

## Structural Properties of Stereotypic Knowledge and Their Influences on the Construal of Social Situations

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This research focused on the role that higher order structural properties of stereotypic knowledge play in the processing of social information. It is argued that stereotypic assumptions about cause-effect relations provide important constraints for the causal structure underlying the perceiver's subjective representation of social information. Experiment 1 shows how, within the context of a jury decision experiment, the causal structure underlying stereotypic knowledge about African Americans influences the construal of causality in a situation involving a member of that group. Results from 2 additional experiments indicate that this construal effect is based in part on stereotypic knowledge affecting the encoding of the trial evidence instead of on biasing responses at the output stage. The implications of these findings are discussed, and a theoretical framework is offered according to which the application of category knowledge involves not only the matching of stereotypic attributes but also the alignment of structural relations in the environment.

The notion that subjective experience goes beyond the bare sensation of stimuli, that we actively construe reality instead of passively registering our environment, has long guided psychological analysis (Asch, 1952; Bartlett, 1932; Heider, 1944; Lewin, 1936; Neisser, 1967; Ross & Nisbett, 1991; Wertheimer, 1925). Frequently, psychologists have focused on the process of categorization, the grouping of our stimulus environment into classes of similar entities, as one of the important means by which we go "beyond the information given" (Bruner, 1957). In identifying an object as a member of a certain category, we are able to draw on our knowledge and past experiences with similar objects and can thus infer stimulus properties that go beyond those that we directly observe. In the same way that we tend to base judgments and inferences about physical objects not on the individual stimulus but on knowledge about the group of stimuli as a whole, we also often make social judgments and inferences on the basis of our social categorical knowledge (Allport, 1954; Tajfel, 1969; Vinacke, 1957). Stereotypes, the perceiver's generalized assumptions about members of a social group, allow us to employ a wealth of knowledge that helps to enrich our subjective representation of the social environment and thereby place information about a given individual into a

context of subjective meaning (cf. Leyens, Yzerbyt, & Schadron, 1992; Oakes & Turner, 1990; Stangor & Lange, 1994).

Indeed, the field has accumulated impressive evidence documenting the effects that perceivers' stereotypes have on the subjective meaning of the social environment (e.g., Darley & Gross, 1983; Duncan, 1976; Sagar & Schofield, 1980; Vallone, Ross, & Lepper, 1985). Stereotypes have been found to direct the perceiver's attention (e.g., Bodenhausen, 1988; Cohen, 1981; Hilton, Klein, & von Hippel, 1991), to affect the information recalled (e.g., Rothbart, Evans, & Fulero, 1979; Hastie & Kumar, 1979; Stangor & Duan, 1991), and to alter the perceiver's interpretation of relevant information (e.g., Banaji, Hardin, & Rothman, 1993; Biernat, Manis, & Nelson, 1991; Darley & Gross, 1983; Duncan, 1976; Kunda & Sherman-Williams, 1993).

Although there has clearly been a long-standing interest in understanding the effects that stereotypes have on the construal of social information, much of this work has focused on the influence of *trait attributes* that are associated with a given stereotype. Banaji and her colleagues, for example, found that after incidental exposure to either stereotypically female or male attributes (i.e., "dependent," "aggressive"), participants perceived a target individual to be relatively more aggressive when the target was a man and relatively more dependent when the target was a woman (Banaji et al., 1993). Of course, stereotypic knowledge often contains assumptions more complex than beliefs about the presence or absence of certain group characteristics. For example, Andersen and Klatzky (1987) demonstrated that stereotype labels evoke substantially richer associations than do trait descriptions. Similarly, Fiske (1993) has described stereotypes as rich "Gestalt-like" entities that aid the perceiver in explaining the social environment. In fact, beyond knowledge about group attributes, stereotypic knowledge frequently includes a causal structure that links these attributes to each other and to the perceiver's external knowledge about the world. In particular, these structural aspects of stereotypic knowledge may specify presumed cause-effect relations among stereotypic at-

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tributes. People's knowledge about African Americans, for example, may include assumptions regarding the underlying causes of stereotypic attributes such as *poor, uneducated*, and so on.

So far, the role these higher order structural properties of stereotypic knowledge play in the subjective construal of the social environment has received relatively little attention among stereotyping researchers. To this end, our goal in the present research was to examine more closely the processes by which the relational structure contained in stereotypic knowledge influences the processing of social information.

### Structural Properties of Stereotypic Knowledge

Women are "dependent," Germans are "nationalistic," and Blacks are "poor." When thinking of the content of common cultural stereotypes, people usually think of the attributes that members of these groups allegedly share. So it is perhaps not too surprising that social psychological research on the phenomenon of stereotyping has most often been concerned with stereotypic group attributes. This focus characterizes stereotyping research from early on, when Katz and Braly (1933) asked participants to indicate the trait attributes descriptive of a given group in order to assess the content of cultural stereotypes, to more recent investigations of how stereotypes function in the processing of social information. In adopting this approach, the field has, over the years, made significant progress in determining, for example, how people incorporate inconsistent information regarding a certain group attribute into their existing stereotypes (e.g., Gurwitz & Dodge, 1977; Rothbart & John, 1985; Weber & Crocker, 1983), how sensitive people are to variability within the group on a certain attribute dimension (e.g., Linville, Fischer, & Salovey, 1989; Park & Judd, 1990), or how the accessibility of certain stereotypic attributes may influence social judgments (e.g., Banaji et al., 1993; Devine, 1989).

Yet, because stereotypes essentially consist of our knowledge about social categories (Hamilton & Trolier, 1986), they, like categorical knowledge in general, extend beyond assumptions about characteristic category attributes. For instance, Armstrong, Gleitman, and Gleitman (1983) pointed out that a list of bird attributes (e.g., lays eggs, flies, has wings and feathers, and builds nests) will not make a bird, unless those attributes are held together by a structure of attribute relations. After all, a bird is an animal, has wings, lays eggs, and lives in trees. Moreover, nest building is linked to laying eggs, and because of birds' ability to fly, the nests may be located in trees.

Similarly important are the relations that link group attributes into a meaningful entity for the categories with which people partition the social environment. One may, for example, believe that Germans can be described by attributes such as "nationalistic" and at the same time believe that this trait is due to Germans' authoritarian upbringing. Or, to a use more pernicious example, the anti-Semite may believe that Jews are rich because they are greedy and sly, whereas Protestants' affluence is seen as a result of diligence and hard labor. In this latter case, the causal assumptions underlying the stereotype are in fact indispensable in determining the meaning of a given group attribute.

The importance of causal assumptions for people's social-categorical knowledge is further illustrated by Whites' beliefs

about African Americans. In trying to identify sets of beliefs that predict various kinds of race-related social judgments and behaviors (i.e., voting behavior, hiring decisions, etc.), researchers have focused increasingly on people's causal explanations for the situation of African Americans in U.S. society (cf. Bobo & Kluegel, 1993; Gilens, 1995; I. Katz & Hass, 1988; Kinder & Sears, 1981; Kluegel & Smith, 1986; Sears, 1988). Although this literature differs widely in its assumptions about the origins of existing belief differences (e.g., realistic group conflict, value differences, or social influence), it consistently has identified two opposing causal models for Whites' beliefs about African Americans. The first model holds that African Americans are individually responsible for economic failure and low social status. African Americans are believed to lack motivation and proper values necessary to function successfully in society, and they are thought to use claims of discrimination to gain unfair advantages and escape their social responsibilities. In contrast, the alternative explanation assumes that the lower social status and economic failure of African Americans is due to structural disadvantages. These structural circumstances, such as lack of job opportunities or an inadequate education system, are thought to result from both discrimination and ignorance on the part of the White majority. At a more general level, these two models may be characterized by whether African Americans are perceived to be the victims or the perpetrators of racial conflict and inequity (Ryan, 1976).

### Structural Properties of Stereotypic Knowledge and the Construal of Causality

In the present article, our goal was to demonstrate that causal assumptions such as these play an important role in how stereotypes influence the perceiver's construal of social situations. That is, we believe that structural properties of stereotypic knowledge serve as a kind of causal blueprint when a stereotype is applied to a specific stereotype target. This blueprint aids the perceiver in integrating social information about a given event into a structure of underlying cause-effect relations.

Let us illustrate this argument with an example from research in the area of problem solving, a field in which the use of structural properties of knowledge for the subjective understanding of available information has long been of interest (e.g., Duncker, 1935; Gentner, 1983; Holyoak, 1985; Vosniadou & Ortony, 1989). Within this area, a series of experiments by Gick and Holyoak (1980, 1983) nicely documented the consequences of prior activation of a given relational structure on people's subjective construals of a subsequently encountered stimulus set. Specifically, Gick and Holyoak provided their participants with a classic task from problem-solving research that asks participants to identify a cure for an inoperable stomach tumor (Duncker, 1935). In this task, participants are told that the tumor could be treated with radiation; however the intensity of radiation necessary to destroy the tumor would also destroy the surrounding healthy tissue. Usually, participants have great difficulty finding a solution that would treat the tumor without affecting the healthy tissue. Gick and Holyoak were able to significantly improve performance by first presenting participants with a story that contained a problem analogous to the radiation problem. In this story, a general chooses to divide his

troops into smaller units and have them converge on a fort from several directions rather than using a dangerous frontal attack. Similarly, one possible solution to the Duncker task consists of having several radiation sources of low intensity converge on the tumor. Although the various attributes of these two problems are relatively dissimilar ("fortress" vs. "tumor," "troops" vs. "rays," "conquer" vs. "cure," etc.), the ways in which these attributes relate to one another match quite well in both problems. The relational structure of the first task specifying cause-effect relations among the attributes apparently provides participants with a frame that allows for an adequate construal of the radiation problem.

In returning to the premise of this article, we propose that stereotypes serve as explanatory frameworks for the construal of cause-effect relations in social situations in a manner similar to that in which the fortress story in Gick and Holyoak's (1980, 1983) experiments provided participants with a structure for Duncker's radiation problem. That is, stereotypes provide a "theme" around which the perceiver organizes social information (Bodenhausen, 1988). In placing a given piece of information encountered into a specific context of cause-effect relations, stereotypic background knowledge specifies potential links to other information and determines the generation of inferences related to the information available. Stereotypic construal, then, is not only a consequence of the perceiver's stereotypic assumptions regarding additional, potentially unobserved, or so far unnoticed, trait characteristics but also a result of the constraints stereotypic knowledge places on the potential causal connections among the various pieces of information observed.

We emphasize that this characterization focuses on a particular function that stereotypic causal assumptions may serve in the processing of social information. That is, the present argument is concerned with the influences stereotypic causal assumptions have on the encoding of available information when the perceiver attempts to integrate this information into a coherent representation. Of course, stereotypes may also influence the construal of social information in alternative ways, such as by allowing the perceiver to rationalize a biased evaluation (e.g., Allport, 1954; Kunda, 1990; Schaller, 1992). However, our focus at present is on the ways in which stereotypic causal assumptions influence the encoding of stereotype-relevant information.

### Overview of the Present Experiments

The three experiments reported in this article were designed to explore this notion that stereotypic knowledge provides constraints for the causal structure of the perceiver's representation of social information. Specifically, the studies were designed to investigate the potential influences of causal assumptions contained in participants' stereotypic beliefs about African Americans on their construals of social information.

Experiment 1 was designed to demonstrate that the differential stereotypic causal assumptions that we referred to earlier as victim or perpetrator models influence participants' perceptions of causality in a social situation involving an African American target. The second and third studies then examined more closely our contention that stereotypic knowledge provides a causal structure into which available information is integrated, thus altering the subjective meaning of available information on its

encoding. Specifically, Experiment 2 was designed to contrast this hypothesis with the alternative assumption that differences in construal merely reflect post hoc rationalizations of preferred outcomes by demonstrating that construal effects persist in situations in which the perceiver is less motivated to maintain a stereotype-consistent construal. Experiment 3, in turn, was designed to show that stereotypic construal of causality takes place during information encoding by demonstrating that construal effects between participants are attenuated when encoding is made more difficult.

