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STEREOTYPES AS SOURCE-MONITORING CUES:
On the Interaction Between Episodic and Semantic Memory

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Abstract—*This research examined the use of stereotypic expectancies as source cues for biographical memories. Participants were more likely to misattribute stereotypical than counterstereotypical behaviors to a target person. However, this was true only when the original source of the behaviors was difficult to assess (there was source confusion) and recollective processes were impaired. Thus, when recollection of episodic details is disrupted, perceivers may still rely on semantic knowledge to interpret memories. These results demonstrate that stereotype use is efficient not only during the encoding of social information, but also during its retrieval. However, there are also significant costs associated with using stereotypes as source cues. Implications of these findings for social perception and eyewitness testimony are discussed.*

The ability to attribute memories to their proper source is critical for many basic human functions (Johnson, Hashtroudi, & Lindsay, 1993). For example, autobiographical memory depends on the attribution that a remembered behavior was performed by oneself and not by someone else. Moreover, the behavior must be attributed to an actual event rather than to a fleeting thought or dream. Accurate self-perception depends on the ability to make these source attributions correctly.

Perceptions of other people are also often based on source memory. Was it Paul or Jason who made the racist comment? Obviously, such source attributions have significant implications for social perception. Correctly attributing others' behaviors to their source is also crucial in legal contexts. Police lineups and related eyewitness testimony are dependent on a witness's ability to correctly attribute criminal behavior to the criminal. Was it Juan or John who threw the first punch in the bar brawl? Such critical source-monitoring tasks are complicated by the existence of stereotypic expectancies that may bias perceivers toward particular conclusions (see Hamilton & Sherman, 1994, for a review). Physical cues having to do with race, sex, age, or dress may lead perceivers to be more or less likely to attribute criminal behavior to a suspect. The purpose of this article is to examine the source-monitoring processes underlying biographical memory (memory for other people's behavior), and the role that stereotypic expectancies play in these processes.

SOURCE-MONITORING PROCESSES

In making source attributions for memories (including biographical memories), perceivers may rely on either systematic, effortful processes or relatively effortless, heuristic processes (Chaiken, Liberman, & Eagly, 1989; Johnson et al., 1993; Johnson & Raye,

1981). Systematic source monitoring involves a reasoned examination of the details of remembered information in an effort to ascertain the plausibility that the information stems from various sources. These processes are intentional and effortful, and they require significant mental resources. In contrast, heuristic source monitoring relies on relatively simple cues in attributing memories to their source. For example, feelings of familiarity or preexisting schemas or expectancies about source may be relied upon in making these attributions (Banaji & Greenwald, 1995; Jacoby, Kelley, Brown, & Jasechko, 1989; Johnson et al., 1993). The use of such heuristic cues is relatively effortless and may occur without the perceiver's intention. Source monitoring may rely on both systematic and heuristic processes concurrently. However, because heuristic processes require fewer resources than systematic processes, situations that constrain a perceiver's processing capacity may increase the extent to which source attributions are based on heuristic cues (e.g., Jacoby, Woloshyn, & Kelley, 1989).

STEREOTYPES AS SOURCE-MONITORING CUES

This heuristic-systematic framework suggests an important role for stereotypic expectancies in making source attributions for biographical memories. Stereotypes provide expectations about what kinds of behavior may be expected from members of different social groups (Hamilton & Sherman, 1994). As a result, when perceivers attribute remembered behaviors to different individuals, stereotypes about those individuals may act as heuristic cues that influence the decision criteria for making a source attribution. The confidence threshold for attributing an expected behavior to an individual may be lower than the confidence threshold for attributing an unexpected behavior to the same individual (e.g., Bodenhausen & Wyer, 1985).

Reliance on stereotypes as source-monitoring cues may be particularly likely when a perceiver's processing capacity is restricted in some way. As noted, heuristic source-monitoring processes are especially prevalent when systematic processing is difficult to achieve (Jacoby, Woloshyn, & Kelley, 1989). In fact, there is considerable evidence that perceivers are especially likely to rely on stereotypes as judgmental heuristics in a variety of social contexts when processing resources are low (for reviews, see Bodenhausen, Macrae, & Sherman, in press; Hamilton & Sherman, 1994). Thus, particularly when capacity is low, stereotypes should increase the likelihood that stereotypical behaviors will be attributed to an individual and decrease the likelihood that counterstereotypical behaviors will be attributed to the individual.

