analysis). Two field studies have been conducted, with victims and eyewitness of real crimes (usually robberies), one in the United States (Fisher, Geiselman, & Amador, 1989) and one in England (George & Clifford, 1992). The results of these studies mirror those in the laboratory: 55% and 35% increases in amount recalled in the U.S. and English studies, respectively. Therefore, we are confident that police interviewers can gather significantly more descriptive eyewitness reports by adjusting their interviewing techniques to take advantage of knowledge gathered from basic psychological research.

Although the cognitive interview has been used with considerable success to elicit more event information from eyewitnesses, it has been relatively unsuccessful for improving eyewitnesses' abilities to identify people in lineups or photo arrays (Fisher, Quigley, Brock, Chin, & Cutler, 1990, although see minor effects in Gwyer & Clifford, 1997; Finger & Pezdek, 1999). Improving eyewitnesses' abilities to identify perpetrators, rather than to elicit better event memory, apparently requires other solutions. There is some evidence that other procedures, based on the idea of context reinstatement, might improve lineup identification accuracy (see Malpass, 1996).

Identification Memory System Variables

It is estimated that in the United States more than 200 people per day become criminal defendants after being identified from lineups or photospreads (Goldstein, Chance, & Schneller, 1989). As a form of evidence against a criminal suspect, the idea appears relatively simple: In a police lineup, a suspect is embedded among several known-innocent people (*fillers*), and the eyewitness is asked if she or he can identify the perpetrator.

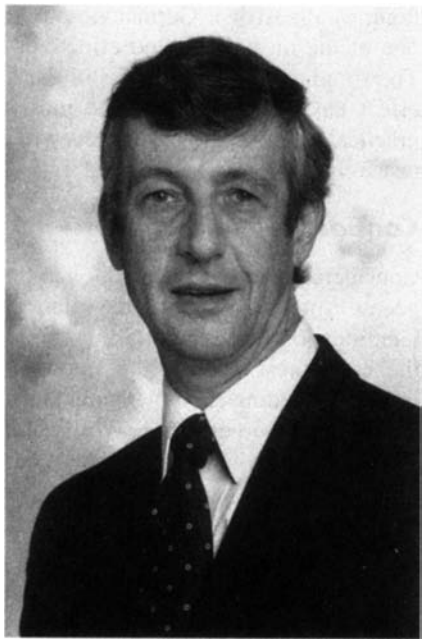
Until the 1970s, psychologists did not seriously question the accuracy of eyewitness identifications from lineups. Even Münsterberg (1908), who questioned most of the abilities of eyewitnesses, did not address the issue of eyewitness misidentification. Today, it is a simple demonstration experiment to show that people will misidentify someone from a live or photo lineup under certain conditions. The key contribution of eyewitness identification research has been to study the conditions that increase and decrease the chances of mistaken identification.

It is not our purpose to review the extant literature that has resulted from eyewitness identification research (see Cutler & Penrod, 1995, for a more detailed treatment). In fact, certain variables that affect eyewitness identification accuracy are irrelevant to the focus of the current article because they are not system variables. Stress (e.g., Christianson, 1992), arousal (e.g., Deffenbacher, 1983), weapon focus (e.g., Loftus et al., 1987), cross-race identifications (e.g., Bothwell, Brigham, & Malpass, 1989; D. S. Lindsay, Jack, & Christian, 1991), and a host of other variables can affect the accuracy of eyewitness identifications, but the justice system cannot control these variables. We restrict our focus to system variables because system variables are the focus of the *Guide*.

Fillers

A lineup contains only one suspect and several other known-innocent persons.[1] These known-innocent members

[1] As Wells and Turtle (1986) noted, in actual police practice some lineups are composed totally of suspects. Such practices serve to inflate the rate of identification of innocent suspects and constitute a serious violation of what eyewitness experts consider acceptable practices. In effect, the failure to include known-innocent fillers in a lineup makes the lineup similar to a multiple-choice task for the witness, for which any answer is considered correct. The value of known-innocent fillers is that they serve as probabilistic insurance against mere guessing. The national guidelines, discussed in more detail later in this article, call for lineups to



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of the lineup are commonly called distractors, foils, or fillers. We use the term *fillers*, as this term is the most common one used in law enforcement. Eyewitness researchers have long recognized that the fillers used in a lineup must be carefully selected to prevent the lineup from being biased against an innocent suspect (e.g., Brigham & Brandt, 1992; Doob & Kirshenbaum, 1973; R. C. L. Lindsay & Malpass, 1999; Malpass, 1981; Wells, Leippe, & Ostrom, 1979).[2] The relevant dimension, of course, is similarity. Surrounding an innocent suspect in a lineup with dissimilar fillers increases the risk that the innocent suspect will be identified (R. C. L. Lindsay & Wells, 1980). One problem with this research has been the failure to define optimal similarity. As Luus and Wells (1991) noted, too much similarity between the suspect and the fillers will confuse witnesses and result in a drop in accurate identification rates. Fortunately, an answer has emerged. Research and theory indicate that the fillers should fit the verbal description of the perpetrator (which is given by the eyewitness prior to viewing the lineup), but additional similarity should not be sought. Physical similarity between the suspect and the fillers beyond the level of the description provides no additional protection to the innocent suspect and can actually harm the eyewitness's ability to identify the perpetrator (Luus & Wells, 1991; Navon, 1992; Turtle & Yuille, 1994; Wells, Rydell, & Seelau, 1993; Wogalter, Marwitz, & Leonard, 1992).

There are some caveats to this general strategy for choosing lineup fillers. For example, extremely sparse descriptions or descriptions of the perpetrator that do not fit the suspect's physical appearance require slightly different strategies for selecting fillers (see R. C. L. Lindsay, Martin, & Webber, 1994; Wells, Seelau, Rydell, & Luus, 1994). Nevertheless, empirically based solutions for how to select fillers for lineups have been well developed in the eyewitness literature, and these were useful in developing national guidelines for law enforcement.

Instructions Prior to Viewing

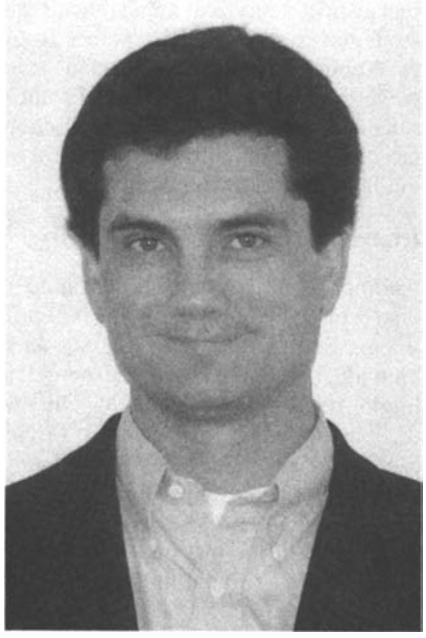
Another important system variable is the nature of the instructions given to eyewitnesses prior to their viewing a lineup. Specifically, eyewitnesses need to be told, prior to viewing the lineup, that the actual perpetrator might or might not be in the lineup. This was first empirically demonstrated by Malpass and Devine (1981). Recently, Steblay (1997) conducted a meta-analysis on the instruction variable, and the results show that the effect is large and consistent. The key to understanding the importance and impact of the instruction variable is to recognize that a lineup might or might not contain the actual perpetrator. If eyewitnesses assume that the perpetrator is in the lineup, then they are likely to believe that all they have to do is pick the person who most closely resembles the perpetrator. An instruction that stresses that the perpetrator might not be in the lineup helps prevent witnesses from making the assumption that the person who looks most like the perpetrator is necessarily the perpetrator. When the perpetrator is not in the lineup, the correct answer for an eyewitness is "not there." Failure to warn the witness that the perpetrator might not be in the lineup leads to very high rates of mistaken identification in perpetrator-absent lineups. Steblay's meta-analysis, which included 22 tests of the hypothesis using 2,588 participants and witnesses, shows a 42% reduction in mistaken choices from perpetrator-absent lineups when the instruction was included versus not included. Importantly, the "might or might not be present" instruction has little effect on correct identification rates when the perpetrator is present (a mere 2%).