In all three studies, potential participants were screened for their stereotypic explanations of African Americans' socioeconomic status several weeks prior to the experimental session. Our goal in this prescreening was to identify White participants who subscribed to either of the belief systems that we earlier characterized as the victim model or the perpetrator model of African Americans. To do this, we used a common measure of racial beliefs, the Modern Racism Scale (MRS; McConahay, Hardee, & Batts, 1981).

The MRS is one of a number of different questionnaire measures that have been used in the past to differentiate between alternative explanations for African Americans' socioeconomic status (for alternative measures, see, for example, Bobo & Kluegel, 1993; I. Katz & Hass, 1988; Kinder & Sears, 1981; McConahay & Hough, 1976; Sears & Kinder, 1971). Among the authors of these various instruments there is considerable disagreement about why people subscribe to the belief systems tapped by the scales. McConahay, for example, has been careful to differentiate his own concept of *modern racism* from Kinder and Sears's (1981) notion of *symbolic racism* (McConahay, 1986). Yet, despite theoretical differences about the belief systems' origins, their actual content has been less contested. Indeed, the various measurement instruments used to assess racial beliefs are in fact quite similar. For example, all but one item used by Sears and Kinder (1971) to assess symbolic racism can, with more or less identical wording, also be found on McConahay's MRS. Likewise, data from a series of studies reported in greater detail elsewhere (Wittenbrink, Judd, & Park, 1997; Wittenbrink, Judd, Park, & Stone, 1996), suggest that alternative questionnaire scales such as I. Katz and Hass's (1988) Pro-Black and Anti-Black scales, the MRS, the Subtle Racism Scale of Pettigrew and Meertens (1995), and a scale assessing Gaertner and Dovidio's (1986) *ambivalent racism* are all highly intercorrelated and would seem to be getting at the same underlying construct.

We decided to use the MRS in the current research for two reasons. First, it is a measure of stereotypic beliefs that has been widely used in experimental work on racial stereotyping (e.g., Devine, 1989; Swim, Aikin, Hall, & Hunter, 1995). Second, and more importantly, Wittenbrink et al. (1996) found that scores on the MRS are highly correlated with a set of items containing explicit perpetrator and victim explanations of African Americans' socioeconomic status (e.g., "Blacks have a tendency to blame Whites too much for problems that are of their own doing"; "More and more, Blacks use accusations of racism for their own advantage"). Across three independent studies that included 246 White college students, the MRS yielded correlation coefficients with the average responses to these explicit explanatory belief items of .78, .73, and .72, re-

spectively (Wittenbrink et al., 1996). In other words, individuals who score high on the MRS are more likely to subscribe to beliefs consistent with a Perpetrator model of African Americans, whereas individuals who score low on the MRS are more likely to subscribe to a Victim model.

### Experiment 1

Approximately 1,200 students enrolled in an introductory psychology course participated in the prescreening session. White students with either a Victim (low MRS score) or a Perpetrator model (high MRS score) of African Americans were eligible for participation in the experiment.

During the experimental session, participants were provided with information about a trial in which a member of a high school basketball team was accused of having assaulted one of his teammates. The defendant's race was manipulated such that he was either an African American student on a predominantly White team, or a White student on a predominantly African American team. Whereas the defendant always belonged to the minority of the team, the victim was always a member of the team majority. In all conditions, the prosecution argued that the defendant was guilty of the assault, whereas the defense argued that he was provoked by racial slurs made by the victim and by chronic discrimination from his teammates.

The experimental manipulations resulted in a 2 (MRS score: high–low)  $\times$  2 (race of defendant: African American–White) between-subjects design. It was predicted that the participants' subjective explanations for the disputed events would match their stereotypic knowledge about African Americans. Specifically, high-MRS participants were expected to construe a representation of the incident that located responsibility for the conflict with the African American protagonists. In contrast, low-MRS participants were expected to be more likely to see the White protagonists as the initiating agents. Moreover, on the basis of previous research on social judgment, we expected these representations to influence their trial-related judgments (cf. Devine & Ostrom, 1985; Pennington & Hastie, 1988). In other words, participants' stereotypic explanations for the trial-related events were expected to mediate their judgments about the defendant.

### Method

#### Participants

Sixty introductory psychology students participated in the experiment in partial fulfillment of their course requirements. Only White students from the upper and lower 20th percentile of the MRS were included in the study. One participant was eliminated from the study because of reactance to the subject matter.

#### Procedure

Participants entered the laboratory in groups of 2 to 5, were seated at individual tables, and were randomly assigned to conditions. Participants were told that the study concerned juror decision making and that they would read the summary of a trial and individually come to a verdict. The experimenter, who remained unaware of the participants' MRS scores, then gave them a package containing introductory materials, a summary of the case, jury instructions, and sentencing guidelines. Once

participants read the materials, they were each given a questionnaire that asked for a verdict, a sentence, ratings of the defendant on a variety of traits, and the evidence they used to reach their verdict.

### Materials

**Trial summary.** The trial summary consisted of testimony by a series of witnesses. This testimony provided background information that the victim had recently replaced the defendant as a starter on the team and described the more immediate conflict between the two. The defendant was said to have exchanged insults with the victim and an eyewitness who was a friend of the victim. During this exchange, the victim allegedly fell and hit his head. He consequently suffered a temporary coma and permanent hearing loss. The cause of the fall was in dispute. The prosecution argued that the defendant pushed the victim in the course of the argument, whereas the defense argued that the victim simply tripped over a locker-room bench. The testimony included numerous references to the protagonists' race. During the course of the testimony, it became clear that the defendant was not well integrated into the team, that he was friends only with the one other minority member of the team, and that he was having emotional problems stemming from his parents' divorce. The trial summary was identical in all conditions, with the exception of the race and names of the defendant and his teammates.

**Causal agency.** To assess participants' explanations for the events described in the trial materials, we asked participants to summarize the evidence they considered to reach their verdicts. The narratives obtained in response to this query were analyzed for their explanatory structure. To this end, the summaries were coded by three independent coders unaware of condition and hypotheses for the extent to which the summaries contained explanations consistent with either a Victim or a Perpetrator model of the African American protagonists. Specifically, the open-ended responses were coded for explicit references to the defendant's or victim's responsibility, as well as for how participants placed central aspects of the trial evidence within the cause–event sequence of the disputed incident. Six coding categories were used in the analysis of these responses: (a) whether responsibility was directly assigned to the defendant or to the victim; (b) whether the defendant intended the actions that led to the assault; (c) whether the defendant's behavior was seen as a justified response to external threats; (d) whether the defendant's underlying motives were described as racist (hitting the victim as a result of the defendant's prejudice) or paranoid (hitting the victim in defense against perceived, but nonexistent, victim's prejudice); (e) whether the victim's underlying motives were characterized as discriminating against the defendant; and (f) whether the available eyewitness testimony was believed to be veridical or a result of the team majority's conspiracy against the defendant.

Initial coding resulted in an interrater reliability across all six items of .75. Differences in the coding were then reconciled, resulting in 100% final agreement for each of these variables. Because we expected that participants' stereotypic knowledge would lead to differences in perceived causal agency of the trial protagonists, we obtained an overall index of perceived causal agency from these coding results. For this index, the six items were combined by scoring answers locating agency with the defendant as +1 and those locating agency with the victim as -1. Thus, responses that yielded more positive than negative scores were categorized as reflecting a causal model in which the defendant was the primary initiating agent, whereas those with more negative than positive scores were categorized as reflective of a causal model with the victim as the initiating agent.

**Verdict and sentence.** Verdicts were measured on a 6-point Likert-type scale, with points labeled *completely confident, not guilty; moderately confident, not guilty; not confident, but leaning toward not guilty; not confident, but leaning toward guilty; moderately confident, guilty; and completely confident, guilty*. Sentencing was indicated in months,

with a possible range of 0–24 months. For participants finding the defendant not guilty, sentencing was coded as 0 months.

**Target impression.** The defendant was rated on a checklist of 25 adjectives (e.g., *violent, cautious, rational, aggressive, impulsive*). The list included 19 evaluative traits and 6 traits without any obvious evaluative dimension that were added as filler items (e.g., *athletic*). Participants were asked to indicate how well each adjective fit the defendant on a scale that ranged from 1 (*not at all*) to 7 (*extremely*). Positive adjectives were reversed and the evaluative adjective ratings averaged to achieve an overall impression rating of the defendant with higher scores reflecting a more negative impression of the defendant.

### Results and Discussion

#### Causal Agency

The central prediction of this initial study was that participants with high and low MRS scores would bring to bear different stereotypic models for the integration of the trial evidence, leading to different causal explanations for the trial-relevant events. To examine the causal structure underlying participants' construals of the incident, the coders' ratings of participants' trial explanations were submitted to a hierarchical log-linear analysis.<sup>1</sup> Consistent with predictions, a three-way MRS Score (high–low) × Defendant's Race (African American–White) × Causal Agency (defendant–victim) interaction emerged,  $\chi^2(1, N = 43) = 10.42, p = .001$ . As can be seen in the top half of Table 1, high-MRS participants who read about a White defendant and low-MRS participants who read about an African American defendant were more likely to perceive the assault victim as the initiating agent than were high-MRS participants who read about an African American defendant and low-MRS participants who read about a White defendant,  $\chi^2(1, N = 20) = 8.36, p = .004$ . Similarly, accounts given by high-MRS participants who read about an African American defendant and by low-MRS participants who read about a White defendant tended to include the defendant as the initiating agent more often than did those of high-MRS participants who read about a White defendant and of low-MRS participants who read about an African American defendant,  $\chi^2(1, N = 23) = 2.65, p = .10$  (see bottom half of Table 1).

#### Verdict, Sentence, and Target Impression

We hypothesized that participants' explanations for the disputed events would, in turn, influence their trial-related judgments.

Table 1  
Causal Agency: Experiment 1

Agency	Participant's MRS score	
	Low	High
<b>Victim as initiating agent</b>		
African American defendant	62%	17%
White defendant	10%	44%
<b>Defendant as initiating agent</b>		
African American defendant	15%	50%
White defendant	60%	33%

Note. Agency × Defendant's Race × Participant's MRS Score interaction,  $\chi^2(1, N = 43) = 10.42, p = .001$ . MRS = Modern Racism Scale.

Table 2  
Average Judgments of Guilt, Target Impression, and Recommended Sentences: Experiment 1

Judgment	Participant's MRS score	
	Low	High
Judgments of guilt <sup>a</sup>		
African American defendant	3.31	4.06
White defendant	4.40	3.76
Target impression <sup>b</sup>		
African American defendant	4.08	4.46
White defendant	4.50	4.36
Recommended sentences <sup>c</sup>		
African American defendant	0.92	2.50
White defendant	4.50	2.33

Note. MRS = Modern Racism Scale.

<sup>a</sup> Responses ranged from 1 (*very confident, not guilty*) to 6 (*very confident, guilty*). Defendant's Race × Participant's MRS Score interaction,  $F(1, 56) = 4.48, p = .04$ .

<sup>b</sup> Responses ranged from 1 (*very positive impression*) to 7 (*very negative impression*). Defendant's Race × Participant's MRS Score interaction,  $F(1, 57) = 8.72, p = .005$ .

<sup>c</sup> Responses ranged from 0 to 24 months. Defendant's Race × Participant's MRS Score interaction,  $F(1, 56) = 2.48, p = .12$ .

ments. Participants' verdicts, sentences, and impression ratings of the defendant were submitted to separate 2 (MRS score: high–low) × 2 (race of defendant: African American–White) analyses of variance (ANOVAs). No main effects emerged from this analysis. As expected, however, conceptually similar interactions emerged for both verdicts,  $F(1, 56) = 4.48, p = .04$ , and participants' impressions of the defendant,  $F(1, 57) = 8.72, p = .005$ . The means for participants' sentencing recommendations were also in the predicted directions, but they did not achieve significance,  $F(1, 56) = 2.48, p = .12$ . As can be seen in Table 2, consistent with their perceptions of causal agency, high-MRS participants tended to rate the African American defendant as more guilty, to form a more negative impression of him, and to recommend harsher sentences for him. In contrast, low-MRS participants tended to rate the White defendant as more guilty, to form a more negative impression of him, and to recommend harsher sentences for him.