PREVIOUS RESEARCH

One methodology that has been used to examine the attribution of behaviors to members of different groups is the category-confusion paradigm developed by Taylor, Fiske, Etcoff, and Ruderman (1978).

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In this paradigm, perceivers are exposed to statements made by members of two groups (e.g., men and women), and are later asked to match the statements with the individuals who made them. The purpose of this methodology is to examine the extent to which perceivers are relying on categories (e.g., sex) to organize the information. The proportion of intracategory misattributions (e.g., attributions made to one male when another male actually made the statement) is compared with the proportion of intercategory misattributions (e.g., attributions made to a male when a female actually made the statement). The greater the proportion of intracategory compared with intercategory errors, the greater the extent to which perceivers are relying on the categories in making their attributions. Researchers have examined a variety of factors that influence the extent to which perceivers' judgments are category-based. However, in applications of this paradigm, the stereotypicality of the individuals' statements has not been manipulated. Thus, researchers using this approach have not investigated the extent to which misattributions depend on the stereotypicality of the statements.

Other research by Slusher and Anderson (1987) examined the role of stereotypes in source-monitoring processes more directly. This research demonstrated that stereotypes may influence perceivers' ability to distinguish imagined information from real information (i.e., *reality monitoring*; Johnson & Raye, 1981). In particular, perceivers have a difficult time distinguishing between stereotypical traits that are actually encountered and stereotypical traits that are only inferred.

Banaji and Greenwald (1995) examined the influence of stereotypes on attributions of fame. Replicating the results of Jacoby, Kelley, et al. (1989), Banaji and Greenwald showed that names made familiar through prior exposure were often misperceived as being the names of famous people. Because the source of the original encounter with the names could not be remembered, the names' familiarity was attributed to the fact that they belonged to famous people. Thus, familiarity was used as a source cue to fame, and nonfamous people "became famous" overnight. However, Banaji and Greenwald extended the findings of Jacoby, Kelley, et al. by showing that some people may become famous overnight more easily than others. In particular, they showed that the familiarity of nonfamous male names was more likely to be misattributed to fame than was the familiarity of nonfamous female names. Banaji and Greenwald argued that this reflected the implicit operation of a stereotype that men are more likely to be famous than women. This stereotype was used implicitly as a cue in deciphering the source of the names' familiarity.

THE PRESENT RESEARCH

The present experiment extends previous research on stereotypes and source monitoring in two important ways. First, we investigated the role of stereotypes in source attributions for specific biographical events. We were interested in the extent to which perceivers relied on a stereotype as a cue in attributing particular stereotypical and counterstereotypical behaviors to an individual who belonged to a stereotyped group. Second, we examined the extent to which processing capacity moderated the use of stereotypes as source-monitoring cues.

Overview and Predictions

Participants read two lists that included both friendly and unfriendly behaviors. The first list was described as a list created by the experimenters. The second list was described as a set of behaviors performed by a skinhead or priest. The next day, participants were presented with all the behaviors from the two lists plus a set of new friendly and unfriendly behaviors. Participants were asked to identify which behaviors had actually been performed by the skinhead or priest. Half of the participants were put under a cognitive load as they attempted to perform this task. We were interested in the extent to which stereotypical (skinhead-unfriendly, priest-friendly) and counterstereotypical (skinhead-friendly, priest-unfriendly) behaviors that the skinhead or priest did not do would be misattributed to him as a function of behavior familiarity (old behaviors not reported by the skinhead or priest vs. new behaviors not reported by the skinhead or priest) and processing capacity (full vs. divided). We expected that more stereotypical than counterstereotypical behaviors would be misattributed to the target, but only when the behaviors were familiar from being presented during the 1st day of the experiment. However, we expected this tendency to be true only when participants did not have full processing capacity. Thus, when familiarity is high (and source attributions are difficult to make), but systematic recollection is impaired, participants should rely on their stereotypes as source cues. As a result, in this condition, a greater number of stereotypical than counterstereotypical behaviors should be misattributed to the target. In contrast, if either familiarity is low or recollection is unimpaired, then there should be relatively equal numbers of misattributions of stereotypical and counterstereotypical behaviors. In these situations, the stereotype is not needed as a source cue.

