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Stereotypes

[Review]

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ABSTRACT

The stereotyping literature within psychology has grown considerably over the past decade. In large part, this growth can be attributed to progress in understanding the individual mechanisms that give rise to stereotypic thinking. In the current review, the recent psychological literature on stereotypes is reviewed, with particular emphasis given to the cognitive and motivational factors that contribute to stereotype formation, maintenance, application, and change. In addition, the context-dependent function of stereotypes is highlighted, as are the representational issues that various models of stereotypes imply.

KEY WORDS: prejudice, group relations, discrimination, expectancies.

INTRODUCTION

On the Question of "Why?": The Context-Dependent Function of Stereotypic Thinking

Why do people engage in stereotypic thinking? Should stereotypes be seen as the inevitable by-products of a miserly cognitive style, for example, or do they result from deep-seeded personality and motivational variables? Do stereotypes emerge in response to frustration, or do they stem from a need to go beyond the information given? Are stereotypes a consequence of our evolutionary heritage, or a product of our particular culture?

We devote relatively little attention to this interesting question of why stereotypes exist. (For excellent reviews, see Smith 1993, Snyder & Miene 1994, Stroebe & Insko 1989 [187,192,203].) We believe stereotypic thinking typically serves multiple purposes that reflect a variety of cognitive and motivational processes. Sometimes, for example, stereotyping emerges as a way of simplifying

the demands on the perceiver (Bodenhausen et al 1994a,b; Macrae et al 1994c) [16,19,129]. Stereotypes make information processing easier by allowing the perceiver to rely on previously stored knowledge in place of incoming information. Stereotypes also emerge in response to environmental factors, such as different social roles (cf Eagly 1995) [41], group conflicts (Robinson et al 1995) [161], and differences in power (Fiske 1993) [52]. Other times stereotypes emerge as a way of justifying the status quo (Jost & Banaji 1994, Sidanius 1993) [93,182], or in response to a need for social identity (Hogg & Abrams 1988) [87]. Thus, when it comes to the question of "why," we think the answer can most often be found in the notion of context-dependent functionality. Put simply, stereotyping emerges in various contexts to serve particular functions necessitated by those contexts.

The "How" and "When" of Stereotypic Thinking

In this review, we address the more limited questions of "how" and "when" stereotypic thinking emerges, organizing it into sections devoted to the representation, formation, maintenance, application, and change of stereotypes. It is important to note how motivational factors, traditionally considered key ingredients in answering the "why" of stereotyping, are treated in this review. We consider motivation in a more limited way, assuming that stereotypes are not only formed and maintained for a variety of motivational reasons but through a variety of motivational factors as well. That is, considerable research shows that motivation and emotion play just as important a role in the "when" and "how" of stereotyping as they do in the "why" of stereotyping (Dovidio & Gaertner 1993, Erber 1991, Haddock et al 1993, Hass et al 1992, Islam & Hewstone 1993b, Jussim et al 1995, Mullen 1991, Murray et al 1990, Wilder & Shapiro 1991, Yzerbyt et al 1994) [40,43,65,74,89,99,142,145,220,227].

We highlight a variety of affective and motivational factors that influence when and how stereotypes manifest themselves. As will be evident, motivation frequently determines when stereotyping emerges, but more often than not cognitive processes serve as the mechanism for these motivational effects, determining how motivational processes influence perception, judgment, and behavior. For example, people typically require more evidence to convince them that a disliked person is intelligent rather than unintelligent (Ditto & Lopez 1993) [37]. In terms of stereotyping, this finding suggests that motivational factors can lead to rapid confirmation yet slow or begrudging disconfirmation of a negative expectancy, even when the stereotype concerns a dimension that is irrelevant to the root of the disfavor (see also Hilton et al 1991) [84]. In contrast, motivation to like a particular person can have the opposite effect, bringing about a generalized reduction in negative stereotypes concerning the particular person's group (Klein & Kunda 1992; see also Pendry & Macrae 1994) [104,156].

In a related vein, Spencer & Fein (1994) [195] demonstrated that motivation can

have an impact on stereotyping by increasing the likelihood that certain cognitive processes will take place. They hypothesized that subjects who had experienced a threat to their self-esteem would be motivated to activate their stereotypes as a means of making themselves feel better through downward social comparison (Crocker & Luhtanen 1990, Fein & Spencer 1993) [28,48]. Consistent with this logic, subjects who had experienced a threat to their self-esteem showed evidence of stereotype activation even when they were cognitively busy, a circumstance under which nonthreatened subjects did not show evidence of activation (see section on Automaticity).

Affect can also have opposite effects on stereotyping, as a function of the type of information processing with which it is associated. For example, affect can inhibit stereotype formation by interfering with the development of illusory correlations (Hamilton et al 1993, Stroessner et al 1992) [71,204], or it can facilitate stereotype formation, maintenance, and application by increasing perceptions of group homogeneity (Stroessner & Mackie 1992, 1993) [205,206], the likelihood that deviant group members will be assimilated to the group stereotype (Wilder 1993) [219], and reliance on stereotypes as a cognitive shortcut (Bodenhausen et al 1994a,b) [16,19]. Thus the outcome of affective processes differs dramatically as a function of the mental operations in which the perceiver is engaged.