Although the results for participants' trial-related judgments show the predicted interactions, the interactions are clearly not symmetrical. The race manipulation consistently showed stronger effects for low- than high-MRS participants, resulting in statistically reliable differences for low-MRS participants' verdicts,  $F(1, 23) = 5.21, p = .03$ , and target impressions,  $F(1, 23) = 9.92, p = .004$ , and marginally significant differences for their recommended sentences,  $F(1, 23) = 3.14, p = .09$ . In

<sup>1</sup> For 16 of the 59 participants, causal agency could not be determined because either the participant did not provide enough information upon which the coders could base their judgments ( $n = 12$ ) or the participant's comments were coded as attributing blame equally to the victim and the defendant ( $n = 4$ ). These participants were distributed evenly across conditions, with no effect of prejudice level, defendant's race, or interaction between the two on the distribution.

contrast, the mean differences obtained for high-MRS participants proved to be unreliable (all  $F$ s < 1).

At first, this finding that low-MRS participants were more affected by the manipulation than were high-MRS participants may appear somewhat surprising. In interpreting these results, however, it is necessary to keep in mind that we did not expect low-MRS participants to be "color blind." Indeed, we anticipated information about race to provide a crucial part of the causal framework that allowed low-MRS participants to arrive at a subjective understanding of the evidence. The present results indicate that this was the case. Moreover, the fact that low-MRS participants were more affected by the race manipulation than were high-MRS participants might reflect an increased sensitivity on their part to the potential relevance of race in social interaction.<sup>2</sup> At any rate, what remains critical to our broader thesis is that the pattern of judgments for low- and high-MRS participants differed, not that they differed in a particular way.

### *The Mediating Role of Causal Explanations for the Trial Events*

As stated earlier, we expected the differences in participants' trial-related judgments to result from their differential construal of the trial events. To examine whether the effects on participants' trial-related judgments were indeed mediated by participants' causal explanations, we performed a series of separate bivariate correlational analyses. According to Baron and Kenny (1986), two conditions must be met to support the hypothesis that a given effect is mediated by another variable. First, the hypothesized mediator needs to be correlated with the effect, and second, the effect has to be no longer reliable when controlling for differences on the mediating variable. The relationships between the hypothesized mediator (causal agency) and the effects obtained for participants' trial-related judgments (i.e., the interactive effects of target race and participants' MRS score on the 3 outcome measures verdict, sentence, and target impression) are presented in Figure 1.<sup>3</sup>

For all three outcome variables—verdict, sentence, and target impression—the mediator *causal agency* was significantly correlated with the effect of interest, thus meeting Baron and Kenny's (1986) first condition ( $r_s = .71, .50$ , and  $.44$ , respectively;  $p < .0001, .0001$ , and  $.05$ , respectively; see sections labeled A in Figure 1). Moreover, when causal agency was controlled for in the analyses, the effect of the interaction on the outcome variables consistently dropped, thus meeting Baron and Kenny's second condition (see sections labeled B in Figure 1). Two complications are worth noting. First, consistent with the ANOVA results for the sentencing dependent measure, although the relationship between the interaction and sentencing dropped substantially when causal agency was controlled for, the relationship between these two variables was only marginally significant before entering causal agency ( $r = .19$  vs.  $r = -.05$ ). Second, although the relationship between the interaction and the target impression dependent measure dropped substantially when controlling for causal agency, the relationship remained significant ( $r = .43$  vs.  $r = .28$ ).

The main goal of this first experiment was to demonstrate that structural aspects of stereotypic beliefs influence the construal of causality in social situations involving a stereotyped

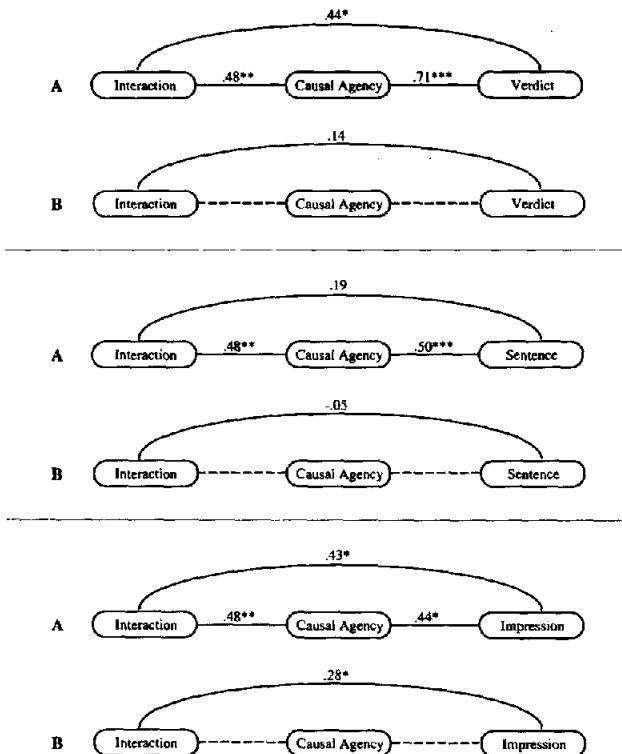


Figure 1. A: Partial correlations controlling for participant's level of prejudice and defendant's race. B: Controlling for causal agency.

\* $p < .05$ . \*\* $p < .001$ . \*\*\* $p < .0001$ .

target. The present data suggest that participants' assumptions about the underlying causes of the socioeconomic status of African Americans did indeed affect their construal of the trial events. Although slight variations among the analyses emerged, when the hierarchical log-linear analysis, ANOVAs, and mediational analyses are taken together, they indicate that participants with either high or low MRS scores constructed different causal explanations for the incident, and these explanations influenced their judgments of guilt and their perceptions of the defendant.

The question remains, however, what processes underlie these effects of stereotypic knowledge on participants' construal. Earlier, we argued that stereotypic knowledge operates by providing the perceiver with a causal structure for the integration of available information, and we likened this process to the use of analogies in order to successfully structure a problem-solving task. The mediational analyses are consistent with this argument in that they suggest that the trial judgments depended on participants' perceptions of causal agency in the trial episodes. Still, the question of whether participants' explanations for the trial events reflect stereotypic effects on the encoding of the trial evidence, as we suggested earlier, or whether they merely reflect processes that happen after the fact remains unanswered. It is

<sup>2</sup> We are grateful to a reviewer who alerted us to this possibility.

<sup>3</sup> The independent effects of participants' MRS scores and race of the target were controlled for in these analyses.

possible, for example, that participants did not encode the events differently, but that, instead, they simply developed post hoc accounts for the trial events that were consistent with their general attitudes toward the African American protagonists. The remaining two experiments were designed to identify more specifically the processes by which structural aspects of stereotypic knowledge affect the encoding of social situations.

## Experiment 2

Our first goal was to contrast our contention that structural aspects of stereotypic knowledge influence the *perception* of causality in social situations with the alternative possibility that stereotypic construals result from the perceiver's motivation to develop a post hoc explanation that is consistent with a general dislike for an out-group target. To this end, Experiment 2 tested whether the effects of stereotypic knowledge about African Americans would extend to a situation in which participants would not be motivated to obtain an attitude-consistent construal. Specifically, we used a priming paradigm (Higgins, Rholes, & Jones, 1977; Srull & Wyer, 1979) in Experiment 2 to leave participants unaware of their potential use of stereotypic knowledge. That is, an initial priming episode manipulated the activation of participants' stereotypic knowledge, and the effects of this activation were subsequently tested on a set of ostensibly unrelated target stimuli.

For the target episode, we chose modified versions of stimuli that had previously been used in research on the perception of causality in social situations (Morris & Peng, 1994). Similar to the materials from the classic experiments on perception of causality in patterns of motion by Heider and Simmel (1944) and by Michotte (1963), these stimuli consisted of short animated episodes that described the interaction between a set of targets. Specifically, participants viewed target episodes that depicted interactions among animated fish. What made these materials particularly well suited for the current purpose is that the nature of the causal relations underlying these interactions remained ambiguous in these stimuli. That is, some of the target episodes we used in Experiment 2 depicted a group of fish together with an individual fish in an interaction that was clearly antagonistic. The degree to which this antagonism was instigated by either the individual fish or the group remained ambiguous. In other words, these materials allowed us to examine whether participants' construal of causal relations in the target episodes would be affected by previous activation of stereotypic knowledge. Specifically, Experiment 2 tested whether the incidental activation of stereotypic knowledge about African Americans would increase the likelihood that participants would use their Victim or Perpetrator models of African Americans for the construal of the interactions among the animated fish.

In addition, we hypothesized that the application of activated relational structures would be moderated by aspects of the stimuli themselves. That is, previous work on concept priming in impression formation has found that priming effects are constrained by the applicability of the activated knowledge for the target stimulus. In general, these studies have suggested that activated trait knowledge may influence consecutive judgments only when the primed traits are semantically related to the target stimuli (Erdley & D'Agostino, 1988; Higgins et al., 1977; but

see Skowronski, Carlston, & Isham, 1993). Similarly, in the present experiment, we expected the application of activated stereotypic beliefs regarding cause-effect relations to be affected by structural properties of the target stimuli. We reasoned that a central aspect of the relational structure for both stereotypic models activated by the priming episode consisted of the antagonism between African Americans and the White majority. Therefore, we hypothesized that the application of this antagonistic structure would be more difficult for a target set with harmonious rather than antagonistic relations.

## Method

### Overview

Again, a larger sample of students (approximately 800) enrolled in an introductory psychology course were prescreened for their stereotypic beliefs about African Americans, through the use of the MRS. Students with either a Victim (low MRS score) or a Perpetrator model (high MRS score) of African Americans were contacted by phone and scheduled for an experiment on "jury decision making." The experiment consisted of two allegedly independent parts. In Part 1, the "jury experiment," half of the participants were given the trial materials involving the African American defendant that were used in Experiment 1. This part of the experiment served to prime participants' stereotypic knowledge regarding the underlying causes of racial conflict. As a stereotype-neutral condition, the remaining half of the participants received information regarding a racially neutral trial. Consecutively, an alleged "perception experiment" presented participants with a set of target stimuli that were designed to test whether the activated stereotypic knowledge would transfer to judgments about apparently unrelated stimuli.

### Participants

From the initial pool of approximately 300 White students who scored in the upper or lower 20th percentile of the MRS distribution, 60 were recruited for participation in this study. These participants received either course credit ( $n = 43$ ) or a \$10 payment ( $n = 17$ ) for their participation.<sup>4</sup>

### Materials

**Priming stimuli.** The Experiment 1 trial materials involving the African American defendant were used to activate participants' beliefs about the underlying causes of racial conflict. In a second stereotype neutral condition, participants read material that was designed to match the conflict described in the stereotypic prime condition in a race-unrelated context. Specifically, participants in this condition read about a trial in which the defendant was accused of armed robbery of a small suburban grocery store. The trial information described a 17-year-old defendant who was somewhat of a loner and who did not have a lot of friends among his fellow high school students. The witness testimony further revealed that the defendant did not have a material motive for the robbery (i.e., he did not need the money), that he had been identified by the grocery store owner, and that his alibi was incomplete. Although the defendant was described as coming from a secure family background, the testimony contained no references to the race of any of the participants. Overall, the material presented participants with a target who was likely to be construed as an outsider acting out of frustration over his ostracized situation.

<sup>4</sup> Both participant groups, those who received a monetary reward and those who received course credit, were distributed equally across conditions.

To ensure that the materials used in the two priming conditions led to similar construals of the basic underlying conflict between an individual target and the social environment, the trial materials were evaluated by 21 pretest participants. In the pretest, participants were asked on a 7-point Likert-type scale that ranged from 1 (*the description is highly inaccurate*) to 7 (*the description is highly accurate*) to indicate the degree to which they thought the defendant was an "outsider." Results from this pretest confirmed that both sets of trial information conveyed the general theme of the defendant being an outsider who did not fit in,  $t(19) = .18, p = .857$  ( $M_s = 6.0$  and  $6.1$  for the stereotypic prime and control prime, respectively).