Method

Participants

For their participation, 93 students at Northwestern University were given partial course credit in an introductory psychology course. Participants were run in sessions of 1 to 4 people.

Materials and procedure

Participants engaged in a two-session experiment, with the sessions occurring on successive days. In the first session, participants read two lists of behaviors. The first list was described to participants as a list that the experimenters had created. Participants were asked to memorize the behaviors on this list. The second list was described as a list of self-descriptive behaviors reported by a Chicago-area man named Bob Hamilton during an interview. Bob was described as either a skinhead or a priest. Participants were asked to read these behaviors and form an impression of Bob. Each list consisted of 30 behaviors, 10 of which were pretested to be friendly (e.g., gave a stranger a quarter to make a phone call), 10 of which were pretested to be unfriendly (e.g., shoved his way to the center seat in the movie theater), and 10 of which were pretested to be irrelevant to the friendly-unfriendly dimension (e.g., bought a new shirt). Though the behaviors in the two lists were similar, participants were assured that only the behaviors in the second list had actually been reported by Bob. For participants in the skinhead condition, the unfriendly behaviors were stereotype-consistent and the friendly behaviors were stereotype-inconsistent. For participants in the priest condition, the opposite was true. Thus, the same behaviors served as both stereotype-consistent and -inconsistent stimuli, depending on the target. The behaviors were presented randomly on microcomputers for 6 s each.

In the second session, which occurred approximately 24 hr later, participants were given a modified recognition task. The 60 behaviors from Lists 1 and 2 plus 30 new (List 3) behaviors were randomly presented on microcomputers. Like Lists 1 and 2, List 3 was made up of 10 friendly, 10 unfriendly, and 10 trait-irrelevant behaviors. For the recognition test, participants were instructed to press a key marked "yes" for a behavior only if it was one reported by Bob (List 2 behaviors). They were told that if they could remember that a behavior was from the first list they were asked to memorize, then they could be sure that it was not one of Bob's behaviors, and they should press the "no" key. Similarly, if they knew that the behavior was new and had not been presented at all during the first session, then they could also be sure that the behavior was not one of Bob's, and they should press the "no" key. As they performed this recognition task, some participants were also placed in a low-processing-capacity condition. These participants were further informed that the experiment was concerned with people's ability to do multiple tasks at the same time. A cognitive load was manipulated by asking these participants to hold an eight-digit number in memory as they performed the recognition test. This task has been used successfully to deprive participants of processing resources in past research (e.g., Gilbert & Hixon, 1991; Sherman, Lee, Bessenoff, & Frost, 1998). To assess compliance, we asked these participants to write down the eight-digit number on a slip of paper at the end of the recognition test.[1]

Results

A 2 (target type: skinhead vs. priest) × 2 (capacity: high vs. low) × 2 (behavior list: List 1 vs. List 3) × 2 (stimulus type: stereotype-consistent vs. -inconsistent behavior) analysis of variance, with repeated measures on the last two factors, was conducted on the proportion of false "yes" responses from Lists 1 and 3.[2] This analysis yielded a significant main effect for behavior list, $F(1, 89) = 328.39$, $p < .05$. Many more behaviors were misattributed to Bob from List 1 ($M = .45$) than from List 3 ($M = .12$). An interaction between behavior list and stimulus type, $F(1, 89) = 4.17$, $p < .05$, showed that whereas misattributions were equally likely for stereotype-consistent ($M = .12$) and -inconsistent ($M = .12$) behaviors on List 3, misattributions were more likely for stereotype-consistent ($M = .48$) than -inconsistent ($M = .42$) behaviors on List 1. Finally, this effect was moderated by the predicted three-way interaction among capacity, behavior list, and stimulus type, $F(1, 89) = 4.80$, $p < .05$. When processing capacity was not depleted, misattributions for stereotype-consistent behaviors (List 1: $M = .44$, List 3: $M = .13$) and stereotype-inconsistent behaviors (List

1: $M = .44$, List 3: $M = .12$) were equally frequent for both List 1 and List 3 behaviors (see Fig. 1). In contrast, when capacity was depleted, there was a significant two-way interaction between behavior list and stimulus type, $F(1, 42) = 9.51$, $p < .05$ (see Fig. 2). For List 3 behaviors, misattributions were equally likely for stereotype-consistent ($M = .11$) and -inconsistent ($M = .11$) behaviors. However, for List 1 behaviors, there were many more misattributions for stereotype-consistent ($M = .51$) than -inconsistent ($M = .41$) behaviors (simple effect: $F[1, 89] = 14.71$, $p < .05$).[3]