Taken together, these studies suggest that motivation and affect play significant roles in stereotyping through their impact on cognition. Although preferences influenced judgments in Ditto & Lopez's experiment, for example, they did so through a cognitive mechanism. Subjects did not simply decide that the more likeable person was also more intelligent. Rather, they selectively set high or low standards of evidence that had to be obtained before they could be convinced of who was the more intelligent person (see also Macrae et al 1992) [130]. Similarly, subjects in Klein & Kunda's experiment allowed their desires to influence their beliefs about a person by changing the cognitions underlying these beliefs (see also Klein & Kunda 1993, Kunda 1990, Sanitioso et al 1990) [105,114,170]. Thus a cognitive process mediated, and thereby justified, the influence of subjects' preferences in these experiments (see also Schaller, 1992) [172]. Finally, in Spencer & Fein (1994) [195], although a threat to subjects' self-esteem caused them to stereotype an out-group member, again the mechanism was a cognitive one: Motivation facilitated stereotype activation, which in turn served to bolster subjects' self-esteem (Fein & Spencer 1993) [49].

Definitions and Directions

Stereotypes have been defined in a variety of ways (see Gardner 1994, Hamilton & Sherman 1994) [61,69]. In this review we adopt the standard viewpoint that stereotypes are beliefs about the characteristics, attributes, and behaviors of members of certain groups. More than just beliefs about groups, they are also

theories about how and why certain attributes go together. The nature and purpose of these theories are likely to play an important role in determining when stereotypes are applied and when they are likely to change (cf Leyens et al 1992, Oakes & Turner 1990, Snyder & Miene 1994, Rothbart & Taylor 1992, Wittenbrink 1994) [121,150,192,166,222]. Furthermore, although stereotypes are not necessarily negative in nature, stereotypes about out-group members are more likely to have negative connotations than those about in-group members, even when the attributes they include may seem objectively positive (cf Esses et al 1993, 1994) [44,45]. As Allport (1954) [1] observed, "[T]he personality qualities admired in Abraham Lincoln are deplored in the Jews" (p. 189). Consistent with this viewpoint, negative stereotypes have been shown to be predictive of intergroup attitudes even when positive stereotypes are not (Stangor et al 1991) [200].

Stereotypes can be defined as beliefs about certain groups, but from whence do these beliefs come? There are two sources. The first are mental representations of real differences between groups. That is, stereotypes are sometimes accurate representations of reality (see Judd & Park 1993, Jussim 1991, Swim 1994) [95,97,207], or at least of the local reality to which the perceiver is exposed (Rothbart et al 1984) [165]. Under this circumstance, stereotypes operate much like object schemas, allowing easier and more efficient processing of information about others. Like schemas in general, these stereotypes may cause perceivers to gloss over or fail to notice individual differences (von Hippel et al 1993) [211], but otherwise there is little reason to believe that they cause people to deviate from accurate perceptions. These stereotypes are selective, however, in that they are localized around group features that are the most distinctive (Nelson & Miller 1995) [146], that provide the greatest differentiation between groups, and that show the least within-group variation (Ford & Stangor 1992) [56].

Whereas a variety of stereotypes are based on real group differences (e.g. cultural stereotypes about food preferences), we believe that stereotypes based on relatively enduring characteristics of the person (such as race, religion, and gender) have enormous potential for error. Thus, the second route to stereotyping occurs when stereotypes are formed about various groups independent of real group differences. This issue is the central focus of this review. That is, what are the psychological mechanisms that allow stereotypes to be formed, maintained, and applied even if there are no corresponding group differences? To address this issue, we first discuss how stereotypes are represented in the head of the individual, as assumptions about representation underlie current understandings of stereotyping and stereotype change.

REPRESENTATION

The question of how stereotypes are represented is interesting from at least two perspectives. First, different representational models lead to different

predictions concerning the ways stereotypes are formed, maintained, applied, and changed. Second, although assumptions about representation underlie a great deal of the recent research on formation, maintenance, application, and change, the representational models themselves have received relatively little direct attention. We now briefly outline the gist of five distinct representational models. [For a more thorough treatment of representational issues, see Fiske & Taylor (1991), Hamilton & Sherman (1994), and Smith & Zarate (1992) [54,69,189].]

In the prototype model, which is perhaps the most widely cited, people carry around neither a set of defining features that constitute the stereotype nor much information about individual group members. Instead, perceivers store abstracted representations of a group's typical features and judge individual group members on the basis of similarity comparisons between the individual and the prototype (Cantor & Mischel 1978) [25]. In other words, the prototype representation is an "averaged" representation of the category across many attributes, with no set of group attributes seen as defining. Moreover, the prototype model assumes that knowledge about the stereotype is organized hierarchically (Devine & Baker 1991, Johnston & Hewstone 1992) [33,92]. Thus it is possible to talk about "base level" categories and "subtypes." Indeed, one implication of the prototype model is that stereotype change is accomplished through the creation of subtypes (see section on stereotype change).

A second implication of the prototype model is that it predicts that perceivers will often fail to apply stereotypes to individual group members. Because reactions to individual group members are based on a comparison between the prototype and the individual, any features, even nondiagnostic ones, that reduce the similarity between the individual and the prototype should decrease reliance on the stereotype. Consistent with this aspect of prototype theory, numerous studies have documented the diluting power that nondiagnostic information has, although explanations for this effect differ (Fein & Hilton 1992, Krueger & Rothbart 1988) [47,111].