**Target stimuli.** As mentioned earlier, the target stimuli were derived from previous work on the perception of causality in social contexts (Morris & Peng, 1994). They consisted of three short animated movies depicting five colored fish swimming across the screen. Two of these animated clips were intended to provide a possible match with the relational structure of stereotypic racial beliefs, whereas the third clip was designed to be inconsistent with participants' stereotypic knowledge. All "protagonists" in these movies were identical in size and shape but differed in their color; the clips featured a blue, a red, a yellow, a green, and a brown fish. One particular fish, the blue fish, served as the target stimulus in the experiment.

**Stimulus Set 1: escape-avoidance.** On the basis of one of the compulsion stimuli from Morris and Peng (1994), this clip started with the target located in the center and the remaining fish, which for simplicity will be referred to as *the group*, positioned on the right border of the screen (see Figure 2).<sup>5</sup> The movie showed the group swimming toward the target. Once the group closed in, the target swam toward the left border of the screen, first accelerating very quickly and then gradually slowing down until it came to a stop. When the target accelerated, the group stopped its movement. Although the fishes' behaviors were clearly discordant, the cause of the antagonism remained ambiguous. Depending on the perceiver's inferences, the episode could be construed with either the target or the group as the initiating agent. That is, the target's movement could be seen either as an escape motivated by the group's hostile approach or as an attempt to avoid the group's community, which in turn caused the group to stop its approach. The first interpretation locates causal agency with the group and is consistent with a Victim construal of the episode. In contrast, the latter interpretation perceives the target

as the initiating agent and complies with a Perpetrator construal of the episode.

**Stimulus Set 2: threat-rejection.** The second stimulus set reversed the roles of target and group with the target approaching the group and the group reestablishing the spatial distance between the two parties. Depending on whether the target or the group is perceived as the initiating agent, this sequence can be construed as the target threatening the group or as the target being rejected by the other fish.

**Stimulus Set 3: concordance.** The last clip depicted all five fish together in a group, crossing the screen in a continuous movement. This sequence was largely identical to the harmonious compulsion stimulus used by Morris and Peng (1994). Because the application of activated relational structures should be limited by aspects of the stimuli themselves and because the antagonism between African Americans and the White majority is a central aspect of the relational structure for both stereotypic models of African Americans, we expected few construal differences to emerge between high- and low-MRS participants for the concordance clip.

The three stimulus sets were created on an Apple Macintosh computer with Macromedia Director animation software. The clips were then transferred to standard VHS videotape. Given the relatively short duration of these clips (approximately 7 s for one stimulus set), each clip was repeated three times before the next clip was presented. Because Sets 1 and 2 depicted identical scenes with reversed roles, the concordance sequence was placed between these two clips to limit possible carry-over effects from one set to the other. The presentation order was counterbalanced.

**Dependent measures.** We hypothesized that the transfer of stereotypic knowledge would lead to different inferences regarding the direction of causal force in the target episodes. The dependent measures therefore assessed the causal force participants ascribed to both the target and the group in influencing the observed behaviors. Specifically, participants were asked for (a) the extent to which they believed that "the blue fish's movements seem to be influenced by the other fish," and (b) the extent to which the movements "seem to be influenced by internal factors, for example the fish's own motivation." Responses to these questions were then combined by subtracting participants' ratings of external influences from those of internal influences, thus obtaining a relative score of causal force attributed to the target. The questions were presented with 7-point Likert scales, with the response categories labeled *not at all, slightly, somewhat, moderately, somewhat more, greatly, and almost entirely*.

In addition, participants' ratings regarding the extent to which they believed the defendant to be guilty served as an indirect measure for the effectiveness of the priming manipulation. These ratings were measured on an 8-point Likert-type scale, with responses labeled *not guilty, very confident; not guilty, confident; not guilty, somewhat confident; not guilty, but not confident; guilty, but not confident; guilty, somewhat confident; guilty, confident; and guilty, very confident*.<sup>6</sup>

### Procedure

Participants took part in the experiment in groups of 2 to 5, with the experimenter kept unaware of the participants' MRS scores. Upon arrival, participants were assigned to one of the two priming conditions and were instructed about the procedure of the jury experiment. In these instructions, the experimenter explained that after participants had arrived at their verdict, the experiment would pause for approximately

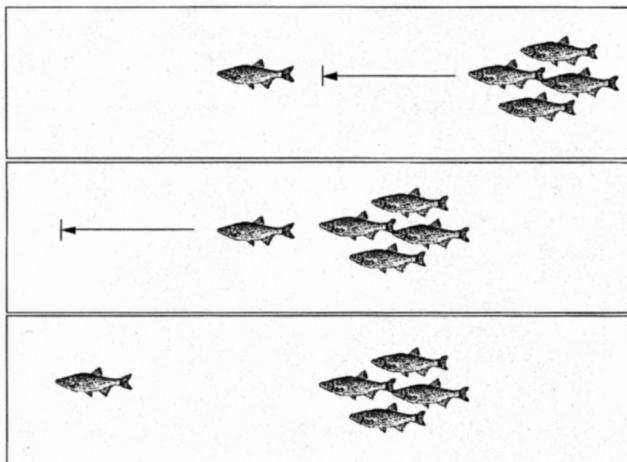


Figure 2. Schematic depiction of the escape-avoidance stimulus set. The top frame represents the position of target and group at the start of the sequence. Center and bottom frames show how these positions changed during the course of the episode. Arrows indicate movements and vertical lines indicate stops of the protagonists.

<sup>5</sup> Changes to the initial stimulus set used by Morris and Peng (1994) involved the stimuli's trajectory and their speed of movement.

<sup>6</sup> Given the relatively low ratings of guilt obtained in Experiment 1, we increased the number of response alternatives for participants' guilt verdicts from six to eight.

10 min. Participants were further told that during this break they would participate in a brief "perception experiment," unrelated to the current study. Part 1 of the experiment then proceeded in the same fashion as Experiment 1, with the exception that, because of time constraints, the sentencing recommendation and the trait ratings for the defendant were omitted from the list of dependent measures.

After all participants had completed this portion of the experiment, the experimenter announced that there would be further questions about the trial once participants returned from the break. A second experimenter, who was unaware of both prime type condition and participants' MRS scores, then led the participants to a different room, located at the opposite end of the hallway. Here, participants were seated in front of the screen of a 3-channel VHS projection unit, at a distance of approximately 4 m. The projection produced an effective display size of 180 cm by 125 cm. Participants received a booklet that included the dependent measures and a brief introduction explaining the experiment. These instructions specified that participants would watch short animated movies with fish moving across the screen and that they would be asked about their perceptions of these movements. The booklet was printed in a different font than were the trial materials to limit the likelihood that participants would think the two experiments were connected. The experimenter then started the projection, varying presentation order of the stimulus sets between sessions. Following the third display of each stimulus set, the tape was paused and participants were given time to complete the dependent measures for this set.

Finally, participants returned to the "jury room," where they were probed for awareness of the experimental hypothesis and debriefed. One participant expressed suspicion about the two experiments being linked. Although this participant acknowledged she did not really know what the exact nature of the suspected connection was, her data were excluded from the analyses.

### Results and Discussion

The central predictions of this study were that for high- and low-MRS participants, the race-relevant priming episode would activate different stereotypic models for the integration of the trial evidence and that these stereotypic models would transfer to the way participants construed the target stimuli once the target stimuli made a stereotype-consistent construal possible. To test these predictions, participants' verdicts from the priming episode and their ratings of the target stimuli were submitted to separate 2 (racial beliefs: high-low MRS score)  $\times$  2 (prime type: stereotypic-neutral) ANOVAs.

### Verdicts

The priming episode was intended to manipulate the activation of participants' stereotypic knowledge about African Americans. The present results replicated the findings from the first experiment. High- and low-MRS participants again differed in their verdicts once presented with the stereotypic trial material. As in the first study, high-MRS participants found the African American defendant more guilty than did low-MRS participants ( $M_s = 5.88$  and  $4.44$ , respectively). In contrast, no such difference emerged in the stereotype neutral condition, where the trial information contained no references to racial conflict ( $M_s = 6.50$  and  $6.67$ , respectively). Results of the ANOVA confirmed this MRS Score  $\times$  Prime Type interaction to be statistically reliable,  $F(1, 58) = 3.90, p = .053$ . Moreover, simple effect analyses confirmed that the mean differences obtained in the stereotypic prime condition were reliable,  $F(1, 31) = 5.66,$

$p = .024$ , and remained statistically insignificant for the control condition ( $F < 1$ ).

The analysis also revealed a theoretically irrelevant main effect for the factor prime type, indicating that participants were more likely to come to a guilty verdict when they read about the trial used in the stereotype neutral control condition,  $F(1, 58) = 13.25, p = .001$ .

### Target Ratings

Consistent with the prediction that these activated explanatory frames would transfer to the construal of the fish sequences, similar MRS Score  $\times$  Prime Type interactions emerged for participants' location of causal agency in both the escape-avoidance,  $F(1, 57) = 5.95, p = .018$ , and the threat-rejection episodes,  $F(1, 57) = 5.43, p = .024$ . When exposed to a stereotypic prime, participants tended to interpret the target fish's behavior in a way consistent with their stereotypic perception of African Americans. As shown in Table 3, high-MRS participants were less likely to see the target fish's behavior in both critical episodes as a result of the group's movements, rating the target's relative causal force higher than did low-MRS participants—escape-avoidance  $M_s = 0.44$  vs.  $-2.38, F(1, 31) = 10.12, p = .003$ ; threat-rejection  $M_s = 0.88$  vs.  $-1.38, F(1, 31) = 7.82, p = .009$ . In contrast, high- and low-MRS participants in the stereotype neutral prime condition did not differ reliably from one another in their ratings of causal force for these fish episodes—escape-avoidance  $M_s = -1.42$  vs.  $-0.93, F < 1$ ; threat-rejection  $M_s = 0.17$  vs.  $0.57, F < 1$ .

In addition, a main effect for participants' scores on the MRS did emerge in the analysis of participants' ratings for the escape-avoidance episode, with high-MRS participants being more likely to ascribe causal force to the target than to the group,  $F(1, 57) = 3.95, p = .052$ , but this effect was solely confined to the stereotypic prime condition.

Although these results show systematic influences of the inci-

Table 3  
*Average Location of Causal Agency in Target Episodes: Experiment 2*

Target episode	Participant's MRS score	
	Low	High
Escape-avoidance		
Stereotypic prime	-2.38	0.44
Neutral prime	-0.93	-1.42
Threat-rejection		
Stereotypic prime	-1.38	0.88
Neutral prime	0.57	0.17
Concordance		
Stereotypic prime	-2.06	-1.19
Neutral prime	-1.14	-1.08

*Note.* Responses may range from -6 to +6, with higher ratings indicating higher perceived causal force for the target. MRS Score  $\times$  Prime Type interaction for escape-avoidance,  $F(1, 57) = 5.95, p = .018$ . MRS Score  $\times$  Prime Type interaction for threat-rejection,  $F(1, 57) = 5.43, p = .024$ . MRS Score  $\times$  Prime Type interaction for concordance,  $F < 1$ . MRS = Modern Racism Scale.

dentially activated knowledge on those target episodes that were designed to provide a match for the relational structure of people's stereotypic knowledge of African Americans, it is important to note that no such effects were observed for participants' ratings of the third, concordant stimulus set (all  $F$ s < 1). Although inspection of the means (see Table 3) indicates that high-MRS participants who were given a stereotypic prime were again less likely to judge the target fish's behavior as influenced by the group, this difference between high- and low-MRS participants was not reliable,  $F(1, 31) = 1.06, p = .312$ .