Discussion

Regardless of processing capacity, participants made the same number of misattributions for unfriendly and friendly behaviors from List 3. Because these behaviors were new, they were unfamiliar to participants, and did not produce source confusions with the List 2 target behaviors. As a result, there was no need to rely on the stereotype as a cue in attributing these behaviors to their source. In contrast, the processing-capacity variable had a significant impact on participants' attributions for List 1 behaviors. Because these behaviors had been seen during the 1st day of the experiment, they were familiar to participants and shared much of their context with the List 2 target behaviors. As a result, source attributions for these behaviors were considerably more difficult to make, and were much more likely to be inaccurate. When participants possessed full processing capacity, they did not rely on their stereotypes to aid in the judgment process. In this case, they could rely on more systematic recollective processes to

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1. Following Gilbert and Hixon (1991), we considered participants who incorrectly reported four or more of the digits to have made large errors and excluded them from the data set. Four participants were excluded from the data analyses on this criterion.

2. The skinhead and priest conditions were conducted in different school terms at Northwestern University. Thus, there was not random assignment to these conditions. However, the predictions for the two conditions were identical: More stereotypical than counterstereotypical behaviors were expected to be misattributed to the target, but only when the behaviors were familiar from being presented during the 1st day of the experiment, and only when participants did not have full processing capacity. Because the predictions for the two conditions were identical (as were the materials and methods), the data were collapsed into one analysis, with target type as a between-subjects factor. As expected, the findings were not qualified by the target-type variable.
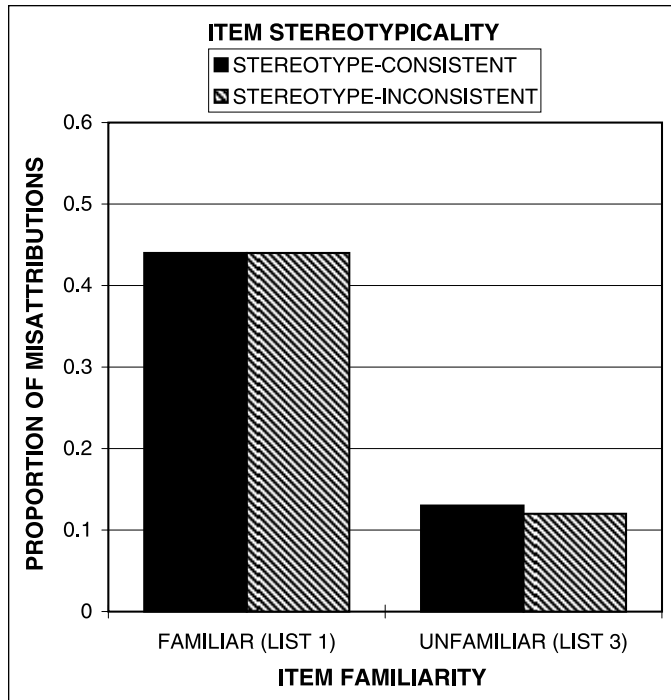
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3. A separate 2 (target type: skinhead vs. priest) × 2 (capacity: high vs. low) × 2 (stimulus type: stereotype-consistent vs. -inconsistent behavior) analysis of variance, with repeated measures on the last factor, was conducted on the proportion of correct "yes" responses to the List 2 behaviors. This analysis yielded no reliable effects. Under both full-capacity (consistent $M = .65$; inconsistent $M = .67$) and divided-capacity (consistent $M = .68$; inconsistent $M = .71$) conditions, stereotype-consistent and -inconsistent behaviors were equally likely to be correctly attributed to Bob. One might have expected that if participants were relying on their stereotypes to make source attributions when resources were depleted, then more correct responses for stereotype-consistent than -inconsistent behaviors would have been made in the low-capacity condition. However, there are good reasons to expect that the stereotype would have a smaller impact on the correct responses than the false alarms. First, whereas participants were asked to memorize the List 1 behaviors, they were asked to form an impression of Bob based on the List 2 behaviors. Considerable research has shown that impression-formation instructions produce much better memory for such behavioral stimuli than do memory instructions, because of organizational and elaborative encoding processes (e.g., Hamilton, Katz, & Leirer, 1980; Klein & Loftus, 1990). Therefore, recollective memory would be stronger for the List 2 than the List 1 behaviors, and participants would be less likely to rely on their stereotypes to make attributions about List 2 behaviors. Second, the fact that the List 2 items had actually been presented about Bob and were associated with Bob during encoding would also increase the confidence with which participants attributed those behaviors to Bob, and would decrease reliance on the stereotype. Analyses of the recognition judgment times for the List 1 and 2 items confirmed that judgments about the List 2 items were made with greater ease. Both "yes" responses (List 1 false alarms: $M = 2,470$ ms; List 2 hits: $M = 2,259$ ms; $F[1, 84] = 11.23$, $p < .05$) and "no" responses (List 1 correct rejections: $M = 2,549$ ms; List 2 misses: $M = 2,306$ ms; $F[1, 84] = 11.06$, $p < .05$) were made more quickly for List 2 behaviors than for List 1 behaviors. Thus, it appears that, because the decisions about List 2 items could be made relatively easily, stereotypes were not needed as source cues.