Recently, a number of investigators have proposed an exemplar-based alternative to prototype and other abstraction-based models (Anderson & Cole 1990, Linville et al 1989, Smith 1990, Smith & Zarate 1992) [3,120,185,189]. According to the exemplar model, perceivers do not store abstract representations of groups. Instead, groups are represented through particular, concrete exemplars. The stereotype of African-Americans as athletic, for example, is thought to be stored in the form of specific individuals (e.g. Michael Jordan, Carl Lewis). Which exemplars are called to mind upon encountering an individual depends on how attention is directed. Because of this feature, exemplar models place considerable emphasis on the role that goals and context play in determining which stereotypes are activated and applied (Smith & Zarate 1992) [189]. Thus, one implication of this model is that a particular stereotype will not always be activated and applied when members of the stereotyped group are encountered, or even when the same member is encountered on different occasions. A second

implication is that it should be possible to observe dramatic (if not necessarily permanent) changes in the stereotype as a result of experience with a single counter-stereotypic exemplar.

A number of researchers have proposed "blended" models in which stereotypes are represented as both prototypes and exemplars (Hamilton & Mackie 1990, Klein et al 1992) [68,103]. Although this broadening of the concepts captures more of the data, it also blurs the distinction between abstraction-based and instance-based models (Hamilton & Sherman 1994) [69].

A third representation model is associative networks, in which stereotypes are thought of as networks of linked attributes (Carlston 1992, Manis et al 1988, Stephan & Stephan 1993) [26,132,202]. Different theorists define "attributes" differently (e.g. some see the attributes as traits, others as beliefs, and still others as behaviors) as well as the links between them (e.g. some see the links as simple associations, others see them as causal connections, and still others see them as associations with affective tags; for a thorough review, see Wyer & Carlston 1994) [224]. Despite the differences, however, these models share the assumption that the associations can be activated automatically, and thus that stereotypes can operate outside the perceivers' awareness and/or control. Similarly, these models suggest that stereotypes change only slowly and incrementally, as the attributes that make up the stereotype are extensively interconnected.

A fourth model proposes that stereotypes are represented as schemas. Although "schema" has become a catch-all term, here we use it simply to refer to Kant's notion of a knowledge representation at its most abstract level. Rather than assuming that information is represented in the form of averaged traits, exemplars, or networked attributes, the schematic view considers stereotypes as generalized, highly abstract beliefs about groups and their members (cf Fiske & Taylor 1991) [54]. The stereotype of men, for example, may contain the general belief that they are aggressive, without tying that belief to particular instantiations of aggression, specific contexts or exemplars, or particular organizational structures (e.g. prototypes or associative networks). Moreover, because schema-based models assume that information is represented more abstractly than in other models, one implication of schema-based representation is that the potential for assimilation should be high. That is, because the representation of the group is devoid of specifics, the possibility for assimilating even inconsistent individuals should be substantial (Hilton & von Hippel 1990) [85].

Finally, some have argued that stereotypes can be viewed as base rates (Beckett & Park 1995, Judd & Park 1993, Nelson et al 1990) [14,95,147], though base rates are not representations per se but rather are a way of thinking about how stereotypes operate. Given people's ability to use base rates, two things should follow from this perspective. First, stereotypes should often be ignored when

individuating information is available. Second, greater experience with the stereotype (i.e. the base rate) should lead to more appropriate (i.e. Bayesian) integration of the individuating information and the base rate (Gigerenzer et al 1988) [62]. With regard to the first point, although a number of studies have found that stereotypes are often diluted by individuating information (e.g. Hilton & Fein 1989, Krueger & Rothbart 1988) [83,111], there is controversy about whether it is possible to make a meaningful distinction between base rate and individuating information in the context of a stereotype (cf McCauley 1994) [133]. There has been less research on the second point, although studies by Nelson et al (1990) [147] on gender and height estimation suggest that people do integrate individuating and base-rate information in some situations.

Although it is possible to identify competing representational models, investigators have devoted relatively little attention to testing them against one another. They have tended to adopt a model (often implicitly) and then conduct research under the notion that if that model is correct, certain phenomena should manifest themselves. (For example, if stereotypes are represented as prototypes, there should be evidence of dilution in the presence of nondiagnostic information.) Researchers have not often proposed that "X should happen if, and only if, the model of representation it implies is correct." Indeed, most of the representational models have yet to be spelled out in sufficient detail to allow testable competing predictions, and, ironically, when such refinement occurs, it often renders the models less rather than more distinguishable (Barsalou 1990) [10].

All of which leaves us with a bit of a paradox. On the one hand, assumptions about representation are implicit in virtually all the recent research on stereotype formation, maintenance, application, and change. On the other hand, there has been little effort directed at specifying the details of various representational models. Although there are obvious exceptions to this generalization (e.g. Bodenhausen et al 1995, Linville & Fischer 1993, Mullen & Johnson 1995, Park & Hastie 1987, Park et al 1991, Sherman 1994, Smith & Zarate 1992) [18,119,144,152,154,178,189], the different representational models have served more as heuristic tools for examining stereotyping than as topics of investigation in their own right.

FORMATION

Having briefly examined issues of representation, we now turn to the questions of how and when stereotypes are formed. We attempt to identify those processes that cause stereotypes to emerge, independent of preexisting differences among groups.