In summary, the present results indicate that, once activated, participants' stereotypic beliefs about African Americans did influence their construal of causality in the cartoon fish episodes, which served as target stimuli in the present experiment. Participants who in a separate pretest had been identified as holding beliefs that assume African Americans to be the victim of societal obstacles and racial discrimination and who were then exposed to a stereotypic target tended to see the behavior of an individual target fish to be caused by the actions of a group of other fish present in the cartoon episode (Stimulus Sets 1 and 2). In contrast, previous exposure to a stereotypic target led those participants who believe that African Americans perpetrate conflict with the White majority to locate causality in these episodes with the individual fish rather than with the group. Moreover, these effects were limited to those target episodes for which the cause-effect relations could possibly be aligned with the causal structure of the activated stereotype. We return to the potential implications of this particular aspect of our findings later.

The primary goal of this second experiment was to test whether the influences of stereotypic knowledge on participants' construal of cause-effect relations would replicate to a situation in which participants would be less motivated to maintain an attitude-consistent construal. There is little reason to assume that participants attempted to construe the cartoon fish episodes in accordance with their attitudes toward the group of African Americans. Indeed, the experimenter's explanations of the study's hypothesis frequently caught participants in open surprise. As such, the present study adds to the mounting evidence for the potential of stereotypic knowledge to operate implicitly, without the perceiver's awareness (Devine, 1989; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Greenwald & Banaji, 1995; Macrae, Stangor, & Milne, 1994).

More important for the premise of this article, however, the results from Experiment 2 make it difficult to interpret the obtained effects of stereotypic causal assumptions on participants' construals of causality as a result of participants' deliberate attempts to construct a scenario consistent with their attitudinal preference for one of the protagonists. In fact, the results from Experiment 2 parallel the findings from the work on problem solving we referred to earlier. In the experiments by Gick and Holyoak (1980, 1983) it also was fairly unlikely that participants actively attempted to construct a solution to the radiation problem that would resemble the fortress story. Instead, knowledge of the fortress story allowed participants to "see" the problem in a different way. It allowed them to relate the various pieces of the radiation problem into a meaningful whole. Similarly, the activation of stereotypic beliefs influenced participants' structuring of the fish episodes in the present experiment. That

is, stereotypic knowledge, once activated, appears to have influenced the subjective meaning of the cartoon fishes' movements by placing them in a different causal framework.

One limitation of the present evidence, however, is that the effects of stereotypic construal were assessed somewhat indirectly. Rather than measuring the impact of stereotypic assumptions on the perceiver's processing of available evidence, Experiment 2 assessed the extent to which these processing effects were transferred to subsequently encountered stimuli. In the third experiment, we decided to use a more direct test of our assertion that structural properties of stereotypic knowledge aid the perceiver in linking available information to a coherent subjective representation by providing constraints for such links.

One way to test this notion more directly is to interfere with the construal process. That is, if the assertion is correct that stereotypic knowledge affects social judgments by constraining the causal structure of people's mental representations of social information, then the effects of stereotypic knowledge should be attenuated when the formation of a coherent causal representation is hindered. Thus, the goal of Experiment 3 was to interfere with participants' ability to construe a coherent and stereotype-consistent explanation for the trial evidence.

### Experiment 3

Previous work on social judgment and story comprehension suggests that presentation order is crucial to the perceiver's representation of information (Baker, 1978; Devine & Ostrom, 1985; Ostrom, Lingle, Pryor, & Geva, 1980; Pennington & Hastie, 1988, 1992). More specific, it has been argued that when evidence is presented in a way that preserves order, the evidence is more easily integrated into subjectively coherent representations (Baker, 1978; Haviland & Clark, 1974; Moeser, 1976; Pennington & Hastie, 1988). For example, Moeser (1976) presented participants with a number of sentences, some of which were relevant to a particular event, such as a picnic under a tree (e.g., "the ants ate the jelly," "the jelly was on the table," "the table was under the tree"). Whereas some participants received the sentences in an order that allowed them to apply the relevant causal framework (i.e., going on a picnic), other participants were provided with the sentences in random order. Participants in the causal framework condition had no difficulty judging related inferences (e.g., "the ants were under the tree") as correct or incorrect, but participants who had been given the sentences in random order had considerable difficulty with the inference task. Presumably, participants in the random order condition, although learning each separate statement, failed to generate inferences about how the various pieces of information related to one another and therefore missed various aspects of the information that were implied, yet not explicitly stated, in the stimulus materials.

In a similar manner, Experiment 3 was designed to manipulate the likelihood with which the trial information used in the previous experiments could be integrated into a coherent representation of the disputed events. Specifically, high- and low-MRS participants were again presented with information from a trial involving a conflict between an African American defendant and his White teammates and were again asked to provide verdicts based on the trial. For half of the participants, the informa-

tion about the case was presented witness by witness, whereas for the remaining participants, the information was presented in a random order.

The witness order condition, in essence, paralleled the manipulation used in Experiment 1, and we therefore expected to replicate our initial findings that construal of the trial events depends on participants' stereotypic causal assumptions. As noted above, when information is presented in this way, it is relatively easy to integrate it into a coherent causal representation, and this integration process should be influenced in important ways by participants' stereotypic knowledge. That is, for a given witness statement to have implications for participants' understandings of the trial-related events, participants have to construe how this statement relates to other aspects of the evidence. A given statement might, for example, provide information about the protagonists' motives, it might contradict previously encountered testimony, it might call into question the other witnesses' credibility, or it might generate hypotheses about aspects of the evidence that are still missing. Stereotypic background knowledge should influence this process by specifying, among other things, hypotheses and default assumptions regarding the causal structure underlying these linkages.

In contrast, the random order condition limits participants' ability to draw substantive inferences about a given statement. Here, for each individual statement, participants first have to resolve important aspects of the information itself (e.g., Who says this? What event does it refer to? When did this happen? What other statements has this witness made in regard to this particular event?). This presentation order thus effectively increases the difficulty of generating the inferences that are necessary to obtain a coherent understanding of the trial-related events.

In other words, if our contention is correct that the causal structure underlying participants' explanations of the trial episodes is critically dependent on the stereotypic causal structure participants impose on the evidence, the differences between high- and low-MRS participants' construals of the evidence and their trial judgments observed in the previous studies should once again emerge when the application of this causal structure is facilitated (i.e., in the witness order). When application of the stereotypic knowledge is made difficult, however, differences between high- and low-MRS participants should be minimal.

### *Method*

#### *Participants*

One hundred thirty-nine introductory psychology students participated in the experiment in partial fulfillment of their course requirements. White participants were again preselected from the upper and lower 20th percentile of the MRS.

#### *Materials*

A set of 66 items was constructed from the trial summaries used in Experiment 1 (see Table 4). The items were selected to preserve the relevant evidence from the original accounts and to eliminate redundant and irrelevant information. Each item consisted of a source identification (i.e., name of witness), followed by a single-sentence statement.

#### *Procedure*

With two exceptions, the experiment proceeded in the same fashion as the jury decision making sections of the previous experiments. First, instead of receiving booklets with witness testimony, participants read the set of evidence items on the display of a Macintosh IIci computer. Each item appeared alone on the screen until the participant pressed the computer mouse button to advance to the next statement. The computer program did not allow participants to retrieve and reread previous items. For half the participants, the statements were arranged in an order close to that of the original narrative accounts. That is, the statements associated with each witness were presented together. For the remaining half of the participants, the items appeared in a fixed random order. Second, and consistent with Experiment 2, the race of the defendant was held constant. For all participants, he was portrayed as an African American.

Once all of the evidence was presented, participants received jury instructions and sentencing guidelines, followed by a booklet containing the dependent measures used in the previous experiments. Thus, the experiment used a 2 (MRS score: high-low)  $\times$  2 (witness-random order) between-subjects factorial design.

#### *Dependent Measures*

The dependent measures used to assess participants' construal of the trial episodes were conceptually the same as those used in the previous experiments. To address the different hypotheses of this study, however, a few changes in their administration were necessary. Specifically, after participants indicated their verdicts, sentence suggestions, and trait ratings of the defendant, they were asked to list as many items as they could remember from the testimony. Participants were handed a sheet with 20 lines and were asked to limit each item description to one line. Their responses on this sheet were taken as a measure for participants' memories of the information presented. The administration of this recall measure, however, precluded the use of the open-ended response format

Table 4  
*Sample of Evidence Items: Experiment 3*

Item	Evidence item
1	I am Andrew Graham, a teammate of Chris and Odell on the Sibley High School varsity basketball team. Witness for the Prosecution.
2	The entire afternoon had been overshadowed by an argument between 2 players on the team, Odell and Chris, during a practice game.
3	Odell got angry and accused Chris of disrupting other people's play and purposely fouling other players.
4	I think Odell's accusations were pretty far fetched.
5	After the game, I returned to the locker room where Odell and Chris were already arguing again, calling each other names.
6	I walked up to Odell and asked him to cool down.
7	Odell just angrily yelled something like "you would be the one to try to get into this; you are all alike . . ." and shoved me so that I fell against one of the lockers.
8	Chris tried to intervene and stepped between me and Odell.
9	Chris stumbled and fell backwards onto a bench in the locker room.
10	By this time other teammates were entering the room, and soon a number of people were standing around Chris who was out cold and his head was bleeding.

*Note.* In both the witness order and the random order conditions, each item was presented together with the name of the witness who allegedly made the statement. All sample items listed here were associated with a single witness.

that was used in Experiment 1 to assess the underlying causal structure of the participants' representations of the trial evidence. Therefore, a procedure from previous research on the role of mental models in social judgment was adopted (Leddo, Abelson, & Gross, 1984; Read & Marcus-Newhall, 1993). Specifically, the recall measure was followed by a set of five items containing different explanations for the information presented (see Table 5). For each account, participants were asked to indicate "how good of an explanation each one provides for the trial events" on a scale ranging from 1 (*not at all what happened*) to 7 (*exactly what happened*). Of the five explanations provided, Item A represented an account with the victim as the initiating agent, Items B and D represented two alternative accounts (i.e., "imagined discrimination" and "discrimination used as a pretense") that included the defendant as the initiating agent, and Items C and E provided explanations added as fillers to the task.

Finally, the relatively low ratings obtained on the sentencing measure used in Experiment 1 led us to assess this variable with two separate questions, asking participants for a "minimum sentence" and a "maximum sentence." The responses were measured on 7-point Likert-type scales that ranged from *0 months* to *16–18 months*.

### Results and Discussion

#### Memory for Trial Evidence

The experimental manipulation of participants' ability to integrate the trial information was intended to demonstrate that

**Table 5**  
*Measurement of Causal Agency: Experiment 3*

Item	Explanation
A	During an argument, the defendant, Odell Jackson, shoved the victim, Chris Henley, causing Henley to fall and be injured. Jackson assaulted Henley after having been provoked by Henley and his friend Graham. This assault was ultimately the result of Jackson being ostracized by the team and of continuous discrimination against Jackson by Henley as well as by other white team members.
B	During an argument, the defendant, Odell Jackson, shoved the victim, Chris Henley, causing Henley to fall and be injured. Jackson assaulted Henley as a result of his frustration with his own performance on the team, as well as his difficult family and school situation. The defendant's claims of being provoked and a victim of racial discrimination were just excuses to avoid conviction.
C	During an argument, the defendant, Odell Jackson, shoved the victim, Chris Henley, causing Henley to fall and be injured. Jackson assaulted Henley because he thought Henley was responsible for the team's consistently poor performance.
D	During an argument, the defendant, Odell Jackson, shoved the victim, Chris Henley, causing Henley to fall and be injured. Jackson assaulted Henley because he felt ostracized by the team and thought he was continuously discriminated against by Henley as well as by other White team members. But in reality the team was not ostracizing Jackson or discriminating against him.
E	Chris Henley's injuries are due to an accident. During a solely verbal argument, Henley accidentally tripped and fell.

stereotypic knowledge critically influences the construal of cause–effect relations. To ensure that our manipulation represented a viable test of encoding effects, it was first necessary to make sure that certain recall prerequisites were met. After all, if participants in the random order conditions were less likely to notice the race of the defendant, it would be possible to argue that potential differences between the order conditions emerged simply because high- and low-MRS participants failed to process the race of the defendant in the random order conditions. We thus analyzed the overall amount of information participants listed during the recall task as well as the likelihood of mentioning the defendant's race during this task, as a function of the integration manipulation.

