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A 'Middle Road' Approach to Bridging the Basic–Applied Divide in Eyewitness Identification Research

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SUMMARY

Over a century of laboratory research has explored the mechanisms of memory using a variety of paradigms and stimuli. In addition, many researchers have taken up Neisser's challenge to examine memory under real-world conditions, most prominently including the eyewitness identification problem. Unfortunately, these 'high road' and 'low road' perspectives rarely communicate with one another, with the eyewitness field largely adopting an approach that focusses on methodological adherence to conditions that mimic real-world situations. In the current paper we advocate for a 'middle road' approach that includes a focus on theory development, an emphasis on the interaction between field and laboratory research and the implementation of convergent approaches to investigating eyewitness identification. We argue that the field would be invigorated by such an approach, with benefits accruing to our understanding of eyewitness identification and to the development of procedures that will ultimately improve eyewitness accuracy. Copyright © 2008 John Wiley & Sons, Ltd.

'Every science considers the single facts in their relation to other facts, works toward connections, towards generalities. Science means connection and nothing else...'

Hugo Münsterberg (1899, p. 11)

Hugo Münsterberg was profoundly interested in applying insights from psychology to solve practical problems, including issues related to the use of eyewitness testimony. Furthermore, as illustrated above, he clearly felt that the pursuit of generalizability and theory building were important goals of the scientific process. We agree with this sentiment, and argue that the eyewitness identification field, despite its many successes, has made less theoretical progress than it should have in understanding the psychological processes that underlie performance. We believe this lack of progress has come because the field has often neglected to incorporate insights from basic research and theory, has used an overly strict ecological validity criterion for determining the relevance of extant research for understanding eyewitness identification and has focussed on demonstrating empirical facts rather than identifying more general theoretical mechanisms (for discussion on this

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latter point, see Turtle, Read, Lindsay, & Brimacombe, 2008). In the current paper, we discuss these issues and propose to overcome these problems by increasing the connection between basic and applied research.

HIGH ROAD AND LOW ROAD—NEVER THE TWAIN SHALL MEET?

The contemporary study of eyewitness identification arose concurrently with an increased general interest in studying real-world memory problems—the Practical Aspects of Memory movement (e.g. Cohen, 1989). In a widely cited talk and series of papers, Neisser (1978, 1982) characterized two modes of research: the 'low road' and the 'high road', with the former being conducted in more ecologically realistic situations and the latter conducted in more well-controlled laboratory situations. Furthermore, he argued that researchers should embrace more low road research because little that had been learned from high road research was useful for shedding light on important real-world problems. Although this particular point has certainly been debated (see e.g. Banaji & Crowder, 1989, 1994 and subsequent commentary), it is clear that researchers have heeded the call to conduct more ecological research, whether by actually conducting field research or by ensuring that research designs contain more features of the target ecological context. Although we believe the eyewitness identification field has benefited from increased applied research, we think that Neisser's exhortation may also have had unintended negative effects.

Despite the impressive progress of the eyewitness identification field in characterizing important factors that impact real-world witnesses (e.g. lineup instructions, lineup procedures or the similarity of lineup members) and techniques that can potentially reduce identification errors (e.g. Technical Working Group for Eyewitness Evidence, 1999), there has been little progress in developing a more general theory of eyewitness identification (for an exception, see Clark, 2003, 2008). Although there may be multiple reasons for this lack of progress (e.g. the complexity of possible variables), we believe that a primary reason is that the field has proceeded rather independently from related developments in more basic research on cognitive (e.g. face identification) and social psychological processes. In many ways this is understandable, as it appears to us that researchers in the field have often adopted a 'traditionalist' approach that sees the eyewitness identification task as unique or special in terms of its characteristics. Because of the uniqueness of the task, it is also often assumed (implicitly or explicitly) that research using tasks that do not share the traditional ecological features of eyewitness identification are therefore largely irrelevant (e.g. Ebbesen & Konecni, 1996). In contrast, we argue that although the eyewitness identification task has some unique characteristics, the cognitive and social psychological processes that are brought to bear on this task are not unique. Thus, theory and data from basic research on these processes are relevant to our understanding of eyewitness identification (see also Brewer & Weber, 2008; Turtle et al., 2008). In short, we argue that the field's largely traditionalist approach has limited its potential for theoretical progress.