Sequential Versus Simultaneous Presentation Variable

The standard police lineup presents the eyewitness with all lineup members (e.g., six or eight persons) at one time. Under these conditions, eyewitnesses tend to compare lineup members with each other to determine which one most closely resembles the perpetrator relative to the others, a process called *relative judgment* (Wells, 1984). Telling the eyewitness that the actual perpetrator might or

have only one suspect, which is an assumption about lineups discussed in the current article.

[2] When a suspect who fits the eyewitness description is located a short time after the crime in an area near where the crime occurred, it is common police practice to use a showup procedure. A showup involves presenting the suspect to the eyewitness alone (with no fillers). Although some data have suggested that showups might produce a lower risk of misidentification than do some lineups (Gonzalez, Ellsworth, & Pembroke, 1993), more recent research indicates that showups are inferior to lineups in protecting a suspect (Dekle, Beale, Elliot, & Huneycutt, 1996; R. C. L. Lindsay, Pozzulo, Craig, Lee, & Corber, 1997; Wagenaar & Veefkind, 1992; Yarmey, Yarmey, & Yarmey, 1996).



John W. Turtle

might not be in the lineup helps reduce the tendency to simply pick the person who (relative to the other lineup members) looks most like the perpetrator, but it does not eliminate the tendency altogether.

R. C. L. Lindsay and Wells (1985) used the relative judgment conceptualization to devise an alternative presentation procedure that would reduce the tendency of eyewitnesses to rely on relative judgments, namely, a sequential presentation. In the sequential procedure, the eyewitness is presented with one lineup member at a time, and the eyewitness must decide for each person whether that person is the perpetrator prior to being allowed to view the next person. This one-at-a-time procedure discourages the eyewitness from simply deciding who looks most like the perpetrator. Although the eyewitness could decide that the person being viewed currently looks more like the perpetrator than did the previous person, the eyewitness cannot be sure that the next (not yet viewed) person does not look even more like the perpetrator than the one being viewed currently. Lindsay and Wells reasoned that this would force eyewitnesses to use a more absolute criterion (i.e., "Is this the perpetrator or not?") rather than the relative-judgment criterion (i.e., "Is this person more similar to the perpetrator than the other lineup members?"). Their data showed that the simultaneous and sequential procedures produced nearly identical correct identification rates when the perpetrator was present in the lineup. When the lineup did not contain the perpetrator, however, the rate of mistaken identifications was 43% with the simultaneous procedure and only 17% with the sequential. Other studies have shown that the sequential procedure is also less sensitive to lineup biases (R. C. L. Lindsay, Lea, Nosworthy, et al., 1991). The sequential-superiority effect has been replicated in experiments across the United States, Canada, the United Kingdom, South Africa, Germany, and Australia, making this one of the most replicated effects in the eyewitness area. The simplicity and robustness of the sequential-superiority effect has made it one of the most important of all the practical contributions of eyewitness system-variable research.

Confidence Malleability

Considerable research effort over the past 20 years has been devoted to assessing the relation between eyewitness identification accuracy and the confidence or certainty of the eyewitness. This is an important issue because (a) people (including jurors) assume that a confident witness is an accurate witness (e.g., Wells, Lindsay, & Ferguson, 1979), and (b) the judicial system has explicitly endorsed the idea that the certainty an eyewitness has in the identification is an indication of the accuracy of the identification (*Neil v. Biggers*, 1972).

Research on eyewitness confidence has taught psychologists that the correlation between confidence and eyewitness identification accuracy is not a single value but rather is something that fluctuates as a function of several moderators. Meta-analyses indicate that the overall correlation across studies is approximately .29, but the estimated correlation rises and falls as a function of such things as viewing conditions and whether the analysis includes nonidentifying witnesses (see Sporer, Penrod, Read, & Cutler, 1995). Leippe (1980) described a process by which eyewitness accuracy is a function of memory variables, whereas confidence is a function of social variables, thereby leading to the possibility of their dissociation under some conditions.

In line with this idea, recent empirical evidence shows that the confidence of an eyewitness is malleable as a function of a system variable, namely, feedback, in a way that is independent of accuracy. Eyewitnesses who make a mistaken identification but are then told that a cowitness identified the same person or that the person identified is the actual suspect undergo confidence inflation (Luus & Wells, 1994; Wells & Bradfield, 1998, 1999). In other words, the justice system can induce false confidence in an eyewitness by giving feedback about the identification after the eyewitness has made a selection from the lineup. Giving feedback confirming an eyewitness's choice is a common practice in many police departments. When police investigators confirm eyewitnesses' choices prior to assessing their confidence, the meaning of confidence becomes distorted. Rather than an indication of accuracy, high confidence could simply be an indication of feedback. Similarly, the recent work of Shaw and his colleagues indicates that repeated questioning of eyewitnesses can produce confidence inflation without increases in accuracy (Shaw, 1996; Shaw, Garven, & Wood, 1997). Evidence suggests as well that directing eyewitnesses' attention to their decision processes might actually lower the confidence–accuracy relation (Robinson & Johnson, 1998).

Solomon M. Fulero

Refining the Message of System-Variable Eyewitness Research

Throughout the 1980s and 1990s, eyewitness research became increasingly sophisticated in a variety of ways. For example, Bayesian statistical procedures were used to estimate error rates under various lineup models and various base rates (e.g., Wells & Lindsay, 1980; Wells & Turtle, 1986), system-variable findings were successfully tested and generalized to other populations such as children and older people (e.g., O'Rourke, Penrod, Cutler, & Stuve, 1989; Parker & Ryan, 1993), and comparisons were made between eyewitnesses in experiments and eyewitness in real cases (e.g., Wright & McDaid, 1996).

Much of the eyewitness research was published in psychology's top journals, such as the *Journal of Applied Psychology*, the *Journal of Personality and Social Psychology*, the *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *Psychological Science*, *Applied Cognitive Psychology*, *American Psychologist*, *Psychological Bulletin*, and the primary journal of the American Psychology–Law Society, Division 41 of the American Psychological Association, *Law and Human Behavior*. Accordingly, eyewitness research gained considerable visibility in psychology, with coverage in introductory psychology, social psychology, and cognitive psychology textbooks. Unfortunately, much of this coverage tended to send a weak and potentially misleading message, namely, that eyewitnesses are unreliable. That message misses the point of system-variable research, which is that eyewitnesses could be more reliable if the justice system adopted certain procedural improvements that the research has shown to be effective in reducing eyewitness errors.