These analyses suggest that the prerequisites were met. First, there was no indication that the order in which participants saw the evidence items affected the overall amount of information recalled. In both conditions, participants listed an equal number of evidence items during the recall task (witness order  $M = 15.45$ ; random order  $M = 15.40$ ;  $F < 1$ ). Second, although the majority of participants (73%) did mention the defendant's race, these references did not differ as a function of the order manipulation. Seventy-four percent and 73% of the participants mentioned the defendant's race in the witness order and random order conditions, respectively,  $\chi^2(1, N = 104) = 0.01, p = .92$ . Thus, there is no indication that the salience of the defendant's race varied as a function of the order manipulation. Although there is a hint that low-MRS participants mentioned the defendant's race more frequently than did high-MRS participants (82% and 63%, respectively),  $\chi^2(1, N = 104) = 1.63, p = .20$ , this was not statistically reliable, nor was it qualified by the order manipulation (64.7% and 79.5%, respectively, for high- and low-MRS participants in the random order conditions,  $\chi^2[1, N = 57] = 0.58, p = .45$ , and 62.1% and 85.3% respectively in the witness order conditions,  $\chi^2[1, N = 47] = 1.13, p = .29$ ).

#### Causal Agency

We predicted that high- and low-MRS participants would again bring to bear different stereotypic causal assumptions for their integration of the trial evidence, resulting in a construal of the trial evidence that was consistent with either a Victim or Perpetrator framework of the African American defendant. However, in the random order conditions, where the application of stereotypic frameworks was made more difficult, these differences were expected to be attenuated.

Table 6 summarizes the means obtained for participants' evaluations of the alternative explanations for the trial evidence. Item A from the set of given explanations represented an account with the defendant as the victim of the other trial participants' actions, whereas Items B and D represented two alternative explanations with the defendant as the initiating agent (see Table 5). Items B and D were averaged to obtain an overall measure for the acceptance of this latter explanatory scheme.

Consistent with our predictions, participants with high and low MRS scores showed differential preferences for the alternative causal explanations only in the witness order conditions. In these conditions, high-MRS participants were more likely to see the defendant as the initiating agent and less likely to use a

causal structure with the trial victim as the initiating agent than were low-MRS participants. In contrast, the two groups of participants show virtually no difference in the random order condition. A 2 (MRS score: high-low)  $\times$  2 (random-witness order)  $\times$  2 (explanation: victim-defendant) mixed multivariate analysis of variance with the last factor being a within-subject measure revealed this three-way interaction to be statistically reliable,  $F(1, 138) = 8.74, p = .004$ . It is worth noting that this interaction emerged despite the fact that participants in the random order and the witness order conditions were equally aware of the defendant's race.

Two additional effects emerged from this analysis. First, a highly significant main effect,  $F(1, 138) = 47.10, p < .0001$ , for the explanation factor indicates that, in general, participants tended to be more likely to see the trial victim rather than the defendant as the initiating agent. This result seems to be consistent with the overall level of participants' verdict and sentencing ratings obtained in the previous experiments. Second, a two-way interaction between the explanation factor and MRS score emerged,  $F(1, 138) = 10.25, p = .002$ . Inspection of the mean suggests, however, that this effect is attributable to the differences found in the witness order condition.

### *Verdict, Sentence, and Target Impression*

The observed differences in participants' construals of causality are again reflected in participants' trial-related judgments (see Table 7).<sup>7</sup> Specifically, the witness order conditions replicated the findings from the first experiment, with high-MRS participants finding the African American defendant more guilty and forming a more negative impression of the target than low-MRS participants. These differences were virtually eliminated when the evidence was presented in random order. In separate 2 (MRS score: high-low)  $\times$  2 (random-witness order) ANOVAs, the predicted two-way interaction emerged for participants' verdicts,  $F(1, 138) = 4.78, p = .031$ , and their impressions of the defendant,  $F(1, 138) = 4.28, p = .041$ . Moreover, simple effect analyses confirm that the mean differences obtained in the witness order condition were reliable,  $F(1, 63) = 7.74, p = .007$  for verdict;  $F(1, 63) = 4.11, p = .047$  for

Table 6  
*Causal Agency: Experiment 3*

Explanation	Participant's MRS score	
	Low	High
Victim as initiating agent		
Random order	4.22	4.12
Witness order	4.59	3.23
Defendant as initiating agent		
Random order	2.98	2.96
Witness order	2.46	3.17

Note. Responses ranged from 1 (*not at all what happened*) to 7 (*exactly what happened*). Presentation Order  $\times$  Participant's MRS Score  $\times$  Explanation interaction,  $F(1, 138) = 8.74, p = .004$ . MRS = Modern Racism Scale.

Table 7  
*Average Judgments of Guilt, Target Impression, and Recommended Sentences: Experiment 3*

Judgment	Participant's MRS score	
	Low	High
Judgments of guilt		
Random order	3.90	3.88
Witness order	3.44	4.63
Target impression		
Random order	4.02	3.90
Witness order	3.86	4.26
Recommended maximum sentences		
Random order	1.51	1.62
Witness order	1.47	1.83

Note. Responses for judgment of guilt ranged from 1 (*not guilty, very confident*) to 8 (*guilty, very confident*). Presentation Order  $\times$  Participant's MRS Score interaction,  $F(1, 138) = 4.78, p = .031$ . Responses for target impression ranged from 1 (*very positive impression*) to 7 (*very negative impression*). Presentation Order  $\times$  Participant's MRS Score interaction,  $F(1, 138) = 4.28, p = .041$ . Responses for recommended maximum sentence ranged from 1 (*0 months*) to 7 (*16-18 months*). Presentation Order  $\times$  Participant's MRS Score interaction ( $F < 1$ ). MRS = Modern Racism Scale.

impression, whereas they remained statistically insignificant for the random order condition ( $Fs < 1$ ).

Evidence for an *independent* effect of MRS score failed to emerge on any of the dependent measures. A significant effect for participants' scores on the MRS did emerge in the analysis of participants' verdicts, with high-MRS participants being more likely to find the defendant guilty,  $F(1, 138) = 3.81, p = .053$ . As with the conceptually equivalent two-way interaction obtained for the causal agency variable, however, this effect was largely confined to the witness order conditions.

The manipulations had virtually no effect on the sentences participants recommended. Although the patterns of results were in the predicted directions, analyses of both maximum and minimum recommended sentences revealed no significant differences ( $Fs < 1$ ).<sup>8</sup>

Taken together, the results from Experiment 3 provide strong support for the assertion that stereotypic knowledge influenced participants' construals of the trial situation by altering the inferences they drew when putting together the various pieces of evidence. These encoding effects were obtained without stereotypic knowledge affecting participants' memory for the trial evidence. We need to emphasize, however, that the absence of any recall effects is most likely attributable to our deliberate attempts to simplify the trial evidence. As in previous research (cf. Devine & Ostrom, 1985; Pennington & Hastie, 1992), the simplified nature of the stimulus materials allowed us to test possible differences in knowledge organization in the absence

<sup>7</sup> Participants were asked to indicate their verdicts on the extended 8-point scale that was also used in Experiment 2.

<sup>8</sup> For simplicity, Table 7 contains only the results of participants' maximum sentencing. Participants' recommended minimum sentence showed even less variation than this variable.

of additional memory effects. Under more realistic conditions, that is, in a more complex stimulus environment, stereotypic conceptual knowledge should serve not only to organize information, but also to selectively direct the perceiver's attention (cf. Bodenhausen, 1988; Cohen, 1981; Hilton et al., 1991) and to guide information retrieval (cf. Brewer & Dupree, 1983; Hastie, 1981; Lichtenstein & Brewer, 1980).

### General Discussion

In the present research, stereotypic knowledge proved to be a powerful tool for participants' construals of social reality. As such, the present results concur with numerous other studies that have documented the prevalence of stereotypes in shaping human experience and providing subjective meaning through the process of social categorization (cf. Banaji et al., 1993; Darley & Gross, 1983; Duncan, 1976; Kunda & Sherman-Williams, 1993; Sagar & Schofield, 1980; Vallone et al., 1985). These studies have consistently shown how stereotypes may affect participants' interpretations of ambiguous information. The present data demonstrate that such interpretational effects are due, at least in part, to causal assumptions that are contained in stereotypic knowledge.

In the same way that an analogous story may help participants to successfully structure a given thought problem, stereotypic knowledge aids in the structuring of information about the social environment. In Experiment 1, specific causal assumptions about the underlying causes of socioeconomic disadvantage among African Americans influenced participants' construals of causality in a social situation that involved a stereotyped target. In the second study, this stereotypic construal transferred to a set of stimuli unrelated to the stereotype, suggesting that the stereotypic influences on the construal of causality may be observed without the perceiver being motivated to maintain an attitude-consistent explanation of the encountered evidence. In Experiment 3, we found that interfering with participants' ability to integrate the available evidence into a coherent representation on encoding reduced the stereotyping effects substantially. Despite the fact that participants in the random order condition of Experiment 3 were cognizant of the protagonists' race, their construal of causal agency in the trial events remained uninfluenced by the racial stereotypes they held. Taken together, the results from all three experiments suggest that stereotypes shape the construal of causal relations at the time of encoding.

This is not to say, of course, that stereotypic influences on social judgments and behavior are limited solely to the encoding of information. Stereotypes have been found to operate at all stages in social information processing (cf. Hamilton & Sherman, 1994). Similarly, the fact that participants in Experiment 2 showed construal effects for target episodes that were not particularly motivationally relevant does not imply that motivational factors are unlikely to play a role in stereotypic construals of causality. In fact, social psychologists have been quite successful in documenting the pervasive influences of the perceiver's motivation to maintain attitude consistency (cf. Kunda & Oleson, 1995; Schaller, 1992; Snyder & Swann, 1978). But what the studies reported here do suggest is that the influence of stereotypic assumptions about causality begin at encoding and involve more than the motivation for consistency.

The fact that stereotypic beliefs may critically influence social judgments has important social implications, of course. In the case of judicial decisions, the context used for the present experiments, the potential of jurors' stereotypic beliefs to influence the outcome of a jury's decisions challenges the basic principle upon which the judicial system is based, the right of every individual to be judged equally independent of race, gender, or class. Indeed, a review of archival records of actual criminal trials suggests that White juries have found African Americans to be the perpetrators of alleged crimes with disproportionate frequency (cf. Gross & Mauro, 1989; Howard, 1975; Petersilia, 1983). Naturally, these studies lack the rigorous controls available in experimental investigation, which makes them susceptible to methodological criticisms and alternative interpretations (cf. Greenberg & Ruback, 1982). In this respect, the present experimental data nicely complement the findings from these reviews, despite the fact that our experimental procedure diverted in many ways from the proceedings of an actual court trial (e.g., presentation of trial evidence, jury deliberation, implications of the judgment). The present data confirm that, depending on a juror's racial stereotypes, the same evidence may obtain an entirely different meaning when the defendant happens to be African American rather than White.

### *Application of Stereotypic Structure*

In this research, we focused on a particular set of causal beliefs that tend to be associated with the social stereotype of African Americans, namely participants' assumptions regarding the underlying causes of racial conflict and inequity. Although we consistently observed that participants' stereotypic causal assumptions influenced their construal of causality in the experimental situations that involved a stereotype target, we expect these effects to be limited to situations in which the causal structure is potentially applicable. Rather than resulting in general and broad effects on the denotative meaning of social information, we believe stereotyping effects to be more specific and dependent on the particular content of the stereotype. Consistent with this notion, in Experiment 2, the variation of relational structure contained in the discordant episodes on the one hand and the concordant episodes on the other hand affected the applicability of activated stereotypic knowledge. Construal effects emerged only when the target episodes provided a potential match with the activated stereotype (i.e., the discordant episodes as opposed to the concordant episodes).