STRENGTH FROM DIVERSITY AND INTERACTION: CONVERGENT OPERATIONS *VS*. METHODOLOGICAL FIXATION

The problem described in the previous section is not exclusive to the eyewitness identification field. It has often been argued that the use of *converging operations* is critical

for the advancement of scientific understanding (e.g. Garner, Hake, & Eriksen, 1956). This research strategy is typically described as the use of different tasks or measures to study a phenomenon with the goal of discriminating between alternative hypotheses. Such diversity of tasks allows scientists to overcome the weaknesses of any given task, and to the extent that results are similar across tasks, confidence in one's conclusions can be increased (e.g. Campbell & Fiske, 1959). We believe such a strategy is efficacious, and also use this term more broadly to apply not only to the use of multiple tasks, but also to multiple complementary methodological approaches or stimuli. Conversely, we refer to the situation where a single task, approach or type of stimuli has been overemphasized as *methodological fixation*. For the same reasons that converging operations can be a fruitful approach to understanding a phenomenon, the lack of converging operations has the potential to limit progress in a given field (similarly, see mono-method or mono-operation bias, Cook & Campbell, 1979).

A historic example of methodological fixation comes from early research on semantic memory. One goal of this line of research was to understand how general knowledge concepts are represented and retrieved from long-term memory. For approximately a decade, research in the area relied almost exclusively on the sentence verification task (e.g. Collins & Quillian, 1969). In this task, participants were presented with sentences like 'Is a chicken a bird'? and reaction time was recorded as the dependent measure. Although a number of theoretical models were posited based upon these studies, later research suggested that performance was largely a consequence of the difficulty of the decision task following retrieval (e.g. McCloskey & Glucksberg, 1979). Consequently, it was generally recognized that the field became overly dependent on a single task instead of using converging tasks to understand the relevant psychological processes. Thus, in many ways, using a single approach limited what researchers were able to learn about semantic memory.

A 'MIDDLE ROAD' APPROACH

Much in the same way that reliance upon the sentence verification task inhibited progress toward a general understanding of semantic memory, we believe that the traditionalist approach of focussing on the uniqueness of the eyewitness identification task has limited our field's development. If not the traditionalist approach, what do we propose as an option? Our alternative is not to replace it exclusively with laboratory-based ('high road') research or to suggest that researchers should focus on collecting data in real-world eyewitness situations (although others have made this 'low road' argument; e.g. Yuille, 1993). Rather, we think that much is to be gained from a 'middle road' approach that bridges basic and applied research.[1] For example, using a diversity of theoretical and empirical approaches allows for the opportunity to overcome limitations of any single approach. In the context of eyewitness identification research, this would include both ecological (e.g. field) studies and basic research that examine psychological processes that are deployed in eyewitness identification. Critically, this approach also assumes a mutually beneficial *interaction* between the two types of research and researchers (rather than the more common independence, or even antagonism between basic and applied researchers).

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[1] We note that a related 'winding road' research strategy has been previously articulated (Mathews & Lane, 2006). However, there are some differences, and our middle road approach is more elaborated.

Although it is often emphasized that basic research may be applied to real-world settings or that applied research can provide ideas that can be tested in the lab, we would argue that real-world settings (or simply research with more ecological features) are ideal for testing the generalizability of more basic theories of cognition. Thus, we see the interaction between basic and applied research as leading to a more vibrant field and to deeper interactions between the various areas of psychology and/or other allied sciences. More specifically, we see this approach as a means of making considerable theoretical and applied progress in the field of eyewitness identification.

We believe there are three basic elements to a middle road approach: (a) a focus on theory development, (b) interaction between field and laboratory research and (c) the use of convergent approaches to investigate eyewitness identification. Below, we discuss the elements of this approach in greater detail and then provide examples of research that exemplify some or all of these elements.

Focus on theory development

The primary goal of a middle road approach is the development of a comprehensive theory of eyewitness identification. Achieving such a goal has the potential for important scientific and practical advances (see also Brewer & Weber, 2008; Brewer, Weber, & Semmler, 2007). At one level, this focus lends greater coherence to the scientific enterprise than one based primarily on testing individual real-world phenomena. Research designed to discriminate between various theoretical accounts (particularly theories whose assumptions are well defined, see Clark, 2008) is much more likely to lead to progress in understanding the processes underlying eyewitness identification than a more piecemeal approach. Furthermore, we agree with Turtle et al. (2008) that a focus on processes rather than phenomena can help researchers better communicate the field's findings to the legal community (including jurors). Importantly, we believe that major advances in applications for eyewitness identification are unlikely to come about absent related theoretical advances. We also believe that a comprehensive theory of eyewitness identification is the appropriate answer to critics of eyewitness memory research who argue that research results are irrelevant unless they precisely replicate real-world conditions (see Clark's (2008) one-legged, six-toed Scotsman example). A well-validated theory allows one to make reasonable predictions about eyewitness memory even for specific situations that have never been encountered in the laboratory or in field research.