Self-Fulfilling Prophecies

Perhaps the best-known route to stereotype formation is the creation of group

differences through self-fulfilling prophecies. Self-fulfilling prophecies emerge when people hold expectancies that lead them to alter their behavior, which in turn causes the expected behaviors to be exhibited by people who are targets of the expectancies. For example, teachers who expect some of their students to excel elicit superior performance from those students (Rosenthal & Jacobson 1968) [163]. Similarly, college students who believe that their conversational partners are physically attractive elicit more sociable behavior from those partners (Snyder et al 1977) [193]. Whereas early research focused on demonstrating that self-fulfilling prophecies occur, recent research has focused on specifying the conditions under which self-fulfilling prophecies emerge (for reviews see Hilton & Darley 1991, Jussim 1991, Snyder 1992) [82,97,191].

Nonconscious Detection of Covariation

One possible route to stereotype formation is through the generalization from the behaviors of one group member to the evaluation of others. Research on covariation detection suggests that this process need not be a conscious one. For although conscious ability to detect correlations is rather poor (Nisbett & Ross 1980) [149], the ability to detect correlations nonconsciously is quite remarkable (Lewicki 1986) [118]. Furthermore, once an initial contingency between two events has been detected nonconsciously, people behave as if the relationship continues to exist long after the contingency has been removed (Hill et al 1989) [80]. For example, Hill et al (1990) [81] presented subjects with a series of faces in which the location of the nostrils, which varied vertically by 1/8 inch, covaried with bogus personality profiles. As in previous research, subjects soon nonconsciously abstracted the relationship. When subjects were later presented with faces for which there was no longer any feedback concerning the accuracy of the earlier association, their nonconscious belief in the rule not only remained intact but actually strengthened with additional presentations of new faces. Thus, the encoding rule that subjects had earlier learned nonconsciously gained in strength in the absence of supporting evidence.

Such self-perpetuation of bias may play an important role in the formation of social stereotypes. In the absence of self-perpetuation effects, the role of nonconscious detection of covariation in stereotyping is limited to stereotypes that are based on a kernel of truth. Because of self-perpetuation effects, however, all that is necessary to initiate a stereotype is an encounter with a few stereotypic individuals (e.g. a few passive women or a few hostile African-Americans), and perceivers will continue to strengthen their belief in the stereotype in the absence of supportive evidence. Given the existence of self-fulfilling prophecies and the prevalence of subtle stereotyping in the arts, media, etc (Zuckerman & Kieffer 1994) [229], it seems highly likely that there will always be at least a few (actual or portrayed) stereotype-congruent individuals available to initiate such self-perpetuating stereotypes. In addition, because contingencies are easier to learn when they are associated

with individuals with whom one has little experience rather than with individuals with whom one has a great deal of experience (Cacioppo et al 1992) [24], nonconscious detection of covariation is likely to play a larger role in the development of stereotypes about out-groups rather than in-groups. Furthermore, because the detection of covariation and consequent changes in evaluation take place outside conscious awareness, self-perpetuating biases could exert an influence even as perceivers attempt to behave in an egalitarian fashion (see Devine & Monteith 1993, Monteith 1993) [34,140].

Illusory Correlation

Erroneous or "illusory" detection of correlation has the potential to play a major role in the formation and maintenance of social stereotypes about minority groups. A great deal of research has demonstrated that people can come to perceive minority groups in a more negative light than majority groups, even when the groups behave identically. One explanation of this effect is that negative behaviors become associated with minority group members at encoding by virtue of their shared distinctiveness (for reviews of the distinctiveness perspective, see Hamilton & Sherman 1989, Mullen & Johnson 1990) [70,143]. Consistent with this analysis, people spend more time encoding distinctive (minority) information than other information, and disruption of this increased processing can inhibit the formation of illusory correlations (Stroessner et al 1992; see also Johnson & Mullen 1994) [204,91]. Similarly, illusory correlations are attenuated when a minority group is made less distinctive by the presence of an even smaller minority group or another minority group with an increased preponderance of negative behavior (Sherman et al 1989) [180]. These findings suggest that the minority group is distinctive only by virtue of its relation to the majority group.

Despite findings like these in support of the distinctiveness explanation, recent research has led to another explanation of the processes by which illusory correlations are formed (Fiedler 1991, Fiedler & Armbruster 1994, Smith 1991; see also McGarty et al 1993) [50,51,186,138]. Specifically, information loss, or forgetting, has been proposed as a route that can lead perceivers to form illusory correlations. Essentially, this account proposes that as a function of probabilities, people are probabilistically more likely to forget the ratio of positive to negative behaviors when the ratio is based on a smaller (i.e. minority) rather than a larger (i.e. majority) sample. Because of this differential forgetting, people's impressions of minority groups are less extreme than their impressions of majority groups. When groups exhibit primarily positive behaviors, people have more moderate and thereby more negative impressions of the minority group, and when groups exhibit primarily negative behaviors people have more moderate and thereby more positive impressions of the minority group. The key to this explanation is that the locus of illusory correlations is proposed to be at retrieval, suggesting that loss of information in storage and failure at retrieval may be at least partially responsible for

the effect.