In 1997, the American Psychology–Law Society (Division 41 of the American Psychological Association) called for a scientific review paper on how lineups should be conducted. A committee of eyewitness researchers reviewed the scientific evidence and made recommendations for how eyewitness identification evidence should be collected. Drafts of the review and recommendations were circulated widely, and input was sought from researchers. The product, known informally as the "lineups white paper," was officially endorsed by the American Psychology–Law Society and published in *Law and Human Behavior* in late 1998 (Wells, Small, Penrod, Malpass, Fulero, & Brimacombe, 1998). Previous publications made similar research-based recommendations on how lineups should be conducted (e.g., Wells, 1988; Wells & Seelau, 1995; Wells, Seelau, Rydell, & Luus, 1994), but the lineups white paper was different in two key respects. First, it was a consensus position paper of the American Psychology–Law Society, which involved input from the large community of eyewitness researchers. Second, the lineups white paper included an analysis of the first 40 DNA exoneration cases (examples of innocent persons who had been wrongfully convicted by juries in the United States). The DNA exoneration cases showed that mistaken eyewitness identification was the primary evidence used in 36 of the 40 convictions of innocent persons. These innocent persons served an average of 8.5 years in prison, and 5 were sentenced to death before their innocence was proven using DNA tests. A total of 50 mistaken identifications by eyewitnesses were involved in convicting these innocent persons. The inclusion of actual cases of mistaken identification that produced convictions of innocent persons was important in establishing a closer nexus between eyewitness identification research and the real world.

PRESSURE POINTS ON THE JUSTICE SYSTEM

In our experience, the mere existence of a strong research literature on eyewitnesses was not sufficient to cause the justice system to take notice and incorporate research findings into their methods for collecting eyewitness evidence. Although it is possible to maintain the attitude that scientists should confine themselves to the lab and not dirty themselves with real-world application, this is not the attitude that eyewitness researchers have tended to hold. Instead, like Hugo Münsterberg, eyewitness researchers as a group have been convinced for some time that their research has an applicable message that should be applied in the criminal justice system. Clearly, change in such a large and independent system was not going to come about without some form of pressure. Eyewitness researchers applied this pressure primarily through expert testimony and, to some extent, through assisting the media in getting the message of the research out to a wide audience.

Expert Testimony

Pressuring the justice system to develop national guidelines was a slow process. The audience for eyewitness research in the 1970s was restricted primarily to psychologists. Defense attorneys, however, were taking increasing notice

of the research findings. Legal scholar Fred Woocher (1977), for example, published an article in the *Stanford Law Review* that described the emerging scientific work on eyewitness reliability. Defense attorneys began to call on psychologists to give expert testimony, and the extent to which eyewitness evidence was challenged in court proceedings began to take on new proportions. Some psychologists criticized the use of eyewitness experts in court cases (e.g., Egeth, 1993; Egeth & McCloskey, 1984; Konechni & Ebbesen, 1986; McCloskey & Egeth, 1983), while others defended this application of the research (e.g., Kassin, Ellsworth, & Smith, 1989; Leippe, 1995; Loftus, 1983). Some courts in the United States accepted expert testimony on eyewitness issues, whereas others did not and still do not. Still, the frequency of acceptance of expert testimony on eyewitness issues increased and continues to increase.

The research literature on eyewitness issues holds up rather well to the latest legal standards for deciding whether an area is sufficiently scientific to qualify for expert testimony (Penrod, Fulero, & Cutler, 1995). Disagreements regarding expert testimony on eyewitness matters are complex, usually revolving around concerns of generalizability from the scientific laboratory to the "real world" (see Yuille & Cutshall, 1986) and the applicability of probabilistic data to individual cases. It is not our purpose to address these issues here. Instead, we note that one of the effects of expert testimony on eyewitness issues has been to increase the degree of scrutiny given to the manner in which law enforcement officers interview witnesses and conduct police lineups. In other words, a great deal of expert testimony has been focused on system variables. Therefore, expert testimony has served to pressure the legal system to improve on the ways that eyewitness evidence is collected.

Consider how expert testimony can and has been used to pressure the system to improve its methods of collecting eyewitness evidence. Suppose that immediately after a crime the eyewitness had described the perpetrator as a tall, balding man around 50 years old. At the lineup, the suspect fit this general description but the other lineup members did not: Some were young or short while others had full heads of hair. Suppose that the witness identified the suspect and that the witness's testimony will be the key evidence at trial. An eyewitness expert might testify in this case that research shows that lineups of this type increase the chances of mistaken identification compared with lineups in which each lineup member fits the general description (e.g., R. C. L. Lindsay & Wells, 1980; Wells et al., 1993). This is not a statement about the accuracy or inaccuracy of this particular witness or identification decision (thereby nullifying some critics' concerns about invading the province of the jury) but rather is a statement about the procedures used in obtaining the identification. Such testimony is not merely a criticism of the procedures that were used in the specific case; such testimony also delivers research-based recommendations regarding how the lineup should have been conducted, thereby helping to educate policymakers in jurisdictions in which such testimony is given. For over two decades, eyewitness experts across the country have used expert testimony to constructively criticize biased lineups, police failures to give proper prelineup instructions to witnesses, and other system-biased methods of collecting eyewitness evidence. In this sense, expert testimony has been a focused pressure point used by eyewitness researchers to encourage the justice system to develop better methods of collecting eyewitness evidence and to recognize that the validity of eyewitness evidence is affected by the methods used to collect and preserve that evidence.

Although expert testimony put some pressure on the justice system to address procedures for collecting eyewitness evidence, the effect of expert testimony on justice system policy has been somewhat limited. Courts have been reluctant to set guidelines for law enforcement on how to collect eyewitness evidence. Courts could set such guidelines by suppressing eyewitness evidence when the evidence is collected using procedures that research has shown to be risky (Wells, 1993). In fact, however, courts almost never suppress identification evidence prior to trial, even when egregiously biased lineup procedures are used (Loftus & Doyle, 1997). In general, U.S. courts have taken the position that eyewitness identification evidence should be evaluated by the trier of fact (the jury) and that any evidence of biased procedures for collecting the evidence can be argued effectively by the defense attorney and revealed in cross-examination of the eyewitness. Considerable empirical evidence, however, indicates that cross-examination is not effective for revealing memory errors and that people, including judges, do not adequately understand the influence of biased lineups (e.g., Cutler, Penrod, & Dexter, 1990; Cutler, Penrod, & Stuve, 1988; Devenport, Penrod, & Cutler, 1998; R. C. L. Lindsay, Wells, & O'Connor, 1989; Stinson, Devenport, Cutler, & Kravitz, 1996, 1997; Wells, Lindsay, & Ferguson, 1979). There are over 13,000 police departments in the United States, and expert testimony on eyewitness issues has probably changed the practices of only a few these departments.

Media Pressure

Another pressure point on the justice system has been media coverage of eyewitness issues, especially in the 1990s. Reporters, producers, and hosts working on stories in major media outlets such as newspapers (e.g., the *Los Angeles Times*, *The New York Times*), television news shows (e.g., *48 Hours*, *Frontline*, *Dateline*), and even daytime talk shows (e.g., *Oprah*) have described eyewitness research findings, interviewed eyewitness experts, and ferreted out actual cases of mistaken identification. This gave exposure to eyewitness research findings and made researchers' concerns about eyewitness reliability salient at levels that far exceeded what eyewitness researchers could have achieved merely through publishing in psychology journals or giving expert testimony in isolated cases.