This finding that construal effects of stereotypic knowledge are specific and limited to information that somehow fits the stereotype, of course, raises a more fundamental question. What are the exact circumstances under which conceptual background knowledge (i.e., stereotypic beliefs) will be considered applicable and thus be used for the assimilation of information? In trying to answer this question, research has focused on contextual factors that may influence whether category information is considered relevant for a given judgment (cf. Wegener & Petty, 1995; Martin, & Achee, 1992) and on characteristics of the target stimulus. In terms of the target stimulus characteristics, various authors have suggested that category membership of the target is a necessary condition for stereotypic knowledge to have assimilatory effects (cf. Banaji et al., 1993; Schwarz &

Bless, 1992). Research has further indicated that the target's typicality for a given category affects the likelihood of stereotype application, with more typical exemplars being more likely to yield stereotype-consistent construal (cf. Krueger & Rothbart, 1988).

Our findings, however, are somewhat at odds with this theoretical framework. In Experiment 2, the target stimuli were distinctly dissimilar from any potential exemplar to which the critical category knowledge would apply. Yet this apparent dissimilarity did not hinder participants from using their stereotypic knowledge of African Americans for their understanding of cartoon fish. Although it was clearly not the target's category membership that could have led to the application of the activated stereotypic knowledge, our data suggest instead that stereotype applicability was determined by a match in relational structure. That is, the variation of relational structure contained in the discordant episodes on the one hand and the concordant episodes on the other hand affected the applicability of activated stereotypic knowledge.

It is interesting that this finding that application of background knowledge depended on structural stimulus properties is quite consistent with evidence from the archival studies on race biases in judicial decisions that we referred to earlier. The archival research suggests that African American defendants are prone to receive more severe punishment in cases that involve White victims (cf., Howard, 1975).

Moreover, our findings are paralleled by results from research on analogical reasoning and problem solving. As we mentioned at the outset of this article, work in this domain has frequently emphasized the importance of higher order relational structure for the comprehension of consecutively encountered stimuli. In fact, an influential theoretical framework in this area of research, Gentner's (cf. Gentner, 1983; Gentner, Rattermann, & Forbus, 1993) structure-mapping theory, has explicitly raised the possibility that such higher order relations, although less relevant for knowledge retrieval, are crucial for the application of background knowledge. In brief, structure-mapping theory holds that the use of knowledge for the construal of a stimulus set can be differentiated into two separate stages. At the first stage, knowledge will be accessed from long-term memory. Once activated, the applicability of this knowledge is evaluated on the basis of the degree to which it captures the higher order structural properties of the target set (e.g., the causal relations). In contrast, the search for potentially relevant knowledge tends to rely more on apparent surface attributes of the encountered stimulus (e.g., shape, size, or object attributes in narratives). In support of this model, Gentner and her colleagues have repeatedly demonstrated that structural similarity between stimuli tends to be a better predictor for judgments of similarity than feature overlap (Gentner et al., 1993; Medin, Goldstone, & Gentner, 1993). On the other hand, this research has also shown that common surface features serve as more effective retrieval cues of knowledge from memory than do relational properties. Apparently, being confronted with Duncker's (1935) radiation problem is unlikely to bring to mind one's memory of those infinite episodes from Western movies where enemy positions are simultaneously attacked from many different directions. Similarly, the cartoon fishes' appearance in Experiment 2 should

make us think of fish rather than of African Americans or any other social group.

It is worth keeping in mind, however, that the nature of the experimental procedures used in the second study may have limited the impact of the more apparent stimulus features. That is, one of the goals of Experiment 2 was to activate participants' stereotypic knowledge of African Americans by incidentally exposing them to a stereotypic target. Importantly, this priming episode consisted of a fairly involving experimental task, in which participants spent a substantial amount of time trying to form a coherent representation of a complex set of evidence and in which they expected to have to justify their view of this evidence. Moreover, participants were instructed that, after completing the "perception experiment," they would return to the initial jury task. Reminiscent of the Zeigarnik effect (Zeigarnik, 1927), these instructions are likely to have motivated participants to continue to think about the uncompleted task and thus likely increased the level of activation of related knowledge during the target episode.<sup>9</sup>

Once activated, participants' stereotypic knowledge of African Americans apparently provided a sufficient match with the discordant target stimuli, and transfer therefore occurred. In contrast, in the case of the concordant stimulus set, the structural properties of primed stereotype and target episode were too dissimilar for the activated knowledge to be applicable.

Further research is needed to test whether Gentner's (Gentner et al., 1993) structure-mapping theory indeed provides a viable model for the processes involved in the application of category knowledge. At any rate, the findings reported in this article suggest that closer attention needs to be paid to the structural aspects of stereotypic knowledge and their function in social information processing.

### Conclusion

At the outset of this article, we emphasized that stereotypes consist of rich sets of knowledge that aid the perceiver in explaining the social environment. This knowledge, of course, is in large part shared in society. That is, although stereotypic knowledge may sometimes be idiosyncratic, because of one's individual experience with members of the group, it is, nevertheless, more likely acquired as a complete package in the process of a person's socialization (cf. Allport, 1954; Gardner, 1994; Pettigrew, 1981; Wittenbrink & Henly, 1996). Indeed, society offers an abundance of stereotypic images about various social groups. Importantly, these images not only contain assumptions about a group's attributes but also include stereotypic explanations for why these attributes presumably exist. In the case of African Americans in U.S. society, these images range from arguments concerning the "culture of poverty," which allegedly perpetuates inadequate values among the largely African Ameri-

<sup>9</sup> Similarly, Seifert, McKoon, Abelson, and Ratcliff (1986) found that a more involving priming task (i.e., judging the similarity of pairs of stories rather than simply reading the stories) led to stronger effects of the priming episode on subsequent judgments. Also, Martin (1986, Experiment 1) reported that assimilatory effects of an incidental priming episode were enhanced when participants anticipated this priming task would be completed after the target episode.

can urban poor (M. B. Katz, 1989), to Herrnstein and Murray's (1994) insidious revival of genetic explanations for African Americans' presumed intellectual inferiority.

As stereotyping research of the past decades has documented quite convincingly, abstract group-level knowledge may influence the perceiver's subjective construal of specific social situations. Likewise, our argument in the present article has been that such stereotypic explanations about cause–effect relations at the group level have the potential to affect perceptions of social causation in specific instances. To the same extent that stereotypic attributes are likely to be used in the perceiver's construal of social information, these structural aspects of stereotypic knowledge are likewise used, from the very beginning, providing a blueprint for the construal of cause–effect relations.

## References

- Allport, G. W. (1954). *The nature of prejudice*. Cambridge, MA: Addison-Wesley.
- Andersen, S. M., & Klatzky, R. L. (1987). Traits and social stereotypes: Levels of categorization in person perception. *Journal of Personality and Social Psychology*, 53, 235–246.
- Armstrong, S. L., Gleitman, L. R., & Gleitman, H. (1983). What some concepts might not be. *Cognition*, 13, 263–308.
- Asch, S. E. (1952). *Social psychology*. Englewood Cliffs, NJ: Prentice Hall.
- Baker, L. (1978). Processing temporal relationships in simple stories: Effects of input sequence. *Journal of Verbal Learning and Verbal Behavior*, 17, 559–572.
- Banaji, M. R., Hardin, C., & Rothman, A. J. (1993). Implicit stereotyping in person judgment. *Journal of Personality and Social Psychology*, 65, 272–281.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Bartlett, F. C. (1932). *Remembering*. London: Cambridge University Press.
- Biernat, M., Manis, M., & Nelson, T. E. (1991). Stereotypes and standards of judgment. *Journal of Personality and Social Psychology*, 60, 485–499.
- Bobo, L., & Kluegel, J. R. (1993). Opposition to race-targeting: Self-interest, stratification ideology, or racial attitudes? *American Sociological Review*, 58, 443–464.
- Bodenhausen, G. V. (1988). Stereotypic biases in social decision making and memory: Testing process models of stereotype use. *Journal of Personality and Social Psychology*, 55, 726–737.
- Brewer, W. F., & Dupree, D. A. (1983). Use of plan schemata in the recall and recognition of goal-directed actions. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 9, 117–129.
- Bruner, J. S. (1957). Going beyond the information given. In J. S. Bruner, et al. (Eds.), *Contemporary approaches to cognition* (pp. 218–238). Cambridge, MA: Harvard University Press.
- Cohen, C. E. (1981). Person categories and social perception: Testing some boundaries of the processing effect of prior knowledge. *Journal of Personality and Social Psychology*, 40, 441–452.
- Darley, J. M., & Gross, P. H. (1983). A hypothesis-confirming bias in labeling effects. *Journal of Personality and Social Psychology*, 44, 20–33.
- Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology*, 56, 5–18.
- Devine, P. G., & Ostrom, T. M. (1985). Cognitive mediation of inconsis-
- tency discounting. *Journal of Personality and Social Psychology*, 49, 5–21.
- Duncan, B. L. (1976). Differential social perception and attribution of intergroup violence: Testing the lower limits of stereotyping of Blacks. *Journal of Personality and Social Psychology*, 34, 590–598.
- Duncker, K. (1935). *Zur psychologie des produktiven denkens* [On problem solving]. Berlin: Springer-Verlag.
- Erdley, C. A., & D'Agostino, P. R. (1988). Cognitive and affective components of automatic priming effects. *Journal of Personality and Social Psychology*, 54, 741–747.
- Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., & Kardes, F. R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology*, 50, 229–238.
- Fiske, S. T. (1993). Social cognition and social perception. *Annual Review of Psychology*, 44, 155–194.
- Gaertner, S. L., & Dovidio, J. F. (1986). The aversive form of racism. In J. F. Dovidio & S. L. Gaertner (Eds.), *Prejudice, discrimination, and racism* (pp. 61–89). Orlando, FL: Academic Press.
- Gardner, R. C. (1994). Stereotypes as consensual beliefs. In M. P. Zanna & J. M. Olson (Eds.), *The psychology of prejudice: The Ontario Symposium* (Vol. 7, pp. 1–31). Hillsdale, NJ: Erlbaum.
- Gentner, D. (1983). Structure-mapping: A theoretical framework for analogy. *Cognitive Science*, 7, 155–170.
- Gentner, D., Rattermann, M. J., & Forbus, K. D. (1993). The roles of similarity in transfer: Separating retrievability from inferential soundness. *Cognitive Psychology*, 25, 524–575.
- Gick, M. L., & Holyoak, K. J. (1980). Analogical problem solving. *Cognitive Psychology*, 12, 306–355.
- Gick, M. L., & Holyoak, K. J. (1983). Schema induction and analogical transfer. *Cognitive Psychology*, 15, 1–38.
- Gilens, M. (1995). Racial attitudes and opposition to welfare. *The Journal of Politics*, 57, 994–1014.
- Greenberg, M. S., & Ruback, R. B. (1982). *Social psychology of the criminal justice system*. Monterey, CA: Brooks/Cole.
- Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review*, 102, 4–27.
- Gross, S. R., & Mauro, R. (1989). *Death and discrimination: Racial disparities in capital sentencing*. Boston: Northeastern University Press.
- Gurwitz, S. B., & Dodge, K. A. (1977). Effects of confirmations and disconfirmations on stereotype-based attributions. *Journal of Personality and Social Psychology*, 35, 495–500.
- Hamilton, D. L., & Sherman, J. W. (1994). Stereotypes. In R. S. Wyer & T. K. Srull (Eds.), *Handbook of social cognition* (Vol. 2, 2nd ed., pp. 1–68). Hillsdale, NJ: Erlbaum.
- Hamilton, D. L., & Trolier, T. K. (1986). Stereotypes and stereotyping: An overview of the cognitive approach. In J. F. Dovidio, & S. L. Gaertner (Eds.), *Prejudice, discrimination, and racism* (pp. 127–163). Orlando, FL: Academic Press.
- Hastie, R. (1981). Schematic principles in human memory. In E. T. Higgins, C. P. Herman, & M. P. Zanna (Eds.), *Social cognition: The Ontario Symposium* (Vol. 1, pp. 39–88). Hillsdale, NJ: Erlbaum.
- Hastie, R., & Kumar, P. (1979). Person memory: Personality traits as organizing principles in memory for behaviors. *Journal of Personality and Social Psychology*, 37, 25–38.
- Haviland, S. E., & Clark, H. H. (1974). What's new? Acquiring new information as a process in comprehension. *Journal of Verbal Learning and Verbal Behavior*, 13, 512–521.
- Heider, F. (1944). Social perception and phenomenal causality. *Psychological Review*, 51, 358–374.
- Heider, F., & Simmel, M. (1944). An experimental study of apparent behavior. *American Journal of Psychology*, 57, 243–249.