The problem with the information-loss account of illusory correlation effects is that it cannot accommodate evidence (e.g. Johnson & Mullen 1994, Stroessner et al 1992) [91,204] that distinctive information does indeed receive greater processing than nondistinctive information. For this reason, an alternative distinctiveness explanation has been offered, according to which it is not only distinctiveness at encoding that facilitates illusory correlations but also postencoding distinctiveness as well (McConnell et al 1994b; see also McConnell et al 1994a) [136,135]. According to this account, it does not matter whether a behavior originally seemed distinctive as it was processed but only whether a behavior comes to be distinctive in the context of all other behaviors that were processed from the same sources. So long as a behavior becomes distinctive prior to the judgment task (e.g. by virtue of the eventual preponderance of other behaviors that are inconsistent with it), it will have the tendency to facilitate the formation of illusory correlations.

Although illusory correlations have proven to be fairly robust, a number of conditions prevent their formation. Most importantly, because illusory correlations rely on item memorability, they only emerge when people are making judgments of a group in a memory-based fashion. Whenever judgments of a group are made on-line, such as when information is self-relevant (Schaller 1991) [171] or when people are processing information about a source from whom they expect a great degree of internal consistency (McConnell et al 1994a, 1995) [135,137], no correlation is perceived between distinctive events. In addition, factors that disrupt the processing of information, such as the presence of cognitive load or a positive or negative mood state, also inhibit the formation of illusory correlations (Hamilton et al 1993, Stroessner et al 1992) [71,204]. Thus, the role of illusory correlations in stereotype formation appears to be limited to conditions in which people are evaluating groups without inordinate demands on their attention and in a memory-based fashion.

Out-Group Homogeneity

Out-group members are not only perceived as possessing less desirable traits than in-group members, they are seen as more homogeneous as well. A consequence of the so-called out-group homogeneity effect is that people believe that most out-group members share the attributes of the specific out-group members whom they encounter (Park & Hastie 1987) [152] and that group-level stereotypes are likely to describe individual group members (Park et al 1991) [154].

Although the out-group homogeneity effect is well documented, there is considerable disagreement about the cause of the effect and about its measurement (see Judd et al 1991, Ostrom & Sedikides 1992) [96,151]. On the one hand, Linville and her colleagues (Linville et al 1989, Linville & Fischer 1993) [120,119] have proposed an exemplar model, according to which perceptions of

out-group homogeneity are caused by the fact that people know more in-group members than out-group members and thereby retrieve more instances when making in-group rather than out-group variability judgments. This greater retrieval of in-group instances leads, on average, to greater perceptions of in-group heterogeneity. A related model has been proposed by Kashima & Kashima (1993) [101] in which it is not the number of exemplars but rather the dissimilarity of the exemplars that leads to judgments of heterogeneity. On the other hand, Park, Judd, and their colleagues (Park & Judd 1990, Park et al 1991) [153,154] have proposed an abstraction/exemplar model, wherein group variability information is stored as part of an abstract group stereotype. According to this model, group variability judgments do not necessitate exemplar retrieval, but exemplars (particularly the self as an exemplar) are nevertheless often retrieved in the case of judgments concerning in-groups but not out-groups. Thus, it is the selective retrieval of exemplars that causes increased perceptions of variability among in-groups as compared with out-groups.

A variety of situations exacerbate or attenuate the tendency to perceive out-groups as more homogeneous than in-groups. For example, minority groups are seen as more homogeneous than majority groups, an effect that holds even in impressions of a minority member's own group (Bartsch & Judd 1993) [12]. Similarly, thinking about group members in terms of subgroups attenuates perceptions of in-group and out-group homogeneity (Park et al 1992) [155],* whereas thinking about groups in terms of their self-defining traits exacerbates perceptions of in-group and out-group homogeneity (Kelly 1989) [102]. Finally, group competition exacerbates the out-group homogeneity effect (Judd & Park 1988) [94], as indeed it exacerbates a variety of in-group biases (Weber 1994) [214].

These relationships between perceived homogeneity and factors such as group competition and knowledge of group stereotypes suggest that perceptions of out-group homogeneity may be critically associated with stereotyping, prejudice, and discrimination (cf Diehl & Jonas 1991, Quattrone 1986) [36,160]. In support of such a possibility, people have been shown to discriminate in a minimal group situation against homogeneous out-groups when they do not discriminate against heterogeneous out-groups (Vanbeselaere 1991; see also Simon et al 1990) [210,183].

MAINTENANCE

Regardless of how they are formed, stereotypes are maintained through a variety of processes. In this section, we review the major routes to stereotype maintenance.

Priming

The way that we process information, even unambiguous information, is heavily

influenced by information that we have previously encountered. Bruner (1957) [23] argued that prior experience operates on current perception by making certain categories more "accessible" during the interpretation of incoming information. Various known as "category accessibility," "implicit memory," and "priming," the impact of prior experience on ongoing perception and cognition is pervasive. If a single conclusion can be made from hundreds of experiments in cognitive and social psychology, it is this: Prior experience determines what we see and hear, how we interpret that information, and how we store it for later use (Sedikides & Skowronski 1991) [176].