Like expert testimony, media coverage has had a limited effect on police practices. In part, this is because most media coverage leaves the reader or viewer with the impression that eyewitnesses are inherently unreliable and that nothing can be done to make eyewitness evidence more reliable. Unfortunately, the idea that eyewitnesses are

inherently unreliable is a view that some psychologists themselves have actually promoted at certain times, and this has not helped psychology's credibility in the justice system. The communication of such views misses the principal argument of system-variable eyewitness research, namely, that some eyewitness errors are attributable to the procedures used to collect eyewitness evidence and, as such, are preventable errors. Although eyewitness researchers interviewed by the media commonly describe the importance of system-variable findings, these comments typically end up on the cutting room floor.

DNA Exoneration Cases

The introduction of forensic DNA to American courts in the 1990s proved to be an unexpected opportunity for exoneration for many innocent persons who had been convicted by juries.[3] Forensic DNA was not used in U.S. courts until 1989; now most Americans are familiar with its use in establishing the identity of perpetrators. Importantly, forensic DNA also has powerful exonerating properties under certain conditions. People who (a) were convicted of crimes prior to the advent of forensic DNA, (b) were convicted of a crime for which the perpetrator left behind DNA-rich biological traces, and (c) had the biological evidence of the crime preserved by police have been able in some cases to have postconviction DNA tests run on the evidence to prove their innocence. Biological evidence exists in only a subset of criminal cases; in most pre-1990 cases, the evidence has been destroyed, lost, or otherwise rendered unavailable after conviction. Nevertheless, as of the time of this writing, postconviction DNA testing has freed 62 persons in the United States who were convicted by juries of crimes that they did not commit (Scheck, Neufeld, & Dwyer, 2000).

The exonerating power of forensic DNA has been a great event for the 62 innocent persons who have been freed, 8 of whom were sentenced to death. But it also has been a significant event for eyewitness researchers, because the pattern that has emerged points to the dominant role played by mistaken identification in these wrongful convictions. Although some of these cases involved perjury (e.g., jailhouse snitches who were lying) or coincidental circumstantial evidence, the vast majority have been cases in which the principal evidence was mistaken eyewitness identification testimony (Connors, Lundregan, Miller, & McEwan, 1996; Wells et al., 1998). In their analysis of the first 40 exoneration cases, for instance, Wells et al. found that mistaken identification was involved in 36 of the cases, in which 50 separate eyewitnesses had mistakenly identified defendants as being perpetrators. In Scheck et al.'s (2000) analysis of 62 cases, 52 were mistaken eyewitness identification cases involving a total of 77 confident but mistaken eyewitnesses.

The DNA exoneration cases were not the first to point to the prominent role of mistaken identification in causing wrongful convictions. Rattner (1988), for instance, analyzed 205 cases of wrongful conviction (convicted people whose innocence was proven on grounds other than DNA) and found that over 50% of these cases were attributable to mistaken eyewitness identification, the remainder being attributable to a variety of errors (also see Borchard, 1932; Brandon & Davies, 1973; Frank & Frank, 1957; Huff, Rattner, & Sagarin, 1986). Nevertheless, the DNA exoneration cases have had far more impact than these earlier cases have, perhaps because they all used a single, definitive technology to establish innocence.

Eyewitness researchers generally do not consider these DNA exoneration cases to be solid scientific evidence. Although these cases are consistent with the claim that mistaken eyewitness identification is the primary cause of the conviction of innocent persons, they are, nevertheless, merely case studies. The representativeness of these cases is unclear (e.g., most are sexual assault), relevant base rates are unknown and largely unknowable, and the number of DNA exoneration cases is not large. Still, it is important to note that DNA exoneration is possible for only a small fraction of all eyewitness cases. Perpetrators of murders, drive-by shootings, convenience store robberies, muggings, and other common crimes almost never leave DNA trace evidence that could exonerate someone who has been the mistakenly identified by an eyewitness. Hence, forensic DNA can uncover only a small fraction of mistaken identifications.

Although eyewitness researchers consider experimental studies to be more informative than the DNA exoneration cases, the opposite has tended to be true of the media and the legal system. This is not particularly surprising given the propensity for nonscientists to be more impressed with individual, vivid cases than they are with more pallid, statistical forms of proof (e.g., Nisbett, Borgida, Crandall, & Reed, 1976). The Public Broadcasting System's (PBS's) award-winning news show *Frontline*, for instance, has never touched the extensive scientific literature on mistaken identification, but it did do an entire one-hour show on a single DNA-exoneration mistaken-identification case.[4]

Like the media, the justice system largely ignored the research literature until the DNA exoneration cases emerged.

[3] Readers are cautioned to not use these DNA exoneration cases to extract conclusions about the rates or proportions of eyewitness misidentification in general. The cases reported in this section are conditional on the finding that later forensic DNA tests excluded the convicted person. Estimating the proportion of all identifications that are mistaken requires knowledge of variables that cannot be known with certainty. Wells and Lindsay (1980) provide a Bayesian model that shows the critical role of the prior probability that the lineup includes the suspect. This is a base rate figure for which we have no clear estimate as yet. It is further complicated by the failure of the justice system to use only single-suspect lineups, which has implications for how errors are distributed and complicates the estimates of prior probabilities (Wells & Turtle, 1986). Recently, Levi (1998a) has tried to estimate the proportion of all identifications that are mistaken, but the number of assumptions involved in the setting of parameters leaves the problem currently unresolved.

[4] Unfortunately, the main message of that program was that "mistakes happen." Accordingly, PBS failed to discuss critical and relevant system variables, such as the use of a simultaneous photo lineup composed entirely of suspects and the use of feedback to bolster the witness's certainty. Hence, media coverage of the DNA exoneration cases raised awareness of the general issue of mistaken identification, but it did not automatically carry the message that a significant share of these mistakes are preventable.

Although the courts were increasingly permitting expert testimony, there were no serious attempts by the justice system to use the psychological literature to address the issue of eyewitness reliability until the DNA exoneration cases caught the attention of the U.S. Department of Justice.

The role of the DNA exoneration cases in propelling the justice system to take seriously the issue of eyewitness evidence struck many eyewitness researchers as odd. Eyewitness researchers generally believed that the experimental literature in psychology had already made a much stronger and more informative case for reform than any collection of case studies could possibly muster. Nevertheless, the published literature in psychology, expert testimony by psychologists, and media exposure were not in and of themselves sufficient pressure points on the justice system to awaken policymakers to the problems with eyewitness evidence.

The experience in England and Wales has been similar in the sense that it took salient miscarriages of justice for the law to recognize that psychologists might have something important to offer. The Devlin report (1976), commissioned by the Secretary of State for the Home Department in London, reviewed 36 cases of misidentification. These case studies, although not scientific, helped create a foundation for interest in scientific psychological research on eyewitness issues in England and Wales. Key eyewitness researchers in the United Kingdom, such as Graham Davies and Ray Bull, have since managed to have considerable impact on the law and practices in England and Wales, especially with regard to child witnesses (Bull, 1992) and police composites (Davies, Shepherd, Shepherd, Flin, & Ellis, 1986). The *Memorandum of Good Practice on Video-Recorded Interviews With Child Witnesses for Criminal Proceedings* (1992), for example, is loaded with psychological research findings and is closely in line with psychological science. As with the experience in the United States, it seemed that the process needed to be jump-started by publicized miscarriages of justice.