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Fig. 1. Source misattributions as a function of item familiarity and item stereotypicality: high-capacity condition.

Fig. 2. Source misattributions as a function of item familiarity and item stereotypicality: low-capacity condition.

decide which friendly and unfriendly behaviors had been performed by Bob. However, when resources were depleted, these recollective processes were disrupted. In this case, participants used their stereotypes to provide cues as to whether or not a particular behavior had or had not been reported by Bob. As a result, many more misattributions were made for stereotype-consistent than -inconsistent behaviors. Thus, stereotypes were used as source-monitoring cues when familiarity and source confusion were high, but ability to engage in systematic processing was low.

GENERAL DISCUSSION

The ability to monitor the source of biographical information is critical for social perception. If perceivers cannot attribute behaviors to their proper source, then they cannot form accurate impressions of other people. This source-monitoring task may be very difficult at times. There are often multiple potential sources of a behavior, and these sources may share much in common. Moreover, perceivers might not have the time or resources to sift through the details of their memories to disentangle the contexts. The present research suggests that in these circumstances, perceivers may rely on stereotypes as cues in attributing others' behavior.

Stereotype Efficiency and the Interaction Between Episodic and Semantic Memory

Research on the efficiency of stereotypes has focused almost exclusively on encoding processes. There is now considerable evidence that impressions of others are based to a lesser extent on individuating behaviors and to a greater extent on stereotypic expectancies when
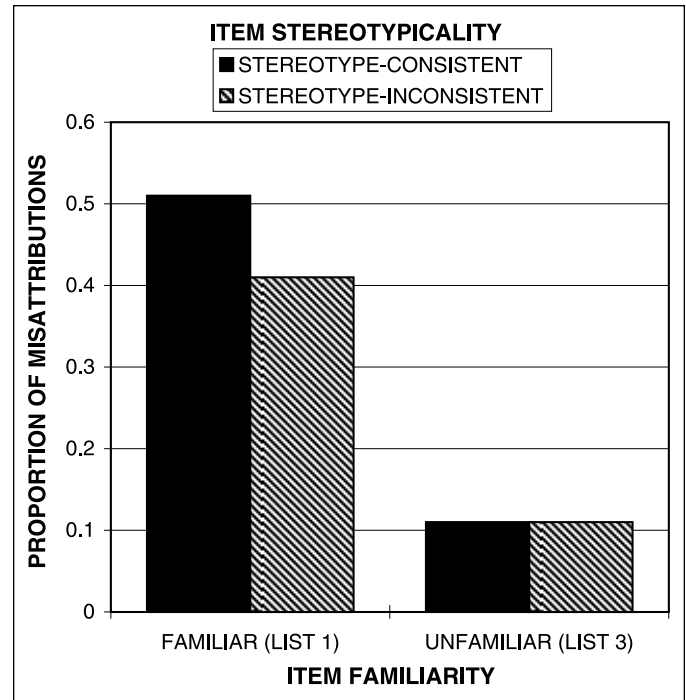
perceivers' processing resources are depleted during encoding (e.g., Bodenhausen et al., in press; Hamilton & Sherman, 1994). It seems that stereotypes are quite useful in providing inferences about others so that a perceiver does not have to attend carefully to their behavior (e.g., Sherman et al., 1998). The present research is the first demonstration that stereotypes are similarly efficient during retrieval processes. The ability to base judgments on the recollection of specific behaviors appears to be somewhat of a luxury. If capacity is low, such recollective processes may not be possible. In contrast, there appear to be no such constraints on stereotype-based memory processes. If behavioral recollection is impaired, stereotype-based memory may still occur. These findings support Tulving's (1983) proposal that episodic recollection is more deliberate and resource consuming than semantic uses of memory (of which stereotyping is one type).