In the realm of stereotyping, priming plays a dramatic role in the perception and evaluation of out-group members. For example, after exposure to television commercials in which women are portrayed as sexual objects, males are more likely to encode the next female they encounter in a sexual fashion, paying more attention to her appearance and style of dress than to what she says (Rudman & Borgida, in press) [168]. Interestingly, males also behave in a more sexual way toward the woman after viewing these commercials, asking sexist questions, scooting their chair closer to the woman's, and spending more time gazing at her body (see also Bargh & Gollwitzer 1994, Bargh et al 1995, McKenzie-Mohr & Zanna 1990) [8,9,139]. It seems that priming a particular domain makes people more likely to use that domain in later evaluations, even when the earlier priming experience should be completely irrelevant to the current task (Sherman et al 1990) [181].

The influence of priming is not limited to conscious information processing; rather, assimilative priming effects emerge even when the initial priming episode takes place outside conscious awareness (Perdue et al 1990) [157]. Such priming effects also manifest themselves at the level of the social category, with conscious or nonconscious activation of a social category causing an individual's behavior to be interpreted along category-relevant dimensions (Ford et al 1994, Macrae et al 1994a) [57,126]. Indeed, priming a social category can inhibit activation of other categories (Macrae et al 1994a) [126]. Moreover, because race, gender, and age information all seem capable of automatically activating associated stereotypes (see section on Automaticity), the mere presence of a female, African-American, or older person may increase the likelihood that this individual's behavior is interpreted in a stereotype-congruent fashion, even if the perceiver has not consciously encoded the target's social category. Thus, despite the fact that social behaviors can often be interpreted in a variety of ways, and all individuals are members of many social categories, priming may nevertheless lock perceivers into a stereotypic frame of reference (Skowronski et al 1993) [184].

Once a behavior has been interpreted in a particular way, this interpretation has long-term consequences for its evaluation (Smith et al 1992) [188]. In Smith et al's experiments, subjects were presented with behaviors that could be interpreted along two different dimensions, with opposite evaluative connotations.

Smith et al found that when subjects initially rated behaviors along a dimension on which the behaviors seemed positive, they later evaluated the behaviors more positively than when they had rated them along a dimension on which they seemed negative. This priming effect was as apparent one week later as it was one hour later and was actually strongest for behaviors that subjects could no longer recollect having encountered. These findings suggest that a single prior experience with a behavior, even if long forgotten, can later exert a strong assimilative influence on how that behavior is interpreted.

If the events that lead to assimilative priming effects were randomly determined, the Smith et al findings would simply suggest that we should hope that, for whatever reason, people are primed to interpret our behaviors along their most favorable dimensions. Recent evidence suggests, however, that events only prime evaluations when the events are stereotype-congruent (Banaji et al 1993; see also Banaji & Greenwald 1995) [5,4]. For example, in Banaji et al's experiments, priming the construct of dependency had an impact on subsequent evaluations of female targets but did not influence evaluations of male targets. Similarly, priming aggression influenced evaluations of males but not females. These findings suggest that even random priming events (e.g. daily experiences, stories in the news) facilitate stereotype maintenance by selectively influencing interpretations only when they are stereotype congruent. These findings also suggest that multiply interpretable behaviors tend to be interpreted to the detriment of the stereotyped group. Because the cultural stereotype holds that African-American males are hostile and unintelligent (Devine 1989) [32], for example, a stereotyping perceiver is primed by the mere presence of an African-American to interpret his behaviors as consistent with these traits. For this reason, if he were to do something friendly but stupid, it would likely be regarded as stupid, whereas his unfriendly but intelligent behavior would likely be regarded as unfriendly.

Assimilation Effects

An important and long-studied route to stereotype maintenance is through assimilation. Put simply, individuals often are perceived as more similar to their stereotype than they really are. For example, a student athlete is more likely to be judged guilty of cheating than a nonathlete (Bodenhausen 1990) [15], an angry housewife is seen as less aggressive than an angry construction worker (Kunda & Sherman-Williams 1993) [116], and an African-American pan-handler is seen as more threatening than a Caucasian pan-handler (von Hippel et al 1995) [212]. These are examples of individuals being assimilated to their group stereotype.

How divergent can such behaviors be from the stereotype and still be assimilated to it? Most evidence suggests that the behaviors must fit at least within the tails of the distributions from which they are thought to emanate, or they will be contrasted away from their group of origin (Manis et al 1988, Wilder &

Thompson 1988; see also Krueger & Clement 1994) [132,221,110]. Thus, an African-American who behaves in a highly intelligent manner will actually seem more intelligent--rather than less intelligent--than a comparable Caucasian (Jussim et al 1987) [98]. This tendency is qualified, however, by people's processing capabilities. When the ability to process information is disrupted, such as in situations that are anxiety provoking, individuals who would otherwise be perceived as deviant are assimilated to their stereotype (Wilder 1993) [219]. Furthermore, people who have a high need to perceive consistency or structure in their environment are more likely to assimilate behaviors to their stereotypes than people who have a low need to perceive consistency (Neuberg & Newsom 1993) [148].