JANET RENO AND THE INITIATION OF GUIDELINES FOR EYEWITNESS EVIDENCE

In 1995, the National Institute of Justice (NIJ), the research and development arm of the Department of Justice, launched a review of cases in which persons were released from prison as a result of posttrial DNA testing of evidence. The resulting report, released in 1996, showed that 80% of these innocent people had been mistakenly identified by eyewitnesses (Connors et al, 1996). U.S. Attorney General Janet Reno, on reading this report, became highly concerned. In early 1997, one of the current authors (Gary L. Wells) met with Reno to discuss the meaning of the pattern of misidentification. Reno had already read a couple of key articles on eyewitness identification, including an *American Psychologist* article that spelled out ways in which the justice system could improve the accuracy of eyewitness identification evidence (Wells, 1993). Reno later ordered that a panel be formed to address this concern; by early 1998, that panel had been formed and began meeting.

The effort to develop national guidelines for the collection of eyewitness evidence was directed by the NIJ. Richard Rau, an experienced NIJ director, was appointed as the project manager. Two researchers (Gary L. Wells and Ronald P. Fisher), 2 prosecutors (Melissa Mourges, an assistant district attorney in Manhattan, and Mark Larson, chief criminal deputy in the King's County Prosecutor's Office in Seattle, Washington), 1 defense lawyer (James Doyle, a Boston lawyer who writes on eyewitness issues), and 2 law enforcement members (Don Mauro, a Los Angeles homicide captain, and Paul Carroll, a retired Chicago Police Department sergeant) constituted the original panel. Later, another law enforcement person (Ella Bully, a commander with the Detroit Police Department) was added to the panel. After several meetings, mostly in Washington, DC, but also Chicago and Atlanta, Georgia, a working group was formed. The working group included an additional 4 eyewitness researchers (Roy S. Malpass, R. C. L. Lindsay, John W. Turtle, and Solomon M. Fulero), 14 law enforcement persons (from 13 different states), 4 prosecutors, and 3 defense lawyers. The full working group (which included the panel plus the additional 25 members) met for the first time in October 1998 in Chicago; that meeting was followed by meetings in January 1999 (Washington, DC) and May 1999 (San Francisco), at which point a draft of the guidelines was finalized and approved.[5]

Although the involvement of eyewitness research and eyewitness researchers in the creation of law enforcement eyewitness evidence guidelines is unique in the United States, there have been successful efforts in England and Wales to incorporate the scientific eyewitness literature into their *Memorandum of Good Practice on Video-Recorded Interviews With Child Witnesses for Criminal Proceedings* (1992), which governs police conduct. In addition, the Law Reform Commission of Canada (1983) relied on the scientific eyewitness literature in 1983 when developing recommendations on eyewitness evidence. Recently, Israeli police have made use of recommendations from eyewitness researcher Avaraham Levi regarding lineup procedures. However, those countries have relatively centralized systems governing their police, whereas the police system in the United States is a complex, multileveled, quasi-independent system of federal, state, and local jurisdictions. For this reason, the inclusion of law enforcement members, prosecutors, and defense lawyers from across the country in the working group was essential to the success of this effort. The absence of a central body governing police procedures in the United States made it necessary to involve all of these constituencies and to reach a consensus for the product to be accepted.

The Process: Pleasant and Unpleasant Surprises

The *Guide* was almost entirely written during the meetings of the full working group. Subgroups drafted sections, but the

[5] The panel and working group are now meeting to formulate national plans for training law enforcement officers on the procedures.

full group always met to examine and refine the products of the subgroups. Both the meetings of the panel and the meetings of the full working group were often contentious. The rules set forth by the NIJ for developing guidelines called for "a consensus document," which meant that the concerns of every individual person had to be taken very seriously.

As members of the working group, we (the current authors) were quite comfortable working with police, defense lawyers, and prosecutors. Each of us had worked with police and attorneys across the United States and Canada on these issues in various contexts over several years. Nevertheless, we were each surprised from the outset by two major events. First, we were surprised by the strong support of the police in the working group for using the research literature to improve the accuracy of eyewitness evidence. Going into the process, we collectively and erroneously assumed that the police would be quite resistant to guidelines, because such guidelines would pertain to their (police) conduct, and they were the ones who had to change their procedures to come into agreement with the *Guide*. We were wrong to believe that police would be highly resistant, for reasons we think we now understand.

We were equally surprised to encounter resistance from the prosecutors in the working group to the idea of national guidelines, and we were surprised by the prosecutors' tendencies to resist using the psychological literature as a model for national guidelines. Going into the process, we assumed that prosecutors would be highly supportive of the concept of guidelines, because it would make their evidence stand up better in court. We were wrong on this count as well.

Support of Law Enforcement

The law enforcement members of the working group sensed that our concerns about eyewitness misidentification were valid, because they had frequently observed eyewitnesses confidently identify fillers (known-innocent distractors or foils) from lineups as perpetrators. Wright and McDaid (1996) showed that eyewitnesses mistakenly identify known-innocent fillers in lineups about 20% of the time. The police who participated in the working group were all highly experienced in crime investigation (e.g., they were detectives, sergeants, and captains). Some had personally supervised hundreds of lineups and interviewed thousands of witnesses in the course of crime investigations. In addition, each of the 17 police members of the working group read articles from the psychological eyewitness literature (which we provided) and became quite familiar and comfortable with the methods, results, and conclusions of the psychological research on eyewitness evidence. This helped greatly in promoting an understanding of the foundations of our views as researchers. Not only did police readily understand our views on the best ways to collect eyewitness evidence, they also were comfortable with the general idea of national guidelines on the collection and preservation of eyewitness evidence. Among other things, the police readily recognized that the identification of an innocent suspect not only can lead to charges against the wrong person but also leaves the actual perpetrator at large to offend again. The police members were understandably reluctant to accept further rules regarding their conduct if those rules seemed poorly thought out or ill-informed, but they were receptive to guidelines that made sense to them and could prevent them from being criticized. Hence, in hindsight, it makes sense to us that police were supportive of the researchers' views: The police had direct experience with eyewitness errors, they read and understood the eyewitness literature, they were motivated to get the actual perpetrator and not be misled to pursue the innocent, and they were receptive to a set of procedural guidelines that would reduce criticism of their methods of collecting eyewitness evidence.

Resistance of Prosecutors

Most of the disagreements tended to be between the researchers and the prosecutors. We argued that national guidelines would make the prosecutors' cases stronger because the procedures used by police in collecting the eyewitness evidence would be more "pristine." Rather than having to defend questionable procedures in conducting lineups, for instance, prosecutors would receive cases that would hold up better in court and give guilty defendants less room for argument. In fact, defense lawyers in the working group noted that a good lineup procedure prevents defense lawyers from using one of their best arguments, namely, that the lineup was biased against their client. The prosecutors were largely unmoved by these points. Instead, the prosecutors were heavily driven by a concern over what happens when police use procedures that are not in agreement with the *Guide*. In general, the prosecutors were much more likely than others in the working group to think that police would be unable or unwilling to follow the *Guide*. Because prosecutors are the ones who must put the pieces of a case together and deal with any discrepancies between the *Guide* and the practices of police, this concern is understandable.