Following Tulving's logic, we (Sherman, 1996) argued that the efficiency of stereotypes is closely tied to the way that stereotypes are represented in memory. We demonstrated that stereotypes are stored in memory as abstract, semantic structures (e.g., skinheads are mean) that are independent from specific episodic memories. Further, we showed that the presence of a stereotype decreased perceivers' reliance on episodic memories when making judgments about a social group. These findings suggested that stereotype-based memory processes are more efficient than episodic retrieval processes. However, the present research has gone much further by placing episodic retrieval and stereotype-based memory at direct odds with one another. To the extent that episodic recollection was operational, the impact of stereotype-based processes would be diminished. The results were clear: When recollection was impaired, stereotypes retained their potency. This finding demonstrates that the recollective use of episodic biographical memories is more resource dependent than the use of stereotypic semantic knowledge. At a deeper level, these results

suggest one reason why it is important for people to develop abstract knowledge structures: They provide invaluable backup to episodic memory. When episodic memory fails, semantic memory may fill in critical details. These findings seem to be at odds with recent speculations that the uses of stereotypes and individuating information are functionally equivalent (e.g., Kunda & Thagard, 1996; Smith, 1990).

This is not to suggest that all aspects of episodic memory are impaired under low-capacity conditions. Episodic memory may influence recognition through both familiarity- and recollection-based memory processes (Atkinson & Juola, 1973; Jacoby, Kelley, et al., 1989; Jacoby, Woloshyn, & Kelley, 1989; Mandler, 1980). Episodic familiarity effects remain strong even when recollective memory is impaired (e.g., Jacoby, Kelley, et al., 1989; Jacoby, Woloshyn, & Kelley, 1989). Indeed, in the present research, familiarity effects were quite substantial when resources were depleted. Yet familiarity is an episodic cue with limited applicability. Feelings of familiarity are quite useful for distinguishing between events that have and have not been encountered (i.e., Lists 1 and 2 vs. List 3). However, familiarity is not very useful for distinguishing between events that were previously encountered in two similar contexts that are equally familiar (i.e., List 1 vs. List 2; e.g., Chalmers & Humphreys, 1998). In this case, perceivers must rely on recollective memory to distinguish the contexts. If recollective memory is impaired, then perceivers may rely on generic knowledge structures to distinguish the contexts (as in the present experiment).

Costs of Stereotype Use

Though there are clear efficiency benefits gained from stereotyping, these benefits are offset by significant costs associated with using stereotypes as source-monitoring cues. Because of their abstract nature, the details provided by stereotypic cues may not apply accurately in many specific instances. Applying stereotypes to individual members of social groups may create falsely stereotypical impressions as stereotype-consistent behaviors are misattributed to the person, and stereotype-inconsistent behaviors are misattributed away from the person. In addition to producing inaccurate impressions, these misattributions have obvious negative implications for the individuals who are stereotyped. Such misattributions may falsely confirm the truth of negative stereotypes and perpetuate use of the stereotypes. Individual group members who are falsely perceived as confirming negative stereotypes may face potent discrimination. Consider again the question as to whether Juan or John started the bar brawl. The present research suggests that an eyewitness will set a lower criterion for attributing the criminal behavior to Juan (a member of a negatively stereotyped group) than to John, particularly if the witness is made nervous by the presence of armed police officers at a lineup or is pressured into making a hasty decision. Thus, clearly, the use of stereotypes as source cues is a double-edged sword that trades off efficiency and accuracy. An important goal for future research is to further explore the factors that influence the extent to which perceivers emphasize efficiency and accuracy in their retrieval processes, and the role that representational differences play in these processes.

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