Interaction between field and laboratory research

As noted above, this approach acknowledges the importance of research that ranges from very basic to highly ecological (e.g. Hermann & Gruneberg, 1993). The interaction that we propose is both philosophical and literal. At a philosophical level, there is a need to take seriously research that is conducted across the methodological spectrum, using different tasks, stimuli, etc. For example, field studies can provide important information about the specific contextual variables operating in real-world identifications, while laboratory paradigms allow us to investigate the potential interactions between such variables. Furthermore, we would argue that much can be gained from conceptualizing real-world behaviour (like eyewitness identification) in terms of basic cognitive and social psychological processes, as well as thinking about how basic psychological theories can apply to the constraints of real-world situations. With this in mind, we suggest that

graduate training in Psychology and Law should include sufficient exposure to basic theories of perceptual, cognitive and social psychological processes (including more recent neuroscientific approaches) and the broad array of research methodologies inherent to these domains.

At a more literal level, the knowledge obtained by research across the spectrum must be shared in ways that allow for theory development. In some cases, such interaction can take place within an individual researcher (e.g. studying a phenomenon in the field and then in the laboratory). In other cases, research might be conducted by different individuals, and the interaction occurs through reading one another's journal articles, conference presentations, etc. We do acknowledge that such interaction can be difficult. Basic and field researchers often publish in different journals, attend different conferences, and thus rarely have the opportunity to discuss the issues of interest. It is challenging enough to keep up with the great volume of research in one's own field, let alone learn about other fields that have different goals or use different terminology. Yet, this problem is not unique to our field as seen by the increased emphasis on interdisciplinary research in the behavioural sciences (e.g. Cacioppo, 2007). Despite these challenges, we believe the benefits of such interaction greatly outweigh the costs. Thus, we believe that encouraging researchers from across the spectrum to work together to tackle the eyewitness identification 'problem' (e.g. through sessions at conferences, special issues of journals, workshops on new techniques, etc.) should be a major goal of the field.

Use of convergent approaches

As we have discussed, we believe that there is strength in using a broad array of theoretical and methodological approaches to understand the cognitive and social processes that underlie eyewitness identification. Such an approach not only allows for firmer conclusions about the phenomena under study (i.e. when conclusions are similar across tasks, stimuli, etc.), but also provides a stronger foundation for theory building and testing. Although one could argue that a variety of approaches are used in the eyewitness identification literature, the issue of ecological validity is sometimes used to argue for the irrelevance of research that employs tasks that do not share all the characteristics of real-world eyewitness identification (e.g. Ebbesen & Konecni, 1996). While ecological validity can be used as a valid basis for criticism, we think that its use as a blanket criticism is unproductive and more harmful than helpful to the field. We argue instead that the core issue, regardless of whether the research was conducted in field or laboratory settings, is *generalizability* (Banaji & Crowder, 1989, 1994). Even field studies can lack generalizability if the situation studied is a unique one, and regardless of context, studies that lack internal validity preclude a consideration of the generality of the findings. Thus, in many circumstances, less ecologically valid studies can contribute more to producing a credible theory of eyewitness identification than other, more ecologically valid ones. If the goal is to understand the psychological processes that underlie eyewitness identification, we see no principled reason why studies of face or word recognition, or those that examine lineup recognition of non-facial stimuli (e.g. cars, boats, words), should be excluded from consideration merely because they are not representative of typical eyewitness memory situations or stimuli. As we have discussed, it is our contention that the processes underlying eyewitness identification are not special, although the manner in which such processes are deployed can certainly be influenced by the constraints of the task. Thus, such

studies can play a role in theory development, as can studies that share more features with real-life eyewitness situations.

RESEARCH EXAMPLES

The approach we have outlined shares some similarities with the '*in vivo/in vitro*' approach advocated by Kevin Dunbar (described in Dunbar & Blanchette, 2001). Dunbar studies the comprehension and production of analogies in both naturalistic (*in vivo*) and laboratory (*in vitro*) contexts. For example, he has examined the use of analogies by researchers in molecular biology laboratories and in political discourse that appeared in Canadian newspaper articles. Doing so has allowed him to uncover potential variables (e.g. generation) that affect the retrieval of analogies that he has subsequently tested in a laboratory setting. Although there are differences between the approaches (e.g. our focus on inter-researcher collaboration and the field as a whole), our 'middle road' approach shares his emphasis on theory development and the need for rich interplay between applied and basic research.