The prosecutors were also the most reluctant members of the working group to accept the premise that there is an eyewitness problem to be addressed. Why should this be the case? Prosecutors win almost all of their cases, in part because they select for trial only those cases they are most confident of winning. They are understandably concerned about any change, because it is unlikely to increase any further their already high rates of success. We see yet another reason why prosecutors were more reluctant than police to perceive a problem with eyewitness evidence: Whereas police routinely encounter cases in which an eyewitness has mistakenly identified a known-innocent filler (Wright & McDaid, 1996), prosecutors rarely learn of such instances.[6] Prosecutors' eyewitness cases are based on

[6] In some jurisdictions prosecutors observe live lineups. Most identifications, however, come initially from photo lineups, which involve only police, not prosecutors. Witnesses who identify someone other than the suspect from photos are rarely shown a live lineup later. Showing the eyewitness a live lineup after the witness has identified the suspect from photos almost never results in the selection of a filler for at least two reasons. First, the witness has already indicated the person he or she thinks is the perpetrator. Second, the suspect is the only one who appears in both the photo lineup and the live lineup.

"hits," instances in which an eyewitness has identified the suspect in the case. Eyewitnesses who identify fillers commonly are not a part of the evidence considered relevant enough to turn over to prosecutors, and of course such witnesses are almost never called by the prosecution. Consequently, prosecutors rarely observe eyewitnesses confidently identify a known-innocent filler, whereas this is a relatively common event for police to observe.

At a more fundamental level, friction between the prosecutors and the eyewitness researchers undoubtedly stemmed at least in part from the opposing roles that they have played in the courtroom over the past two decades. Defense lawyers are the primary users of eyewitness researchers, and prosecutors routinely argue against the admissibility of eyewitness experts. When eyewitness experts do testify, prosecutors do everything possible to discredit the research or argue against its applicability. Understandably, many prosecutors perceive eyewitness researchers as tools for the defense. All in all, prosecutors felt that they had the most to lose from agreeing with the researchers' ideas.

The Product

The final product was about 8,000 words, was published as a booklet, and is available at no cost from the U.S. Department of Justice, Office of Justice Programs, 810 Seventh Street, NW, Washington, DC 20531; the document can also be downloaded at the Internet address http://www.ojp.usdoj.gov/nij/pubs-sum/178240.htm. It is not our intent to reprint the *Guide* in this article. There are, however, some portions that deserve special mention.

For example, material in the introduction to the *Guide* acknowledges the justice system's recognition of the usefulness of the psychological literature on eyewitnesses. In the message from U.S. Attorney General Janet Reno at the beginning of the *Guide*, for instance, she refers to "a growing body of research in the field of eyewitness identification" (p. iii). The introduction states, "During the past 20 years research psychologists have produced a substantial body of findings regarding eyewitness evidence. These findings now offer the legal system a valuable body of empirical knowledge in the area of eyewitness evidence" (p. 1). We believe that these statements are representative of the growing view within the justice system that research findings by psychologists on eyewitness memory are important to understanding, predicting, and controlling eyewitness error. The introduction to the *Guide* goes on to say,

> This *Guide* makes use of psychological findings, either by including them in the procedures themselves or by using them to point the way to the design and development of further improvements in procedures and practices for possible inclusion in future amendments to or revisions of this document. (pp. 1–2)

This statement acknowledges that the scientific study of eyewitness memory is a continuing process and that the *Guide* should be revised in the future on the basis of the continuing knowledge generated by research. It is, we believe, an invitation for researchers to contribute additional research-based solutions to the practical problems associated with eyewitness memory. The *Guide* includes a bibliography directing readers to significant articles and book chapters in the eyewitness literature.

There are many major features of the *Guide* that we believe are particularly important. In the sections of the *Guide* dealing with interviewing eyewitnesses, the *Guide* calls for (a) establishing rapport; (b) encouraging the witness to volunteer information without prompting; (c) asking open-ended questions, not interrupting the eyewitness's response, and avoid leading questions; and (d) cautioning the witness not to guess. In the sections on identification, significant features include (a) guidelines specifying that only one suspect should be used per lineup procedure, (b) guidelines regarding how fillers should be selected for lineups, (c) guidelines for prelineup instructions to the witness, (d) guidelines for avoiding making suggestions to witnesses, and (e) guidelines for conducting the sequential lineup procedure. These features of interviews and of lineups have been prominent in the research literature and represent much of the core of what eyewitness researchers have been advocating in the way of policy. In many cases, practices have been the opposite of the research-based recommendations. We briefly describe each of these features in terms of how they were manifested in the *Guide*.

Features

Establishing rapport. Establishing rapport is appropriate at several phases of the investigation, by everyone from the operator who handles the initial 911 call to the first police officer on the scene to the follow-up investigator. Unfortunately, this principle is followed more in theory than in practice. Many police investigators gloss over this critical phase and jump into the information-gathering phase without having established a personal relation with the victim, not realizing that the victim's concerns may include having someone listen to their plight as well as solve the crime. Not meeting this personal need has implications for not only the effectiveness of the interview but also later in the investigation, when eyewitnesses are expected to take even more time from their schedules to give depositions or appear in the courtroom. Clearly, eyewitnesses will be more likely to invest their time and energy throughout the investigation if their personal needs are addressed and they are not treated like mere case numbers who can provide information.

Encouraging the witness to volunteer information without prompting. In the eyewitness–interviewer dyad, one person, the eyewitness, has extensive knowledge that the other person, the interviewer, wants. As in any interaction between a knowledgeable person and a curious person, one would expect the knowledgeable person to play the dominant role and control the flow of information. In real-world interviews of eyewitnesses, just the opposite occurs: The police interviewer plays the dominant role and controls the flow of information, while the eyewitness answers questions passively. Further, situational factors are rarely conducive to a thorough interview. As a result, eyewitnesses rarely provide any unsolicited information. This puts an unenviable bur-

den on the interviewer to ask all of the appropriate questions. Only some of those questions will be asked: The skill of the interviewer and the situational pressures determine how many. Forcing the interviewer to extract all of the information almost guarantees that idiosyncratic characteristics of a case, which often break the case because of their uniqueness, will not be uncovered.

Asking open-ended questions; avoiding leading questions. On the basis of Loftus's and others' research, cited earlier, it is known that blatantly suggestive questioning may alter eyewitnesses' recollections. It is our experience that suggestive or leading questions are more likely to be closed-ended than open-ended. Compared with closed-ended questions, open-ended questions accomplish at least two goals: (a) They are more apt to be nonleading, and (b) as indicated earlier, they encourage eyewitnesses to take a more active role in the interview. Unfortunately, police interviews contain very few open-ended questions. In Fisher, Geiselman, & Raymond's (1987) analysis, the typical police interview was found to contain only three open-ended questions. Further, when eyewitnesses began to give narrative answers to these open-ended questions, they were interrupted by the interviewer, on average, within 7.5 seconds. This is most unfortunate, as uninterrupted answers to open-ended questions have the potential to carry a considerable amount of information (Aschermann, Mantwill, & Kohnken, 1991; Fisher, Geiselman, Raymond, Jurkevich, & Warhaftig, 1987).

Cautioning against guessing. Because of the imbalance in social status between eyewitnesses and police interviewers, eyewitnesses may feel compelled to volunteer answers to questions that they, in fact, do not know the answers to. This is particularly so when the eyewitness is a child (e.g., Saywitz, Snyder, & Nathanson, 1999). The concern is that eyewitnesses will generate many incorrect responses when enticed to guess or, more properly, when not explicitly cautioned against guessing. One might argue that nonverbal cues will let interviewers know that witnesses are guessing, but (a) police interviewers often do not document these nonverbal cues, so they are lost in time, and (b) the eyewitness's confidence, which is initially low for such guessed responses, may become inflated by the mere fact of having volunteered this information earlier (Shaw, 1996; Shaw & McClure, 1996). As a result, what was volunteered initially as a low-confidence guess may evolve into a confident statement at the time of the trial. This is yet another example of the malleability of confidence referred to earlier in the discussion of issues of eyewitness identification (see *Confidence Malleability*).