The tendency to assimilate is also moderated by a perceiver's expectations of consistency from members of the stereotyped group. When perceivers hold high expectations of consistency, behaviors are assimilated to stereotypes that would otherwise be perceived as outside the distribution of expected behaviors and thus contrasted away (Hilton & von Hippel 1990) [85]. Because natural groups vary a great deal in the extent to which consistency is expected from group members (cf Ostrom & Sedikides 1992) [151], different groups show different proclivities for assimilation. Very large and heterogeneous groups (such as females or African-Americans) are likely to be associated with lower expectations of internal consistency than smaller and more homogeneous groups (such as tax accountants or football players). Importantly, by virtue of their seeming homogeneity (see section on Out-Group Homogeneity), out-groups will be associated with higher levels of perceived internal consistency than in-groups. Thus, there is a greater tendency to assimilate incongruent behaviors to the group stereotype when the behaviors are associated with smaller rather than larger groups and when they are associated with out-groups rather than in-groups. Moreover, because factors such as intergroup competition (Judd & Park 1988) [94] and lack of intergroup contact (Islam & Hewstone 1993a) [88] increase perceptions of out-group homogeneity, such variables are likely to increase the tendency toward assimilation of individuals to the group stereotype as well.

Somewhat related to the notion that people assimilate divergent individuals to their group stereotype is the idea of category accentuation, or the tendency to perceive categories as more distinct from one another than they really are. In a demonstration of this phenomenon, Krueger et al (1989) [113] found that when the distance between categories is exacerbated by the addition of new category members, people are adept at adjusting their perceptions of the category. When the distance between categories is attenuated by the addition of new members, however, people do not sufficiently adjust their perception of the categories to accommodate the new members (see also Ford & Stangor 1992, Krueger & Rothbart 1990) [56,112].

Attributional Processes

Although attributional processes tend to be a ubiquitous component of social perception (Carlston & Skowronski 1994) [27], they are particularly likely to be initiated by behaviors that are incongruent with perceivers' prior expectancies (Kanazawa 1992) [100]. The attribution processes that are aroused by incongruency tend to be highly sophisticated in nature, with a variety of factors converging to bias the attributional outcome in ways that maintain the stereotype. Indeed, one striking finding from the social perception literature is the remarkable flexibility with which people use attributional logic (Hewstone 1990, Major & Crocker 1993) [76,131].

At the most basic level, perceivers sometimes simply refuse to make any inferences at all when confronted with stereotype incongruency (Maass et al 1989, 1995; Rubini & Semin 1994; see also Hamilton et al 1992) [123,122,167,67], a finding that is important for two reasons. First, when making memory-based judgments people tend to remember and rely on their abstractions in place of the original behaviors that led to the abstractions (Srull & Wyer 1989) [196]. Second, and somewhat relatedly, abstractly encoded information tends to be more resistant to disconfirmation and more stable over time than information that is encoded at a concrete level (Semin & Fiedler 1988) [177]. Taken together, these tendencies suggest that perceivers are more likely to remember, believe, rely on, and communicate stereotype-congruent information than stereotype-incongruent information.

Attributional processing can also be inhibited by stereotype-congruent information. People typically engage in attributional processing only until they have found a sufficient cause for the behaviors they are witnessing. Once such sufficiency has been achieved, attributional processing usually ceases. Because the stereotype itself provides a sufficient explanation for many stereotype-congruent events, stereotypes can block people's ability to notice and interpret covariation between stereotype-irrelevant factors and the stereotype-congruent event (Sanbonmatsu et al 1994) [169].

Finally, when behaviors are open to alternative explanations, people make very different types of inferences from stereotype-congruent vs stereotype-incongruent information (for a review, see Hewstone 1990) [76]. For example, people are more likely to infer dispositional or internal causes for stereotype-congruent rather than incongruent behaviors (Jackson et al 1993, Yee & Eccles 1988) [90,226]. People are also more likely to infer dispositional causes for negative out-group and positive in-group behaviors than for positive out-group and negative in-group behaviors (Hewstone & Jaspars 1984) [78]. Pettigrew (1979) [159] has labeled this tendency the "ultimate attribution error" and has proposed that it underlies a variety of in-group biases. It is worth noting, however, that although the tendency to protect group esteem by attributing negative in-group and positive out-group information to situational causes is a common finding, the tendency to enhance group esteem by attributing positive in-group and negative out-group information to dispositional causes is relatively rare (Weber

1994; see also Islam & Hewstone 1993b) [214,89].

Memory Processes

It is clear from the research cited in this review that a number of information-processing strategies are biased toward stereotype formation and maintenance. The question remains, however, as to what role memory plays in this process. The evidence that currently exists suggests that people often have better memory for information that is incongruent, rather than congruent, with their stereotypes and expectancies (for reviews see Rojahn & Pettigrew 1992, Stangor & McMillan 1992) [162,199]. This general finding suggests that memory processes actually serve to undermine stereotyping. There are, however, three important reasons to believe that this is not so.

First, incongruent information is better remembered than congruent information because it instigates attributional processing, as people attempt to make sense of the incongruity (Sherman & Hamilton 1994) [179]. This attributional processing might conceivably result in a change of meaning, or perhaps discounting, of the incongruent behavior. Either way, this attributional processing leads to better recall of incongruent rather than congruent information and also causes the incongruent information to no longer seem incongruent with the original expectancy. Thus, to the extent that a perceiver engages in cognitive effort to explain away a seeming inconsistency, the perceiver is both more likely to be successful in discounting or reinterpreting the information and more likely to remember the (no longer) incongruent information as a consequence of the extensive cognitive processing (von Hippel et al 1995) [212]. Because so many social behaviors are inherently ambiguous, this reinterpretation process and the resultant dissociation between memory and judgment are likely to be quite common. Consequently, despite the seeming inconsistency between memory and judgment, memory incongruity effects should not be taken as evidence that memory serves to undermine stereotyping.