Eyewitness research examples

Within the broader field of psychology and law, there are some areas or individual investigators which have successfully employed some or all of the characteristics described above. For example, the field of eyewitness suggestibility was influenced both by the situations faced by real-world witnesses and by basic memory theory. In a typical study, participants view a mock crime, read a narrative or answer questions about the event that include misleading information, and are later tested on their memory for the event (e.g. Loftus, Miller, & Burns, 1978). A consistent finding is that participants choose or report the misleading information when tested on their memory for the event. Furthermore, much research in the area has focussed on testing theoretical mechanisms that were taken from more basic research on memory. Prominent examples of proposed mechanisms include overwriting (e.g. Loftus et al., 1978), inaccessibility/blocking (e.g. Christiaansen & Ochalek, 1983; Eakin, Schreiber, & Sergent-Marshall, 2003) and source monitoring errors (e.g. Lane, Roussel, Villa, & Morita, 2007; Lindsay & Johnson, 1989; Zaragoza & Lane, 1994). Thus, researchers in the area did not think it necessary to posit a specialized theory of eyewitness suggestibility, but rather focussed on established fundamental mechanisms of memory.

We also note that the results of basic research on memory have contributed to successful real-world legal applications. One prominent example is 'the Cognitive Interview' (e.g. Fisher & Geiselman, 1992). The techniques which make up the interview are motivated by findings from basic research including context reinstatement (e.g. Tulving & Thomson, 1973) and varied retrieval (e.g. Anderson & Pichert, 1978). Research examining the efficacy of the Cognitive Interview has generally found increased recall of event detail with little or no cost to accuracy (e.g. Fisher, Geiselman, & Amador, 1989). What is noteworthy is that this is not merely a situation where basic research informed practice; rather, these researchers also conducted an intensive examination of how investigators typically interview witnesses in the field (for a review, see Fisher & Schreiber, 2007). Thus, the strength of the Cognitive Interview came from the interplay between basic theory and real-world application.

Within our own field of eyewitness identification, we believe that several examples of 'middle road' approaches have been undertaken in recent years. For example, Clark (2003, 2008) has developed a computational model of eyewitness identification that relies upon memory theory from a basic research tradition. Similarly, Gronlund's (2005) SUSPECTS framework has been used to account for performance in sequential lineups. Within our own laboratories, we have also begun exploring the role of basic memory and decision-making theory in eyewitness identification tasks. Meissner, Tredoux, Parker, and MacLin (2005) introduced a 'lineup recognition' paradigm to examine signal detection perspectives on lineup identification, as well as the role of dual-process theories in predicting performance across various manipulations (e.g., Yonelinas, 2002). This paradigm differs from the more traditional eyewitness identification task by providing multiple identification opportunities to participants across both target-present and target-absent arrays, yet in doing so it also provides an opportunity to test theory using a variety of process measures. The paradigm has been used to examine lineup presentation factors (Meissner et al., 2005), carryover effects from show-ups to lineups (Haw, Dickinson, & Meissner, 2007), the cross-race effect (Evans, Marcon, & Meissner, in press; Jackiw, Arbuthnott, Pfeifer, Marcon, & Meissner, 2008) and the relationship between memory for contextual details and identification accuracy (Lane, Groft, Roussel, & Calamia, 2008).

CONCLUSION

In closing, we share Münsterberg's belief that scientific endeavours should focus on the connections between facts, methods and theories. Connections between research on eyewitness identification and related theory in cognitive and social psychology have been few in number, despite the fact that these fields are quite mature theoretically and methodologically, and thus potentially have much to offer. Furthermore, there has often been a reluctance to acknowledge the relevance of research that utilizes stimuli or tasks which are thought to be less ecologically valid. We believe that such attitudes have slowed the theoretical progress of an otherwise vibrant and important field. In the end, we believe a 'middle road' approach that provides a central role for theory building and testing can be a fruitful one for the study of eyewitness identification. This approach assumes that the eyewitness identification task is not special in terms of the psychological processes deployed nor is it entirely unique in its characteristics. In addition, the use of converging methodologies, tasks and stimuli can only strengthen the field's ability to offer sound conclusions. Perhaps most importantly, this approach sees basic and applied research as mutually beneficial. Thus, the goal of achieving a comprehensive scientific theory of eyewitness identification is also a path toward new and groundbreaking applications that promise to increase the accuracy of eyewitnesses.

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