One suspect per identification procedure. Many lineups conducted in the United States include more than one suspect, even when there was a single offender. Wells and Turtle (1986) used Bayesian modeling along with experimental data to show that the practice of placing multiple suspects in a lineup serves to inflate the chances of mistaken identification. This is easiest to understand when comparing the single-suspect model with an all-suspect model. With a single-suspect lineup, the remaining members of the lineup are known-innocent fillers. Hence, with a single-suspect lineup, if the eyewitness picks a filler, it is an error, but it is an error that is not going to result in charges being brought against the identified person. Suppose, however, that every member of the lineup was a suspect. In this case, even a random guess by the eyewitness would hit on a suspect. An all-suspect lineup is like a multiple-choice test in which the grading key allows for all answers to be considered correct. Happily, this was among the least contentious of all issues for the working group. The *Guide* states bluntly, "Include only one suspect in each identification procedure" (pp. 29–30).

The selection of lineup fillers. Earlier in this article (see Identification Memory System Variables), we discussed the empirical evidence and theory behind the selection of fillers for lineups. These data and the theory were essential to promoting consensus in the working group about selecting lineup fillers. The *Guide* instructs police to:

> Select fillers that generally fit the witness' description of the perpetrator. Where there is a limited/inadequate description of the perpetrator provided by the witness, or where the description of the perpetrator differs significantly from the suspect, fillers should resemble the suspect in significant features. (pp. 29–30)

As obvious as this might seem to psychologists, this is nevertheless one of the most common problems with lineups. In the absence of explicit, credible guidelines, many jurisdictions were constructing lineups in which the suspect was the only one (or one of only two) who actually fit the description that the eyewitness had previously given to police. Additionally, the *Guide* calls for such things as "placing suspects in different positions in each lineup, both across cases and with multiple witnesses in the same case" (p. 30). *American Psychologist* readers will recognize the idea here of counterbalancing to prevent bias from one particular positioning of the suspect from carrying over to other witnesses. This is one of many useful procedural considerations that resulted from exploiting the analogy between a properly conducted lineup and a properly conducted experiment (Wells & Luus, 1990).

Prelineup instructions. Another major feature of the *Guide* concerns the instructions to be given to eyewitnesses prior to their viewing the lineup. As discussed in an earlier section of this article (Identification Memory System Variables), the empirical research shows that it is essential to tell eyewitnesses that the person who committed the crime may or may not be in the lineup (see Malpass & Devine, 1981, for the original demonstration of the propitious effect of this instruction and Steblay, 1997, for a meta-analysis on this variable). For photographic lineups, the *Guide* tells police, "Instruct the witness that the person who committed the crime may or may not be in the set of photographs being presented" (p. 32). Parallel instructions are required for live lineups. This helps prevent eyewitnesses from assuming that their job is merely to select the person who best resembles the perpetrator. In addition, the *Guide* for both live and photographic lineups tells police, "Instruct the witness that it is just as important to clear innocent persons from suspicion as to identify guilty par-

ties" (p. 32). We believe that the latter instruction is especially important in making it clear to eyewitnesses that it is not only acceptable to make no selection, but not finding the perpetrator in the lineup could be a critical step in freeing an innocent suspect. Indeed, using Bayesian analyses with eyewitness identification data, we have shown that nonidentifications can be at least as diagnostic of innocence as identifications are of guilt (Wells & Lindsay, 1980). Nonidentifications frequently are not recorded and are commonly undervalued in spite of their diagnostic value (Leippe, 1985).

Avoiding postidentification suggestions. Importantly, the lineup sections include not only warnings against suggestion prior to the selection but also warnings against suggestion that can occur after a selection. Specifically, the *Guide* states, "If an identification is made, avoid reporting to the witness any information regarding the individual he/she has selected prior to obtaining the witness' statement of certainty" (pp. 31, 35). The latter instruction is meant to prevent the type of confidence inflation that results from informing eyewitnesses that the person they selected is the suspect in the case, confirming that other witnesses selected this person, or passing along other information that is known to heavily influence eyewitnesses' statements about their identification. Although eyewitnesses will eventually know whether the person they identified is the suspect in the case or merely a filler, the *Guide* calls for the eyewitnesses to make a statement of their certainty prior to learning that information.

The sequential lineup. As described earlier (see Identification Memory System Variables), the sequential lineup is superior to the simultaneous lineup. Although the *Guide* does not call for all lineups to be conducted using the sequential method (see the later section entitled *Shortcomings*), the sequential method is clearly described for both photo lineups and live lineups. Even without requiring the sequential method, the *Guide's* introduction of the sequential lineup method is, we believe, critical for two reasons. First, its presence in the *Guide* legitimizes its use. Many of the law enforcement members of the working group were concerned that they could not simply choose on their own to use the sequential method, because the simultaneous method is the traditional standard. By giving a clear description of the sequential method as an alternative to the simultaneous method, the *Guide* gives law enforcement officers a credible source to point to (other than the psychological literature) when arguing for the sequential method's use. Second, the presence of the sequential method in the *Guide* paves the way for future versions of the *Guide* to give the sequential method its due place as the preferred method for conducting lineups.

There are other important features of the *Guide* in addition to these, of course. For instance, the *Guide* states that the investigator must "record both identification and nonidentification results in writing, including the witness' own words regarding how sure he/she is" (p. 38). Investigators frequently do not use the witness's own words but instead make a summary statement. The failure to record the witness's actual words is especially problematic when the witness does not pick the suspect. In such cases, a common practice of police is to enter a report stating something like, "Witness could not make a positive identification of the suspect." This is uninformative at best, and it is quite misleading if the witness had actually said, "The person I saw is not in this lineup."

Shortcomings

It should come as no surprise that the final product was not what eyewitness researchers would consider ideal. There were two shortcomings that deserve particular mention. First, in both our writings (e.g., see Wells et al., 1998) and our presentations in the working group, we argued fervently for double-blind testing, that is, the person who administers a lineup should not be aware of which person in the lineup is the suspect. Currently, in most jurisdictions, the police investigator in charge of the case conducts photo lineups and participates in the running of live lineups. Hence, the investigator knows which person in the lineup is the suspect. The investigator's verbal and nonverbal behaviors provide considerable opportunity to inadvertently influence the witness both before the identification and immediately after the witness makes a choice (see Phillips, McAuliff, Kovera, & Cutler, 1999). The idea of double-blind testing is, of course, well understood and accepted in scientific circles. Still, police and prosecutors put up a strong and successful fight to keep double-blind testing out of the *Guide*. The police were quite concerned that their peers would be insulted by a requirement for double-blind testing, because it would be construed as a statement that police are not to be trusted to conduct their own investigations. This was something that took us by surprise, because double-blind testing is a familiar precaution against inadvertent, rather than intentional, influence in psychological research. Although the police members of the working group realized that our call for double-blind testing was not a statement about trust, they remained reluctant to advocate double-blind testing to their peers. They felt their peers would interpret the recommendation the same way that they had, namely, as a statement that police could not be trusted.