- Herrnstein, R. J., & Murray, C. (1994). *The bell curve: Intelligence and class structure in American life*. New York: Free Press.
- Higgins, E. T., Rholes, W. S., & Jones, C. R. (1977). Category accessibility and impression formation. *Journal of Experimental Social Psychology*, 13, 141–154.
- Hilton, J. L., Klein, J. G., & von Hippel, W. (1991). Attention allocation and impression formation. *Personality and Social Psychology Bulletin*, 17, 548–559.
- Holyoak, K. J. (1985). The pragmatics of analogical transfer. In G. H. Bower (Ed.), *The psychology of learning and motivation* (Vol. 19, pp. 59–87). New York: Academic Press.
- Howard, J. C. (1975). Racial discrimination in sentencing. *Judicature*, 59, 120–125.
- Katz, D., & Braly, K. W. (1933). Racial stereotypes of one hundred college students. *Journal of Abnormal and Social Psychology*, 28, 280–290.
- Katz, I., & Hass, R. G. (1988). Racial ambivalence and American value conflict: Correlational and priming studies of dual cognitive structures. *Journal of Personality and Social Psychology*, 55, 893–905.
- Katz, M. B. (1989). *The undeserving poor: From the war on poverty to the war on welfare*. New York: Random House.
- Kinder, D. R., & Sears, D. O. (1981). Prejudice and politics: Symbolic racism versus racial threats to the good life. *Journal of Personality and Social Psychology*, 40, 414–431.
- Kluegel, J. R., & Smith, E. R. (1986). *Beliefs about inequality: Americans' views of what is and what ought to be*. Hawthorne, NY: Aldine de Gruyter.
- Krueger, J., & Rothbart, M. (1988). Use of categorical and individuating information in making inferences about personality. *Journal of Personality and Social Psychology*, 55, 187–195.
- Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, 108, 480–498.
- Kunda, Z., & Oleson, K. C. (1995). Maintaining stereotypes in the face of disconfirmation: Constructing grounds for subtyping deviants. *Journal of Personality and Social Psychology*, 68, 565–579.
- Kunda, Z., & Sherman-Williams, B. (1993). Stereotypes and the construal of individuating information. *Personality and Social Psychology Bulletin*, 19, 90–99.
- Leddo, J., Abelson, R. P., & Gross, P. H. (1984). Conjunctive explanations: When two reasons are better than one. *Journal of Personality and Social Psychology*, 47, 933–943.
- Lewin, K. (1936). *Principles of topological psychology*. New York: McGraw-Hill.
- Leyens, J. P., Yzerbyt, V. Y., & Schadron, G. (1992). The social judgeability approach to stereotypes. In W. Stroebe & M. Hewstone (Eds.), *European review of social psychology* (Vol. 3, pp. 91–120). London: Wiley.
- Lichtenstein, E. H., & Brewer, W. F. (1980). Memory for goal-directed events. *Cognitive Psychology*, 12, 412–445.
- Linville, P. W., Fischer, G. W., & Salovey, P. (1989). Perceived distributions of the characteristics of in-group and out-group members: Empirical evidence and a computer simulation. *Journal of Personality and Social Psychology*, 57, 165–188.
- Macrae, C. N., Stangor, C., & Milne, A. B. (1994). Activating social stereotypes: A functional analysis. *Journal of Experimental Social Psychology*, 30, 370–389.
- Martin, L. L. (1986). Set/reset: Use and disuse of concepts in impression formation. *Journal of Personality and Social Psychology*, 51, 493–504.
- Martin, L. L., & Achee, J. W. (1992). Beyond accessibility: The role of processing objectives in judgment. In L. L. Martin & A. Tesser (Eds.), *The construction of social judgment* (pp. 195–216). Hillsdale, NJ: Erlbaum.
- McConahay, J. B. (1986). Modern racism, ambivalence, and the modern racism scale. In J. F. Dovidio & S. L. Gaertner (Eds.), *Prejudice, discrimination, and racism* (pp. 91–125). Orlando, FL: Academic Press.
- McConahay, J. B., Hardee, B. B., & Batts, V. (1981). Has racism declined in America? It depends on who is asking and what is asked. *Journal of Conflict Resolution*, 25, 563–579.
- McConahay, J. B., & Hough, J. C. (1976). Symbolic racism. *Journal of Social Issues*, 32, 23–45.
- Medin, D. L., Goldstone, R. L., & Gentner, D. (1993). Respects for similarity. *Psychological Review*, 100, 254–278.
- Michotte, A. (1963). *The perception of causality*. New York: Basic Books.
- Moeser, S. D. (1976). Inferential reasoning in episodic memory. *Journal of Verbal Learning and Verbal Behavior*, 15, 193–212.
- Morris, M. W., & Peng, K. (1994). Culture and cause: American and Chinese attributions for social and physical events. *Journal of Personality and Social Psychology*, 67, 949–971.
- Neisser, U. (1967). *Cognitive psychology*. Englewood Cliffs, NJ: Prentice Hall.
- Oakes, P. J., & Turner, J. C. (1990). Is limited information processing capacity the cause of social stereotyping? In W. Stroebe & M. Hewstone (Eds.), *European review of social psychology* (Vol. 1, pp. 112–135). London: Wiley.
- Ostrom, T. M., Lingle, J. H., Pryor, J. B., & Geva, N. (1980). Cognitive organization of person impressions. In R. Hastie, T. M. Ostrom, E. B. Ebbesen, R. S. Wyer, D. L. Hamilton, & D. E. Carlston (Eds.), *Person memory: The cognitive basis of social perception* (pp. 55–88). Hillsdale, NJ: Erlbaum.
- Park, B., & Judd, C. M. (1990). Measures and models of perceived group variability. *Journal of Personality and Social Psychology*, 59, 173–191.
- Pennington, N., & Hastie, R. (1988). Explanation-based decision making: Effects of memory structure on judgment. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 14, 521–533.
- Pennington, N., & Hastie, R. (1992). Explaining the evidence: Tests of the story model for juror decision making. *Journal of Personality and Social Psychology*, 62, 189–206.
- Petersilia, J. (1983). *Racial disparities in the criminal justice system*. Santa Monica, CA: Rand Corporation.
- Pettigrew, T. F. (1981). Extending the stereotype concept. In D. L. Hamilton (Ed.), *Cognitive processes in stereotyping and intergroup behavior* (pp. 303–331). Hillsdale, NJ: Erlbaum.
- Pettigrew, T. F., & Meertens, R. W. (1995). Subtle and blatant prejudice in Western Europe. *European Journal of Social Psychology*, 25, 57–75.
- Read, S. J., & Marcus-Newhall, A. (1993). Explanatory coherence in social explanations: A parallel distributed processing account. *Journal of Personality and Social Psychology*, 65, 429–447.
- Ross, L., & Nisbett, R. E. (1991). *The person and the situation. Perspectives of social psychology*. New York: McGraw-Hill.
- Rothbart, M., Evans, M., & Fulero, S. (1979). Recall for confirming events: Memory processes and the maintenance of social stereotypes. *Journal of Experimental Social Psychology*, 15, 343–355.
- Rothbart, M., & John, O. P. (1985). Social categorization and behavioral episodes: A cognitive analysis of the effects of intergroup contact. *Journal of Social Issues*, 41, 81–104.
- Ryan, W. (1976). *Blaming the victim*. New York: Vintage.
- Sagar, H. A., & Schofield, J. W. (1980). Racial and behavioral cues in Black and White children's perceptions of ambiguously aggressive acts. *Journal of Personality and Social Psychology*, 39, 590–598.
- Schaller, M. (1992). In-group favoritism and statistical reasoning in social inference: Implications for formation and maintenance of group stereotypes. *Journal of Personality and Social Psychology*, 63, 61–74.

- Schwarz, N., & Bless, H. (1992). Constructing reality and its alternatives: An inclusion/exclusion model of assimilation and contrast effects in social judgment. In L. L. Martin & A. Tesser (Eds.), *The construction of social judgment* (pp. 217-245). Hillsdale, NJ: Erlbaum.
- Sears, D. O. (1988). Symbolic racism. In P. A. Katz & D. A. Taylor (Eds.), *Eliminating racism: Profiles in controversy* (pp. 53-84). New York: Plenum.
- Sears, D. O., & Kinder, D. R. (1971). Racial tensions and voting in Los Angeles. In W. Z. Hirsch (Ed.), *Los Angeles: Viability and prospects for metropolitan leadership* (pp. 51-88). New York: Praeger.
- Seifert, C. M., McKoon, G., Abelson, R. P., & Ratcliff, R. (1986). Memory connections between thematically similar episodes. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 12, 220-231.
- Skowronski, J. J., Carlston, D. E., & Isham, J. T. (1993). Implicit versus explicit formation: The differing effects of overt labeling and covert priming on memory and impressions. *Journal of Experimental Social Psychology*, 29, 17-41.
- Snyder, M., & Swann, W. B. (1978). Hypothesis-testing processes in social interaction. *Journal of Personality and Social Psychology*, 36, 1202-1212.
- Srull, T. K., & Wyer, R. S. (1979). The role of category accessibility in the interpretation of information about persons: Some determinants and implications. *Journal of Personality and Social Psychology*, 37, 1660-1672.
- Stangor, C., & Duan, C. (1991). Effects of multiple task demands upon memory for information about social groups. *Journal of Experimental Social Psychology*, 27, 357-378.
- Stangor, C., & Lange, J. E. (1994). Mental representations of social groups: Advances in understanding stereotypes and stereotyping. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 26, pp. 357-416). San Diego, CA: Academic Press.
- Swim, J. K., Aikin, K. J., Hall, W. S., & Hunter, B. A. (1995). Sexism and racism: Old-fashioned and modern prejudices. *Journal of Personality and Social Psychology*, 68, 199-214.
- Tajfel, H. (1969). Cognitive aspects of prejudice. *Journal of Social Issues*, 25, 79-97.
- Vallone, R. P., Ross, L., & Lepper, M. R. (1985). The hostile media phenomenon: Biased perception and perceptions of media bias in coverage of the Beirut massacre. *Journal of Personality and Social Psychology*, 49, 577-585.
- Vinacke, W. E. (1957). Stereotypes as social concepts. *Journal of Social Psychology*, 46, 229-243.
- Vosniadou, S., & Ortony, A. (Eds.). (1989). *Similarity and analogical reasoning*. Cambridge, England: Cambridge University Press.
- Weber, R., & Crocker, J. (1983). Cognitive processes in the revision of stereotypic beliefs. *Journal of Personality and Social Psychology*, 45, 961-977.
- Wegener, D. T., & Petty, R. E. (1995). Flexible correction processes in social judgment: The role of naive theories in corrections for perceived bias. *Journal of Personality and Social Psychology*, 68, 36-51.
- Wertheimer, M. (1925). *Drei Abhandlungen zur Gestalttheorie* [Three essays on Gestalt theory]. Erlangen, Germany: Palm-Enke.
- Wittenbrink, B., & Henly, J. R. (1996). Creating social reality: Informational social influence and the content of stereotypic beliefs. *Personality and Social Psychology Bulletin*, 22, 598-610.
- Wittenbrink, B., Judd, C. M., & Park, B. (1997). Evidence for racial prejudice at the implicit level and its relationship with questionnaire measures. *Journal of Personality and Social Psychology*, 72, 262-274.
- Wittenbrink, B., Judd, C. M., Park, B., & Stone, M. H. (1996). *The valenced content of racial stereotypes: Assessing prejudice at implicit and explicit levels*. Manuscript submitted for publication.
- Zeigarnik, B. (1927). Das behalten von erledigten und unerledigten handlungen [Remembering finished and unfinished tasks]. *Psychologische Forschung*, 9, 1-85.

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