In addition, the police members of the working group argued that it would be impractical or expensive to require double-blind testing. We argued that any person who did not know which lineup member was the suspect could be used in place of the case investigator (e.g., a dispatcher, a secretary). The prosecutors countered that this would require that the person appear at trial and give testimony, something for which the person is not trained, and that this would add to the expense and logistical difficulties of the entire endeavor. Technological developments are likely to solve these concerns rather easily, at least for photo lineups, by allowing the lineups to be administered by a computer.

Double-blind testing did not make it into the guide as a recommendation. However, even though the *Guide* does not call for double-blind testing, the introduction to the *Guide* states:

Investigators' unintentional cues (e.g., body language, tone of voice) may negatively impact the reliability of the eyewitness evidence. Psychology researchers have noted that such influences could be avoided if "blind" identification procedures were employed (i.e., procedures conducted by investigators who do not know the identity of the actual suspect). However, blind procedures, which are used in science to prevent inadvertent contamination of research results, may be impractical for some jurisdictions to implement. Blind procedures are not included in the *Guide* but are identified as a direction for future exploration. (p. 9)

The second main shortcoming of the *Guide* was not naming the sequential procedure as the preferred lineup procedure. An underlying concern was that an explicit declaration that the sequential procedure is superior to the simultaneous procedure would lead to new trials for those who had been convicted in the past using simultaneous procedures. Because the simultaneous procedure has been the standard across the country, this would be very disruptive for the courts. The *Guide* was meant to be used to direct future procedures, not produce new trials for previously convicted persons. Accordingly, declaring the simultaneous procedure to be inferior seemed to be too radical at this point in time. In addition, resistance to the sequential procedure stemmed from concerns about details of the procedure and possible outcomes that some thought might prove problematic in court. For example, we recommended that the sequential procedure end as soon as the witness makes an identification (without seeing the remaining lineup members), because viewing the remaining lineup members might simply lead witnesses to revert back to relative judgments. Valid concerns were raised, however, about a situation in which the suspect was placed in Position 1 (positioning is supposed to be random) and the witness selects the suspect. The defense would argue that this was the equivalent of a showup (an identification procedure with only the suspect and no fillers) and hence a biased procedure. The police also were concerned that witnesses would ask to re-view photos they had seen earlier. In the pure version of sequential presentation, reviewing photos is not allowed because it begins to transform the sequential procedure into a simultaneous procedure, thereby eliminating its effective advantage. Denying witnesses' requests to reexamine previously viewed lineup members seemed problematic, and yet the research shows that it is important to follow certain protocols in order to take full advantage of the sequential-superiority effect (R. C. L. Lindsay, Lea, & Fulford, 1991). A concern also was raised about what to do if the witness picked a filler before coming to the suspect. Police investigators argued that they would want to know the witness's reaction to the suspect and, hence, would want to continue. We noted that a serious problem would arise if the procedure ended whenever the witness picked the suspect but continued when the witness picked a filler, because that would communicate to the witness something about the status of the identified person. The solution was to permit either the continuation procedure or the stopping procedure as long as it was determined ahead of time (not at the time of the witness's pick) which procedure would be used.

Although the *Guide* does not explicitly state a preference for the sequential procedure, the following statement is included in the introduction:

Scientific research indicates that identification procedures such as lineups and photo arrays produce more reliable evidence when the individual lineup members or photographs are shown to the witness sequentially—one at a time—rather than simultaneously. [Nevertheless] this *Guide* does not indicate a preference for sequential procedures. (p. 9)

Not recommending double-blind testing and not indicating a preference for the sequential lineup were not the only shortcomings. For example, it would be helpful to videotape all lineups (see Kassin, 1998). The best we could get was guidelines to preserve the original photos for photo lineups and pictures of the lineup for live lineups.

REFLECTIONS AND PROSPECTIONS

Research on eyewitness memory is almost exclusively an experimental, laboratory-based literature in psychology. The idea that this literature would come to the point of informing and influencing the development of national guidelines on eyewitness evidence seemed far-fetched at one time, even to those of us who were trying to achieve just such an effect. Clearly, there were precipitating events that psychology played no part in, such as the development of forensic DNA techniques. Furthermore, had Janet Reno not been attorney general, who knows whether the U.S. Department of Justice would have taken up this issue. As well, the timing of these events was fortunate. For example, if forensic DNA techniques had been available in the 1970s to reveal the dominant role of eyewitness error in false convictions, psychology would have been caught without a meaningful literature to address the problem. As it turns out, the timing of DNA-based revelations of eyewitness error coincided nicely with the maturation of an eyewitness literature that had sophisticated policy statements and practical solutions. Of course, luck favors the prepared, and psychologists can take credit for being prepared. With well over 1,000 publications on eyewitness issues in psychology since 1979, a large proportion of which focused on system variables, psychologists were in a solid position to assist the legal system when the eyewitness issue came to the fore.

We believe that the *Guide* will be revised in a few years, and we are hopeful that the shortcomings described earlier will be addressed. In addition, we see considerable opportunity for new research in psychology that will effectively address some matters that we were not able to address effectively this time around. Prominent among those is the problem of the paucity of information that is obtained from eyewitnesses' verbal descriptions of perpetrators. The typical description obtained in both lab studies and actual cases includes only about five descriptors, such as gender, approximate age, race, something about hair or facial hair, and height or build (see Piggott & Brigham, 1985; Sporer, 1996; Wells, 1985). These descriptions are typically so broad as to encompass large segments of the population (e.g., adult, white male, average height, medium-

length hair). Pressing for further details commonly yields guesses or at least information of low accuracy. Furthermore, a witness who feels pressure to describe a face may have his or her ability to recognize that face later diminished, a phenomenon dubbed *verbal overshadowing* (Schooler & Engstler-Schooler, 1990). Another problem concerns the phenomenon of memory source confusions, in which, for instance, a bystander at a crime is mistakenly identified as the perpetrator (e.g., Read, 1994; Ross, Ceci, Dunning, & Toglia, 1994). Are there ways to minimize the chances of such errors? We anticipate as well that there will be further refinements to the sequential lineup procedure (e.g., see Levi, 1998b) and that there will be new procedures that are particularly suitable for child witnesses (see Pozzulo & Lindsay, 1999). In addition, future research is likely to discover better estimator variables for diagnosing mistaken identifications after they have happened (postdiction). Decision times seem to be one of the most promising new postdiction variables (see Dunning & Stern, 1994; Smith, Lindsay, & Pryke, in press; Sporer, 1993). Far from being the finale for psychology's contributions to the justice system's understanding, postdiction, and control of eyewitness error, we see the *Guide* as one example of what psychology and law enforcement can accomplish together.

Early in the 20th century, applied psychologist Hugo Münsterberg (1908) claimed that psychology could help the legal system clarify the "chaos and confusion" (p. 33) of eyewitnesses. The brilliant and influential legal scholar J. H. Wigmore (1909) dismissed Münsterberg's claims with regard to what psychology had to offer at that time. Wigmore nevertheless felt that the day would come when psychology could in fact assist the legal system in its struggle with eyewitness evidence. Wigmore further stated that when psychology had something to offer the legal system regarding eyewitness evidence, the legal world would be ready to receive it. It appears that the time has come, at least in some measure. We think both Münsterberg and Wigmore would be pleased.

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