Second, although the memory incongruity effect emerges when people are allowed to process information at their leisure, when task demands are heavy (as they commonly are in social interaction) people tend to show better memory for stereotype-congruent information (Macrae et al 1993, Stangor & Duan 1991) [128,198]. Presumably this increased memory for congruent information arises because people do not have the opportunity to engage in the inconsistency-resolution processes that lead to the memory incongruity effect (Sherman & Hamilton 1994; see also Vonk & van Knippenberg 1995) [179,213].

Third, in their meta-analytic review, Stangor & McMillan (1992) [199] found that incongruent information is better remembered than congruent information only when the perceiver believes that the target is relatively homogeneous. For groups from which little internal consistency is expected (such as large groups like African-Americans and women), perceivers should remember more congruent

rather than incongruent information. Stangor & McMillan also found that the tendency to remember incongruent information is moderated by the strength of the perceiver's expectancy. When the perceiver holds an expectancy that is of weak to moderate strength, incongruency effects emerge. When the perceiver holds a strong stereotype or expectancy, congruent information is actually more likely to be remembered than incongruent information. This finding, suggests that people who are highly prejudiced, and thereby likely to hold strong stereotypes, have memories that primarily support their stereotypes (von Hippel et al 1995) [212].

APPLICATION

Probably the most important consequence of stereotypes is that they can lead to unfair, negative outcomes when they are applied to members of stereotyped groups. In this section, we review evidence for when and how stereotypes are likely to be applied.

Automaticity

Under the right circumstances, and with extensive practice, information processing becomes automatic (Bargh 1994) [7]. Devine (1989) [32] has proposed that automaticity develops in the activation of social stereotypes just as it does with a variety of other cognitive tasks. She has argued that because our culture is suffused with information pertaining to the stereotype of African-Americans, the activation of the African-American stereotype becomes automatized at a young age for most Americans. Importantly, however, as people grow older and begin to evaluate and reflect on their beliefs, those who are not prejudiced learn to suppress or replace the automatically activated stereotypic thoughts in favor of more egalitarian ones. This suppression or replacement of stereotypic cognitions is proposed to be an effortful process that requires conscious cognitive resources from the perceiver. Devine's theory is important both as a process model of stereotype activation and application and for its implications for stereotype use under a variety of circumstances. If group membership and the accompanying stereotypic information are automatically encoded whenever a member of a social category is encountered, the potential for that stereotype to be applied is manifestly increased.

Although there continues to be relatively little published research concerning the automatic activation and subsequent suppression of stereotypes, the evidence that does exist supports several aspects of Devine's theory. For example, nonconscious presentation of age (Perdue & Gurtman 1990) [158], gender (Klinger & Beall 1992) [108], and race (Macrae et al 1994b, Wolfe et al 1995) [127,223] information has been found to activate associated evaluations and stereotypes (see also Perdue et al 1990) [157]. Furthermore, whereas nonconscious priming of gender information leads to equivalent activation of gender stereotypes among people who consciously endorse them and people who do not, conscious priming

leads to differential activation among people who express different attitudes toward women (Klinger & Beall 1992) [108].

Despite such evidence that stereotypes are activated automatically, a recent paper has challenged this notion. In a clever pair of experiments, Gilbert & Hixon (1991) [63] demonstrated that cognitive busyness inhibits activation of the Asian-American stereotype but facilitates application of it. These findings suggest that stereotypes require conscious attention and effort to be activated and thus are not automatic. An important caveat, however, that must be considered is that in Gilbert & Hixon's (1991) [63] experiments subjects had no particular reason to engage in stereotypic processing.

In an effort to determine whether cognitively busy subjects in Gilbert & Hixon's experiments could have activated their stereotypes had they been more motivated to do so, Spencer & Fein (1994) [195] replicated the experiments but added a manipulation of threat to self-esteem. Because motivation to stereotype is enhanced when people experience a threat to their self-esteem (see sections On the Question of "Why?" and The "How" and "When" of Stereotypic Thinking), Spencer & Fein (1994) [195] hypothesized that even cognitively busy subjects would activate their stereotypes when they had been threatened. Consistent with this prediction, they found that although cognitively busy subjects who had not been threatened did not show any evidence of stereotype activation, cognitively busy subjects who had experienced a threat to their self-esteem did show evidence of activation of the Asian-American stereotype. In follow-up research, Wolfe et al (1995) [223] demonstrated that stereotypes concerning African-Americans were also not activated when subjects were cognitively busy, unless subjects had experienced a threat to their self-esteem. This effect emerged despite the fact that the stereotypes were primed subliminally and were never available to conscious awareness. These data suggest that activation of stereotypes can be accomplished with minimal cognitive resources by persons who are motivated to stereotype others.

How is it that stereotypes can be activated automatically, but only when the perceiver is motivated to do so? The solution to this seeming inconsistency lies in the conditional nature of automaticity. As Bargh (1989) [6] has noted, automaticity is not a unitary construct. Rather, different types of automaticity require different levels of processing on the part of the perceiver. It seems likely that stereotype activation is at the level of goal-dependent automaticity in that the perceiver must have a specific goal (e.g. denigration or impression formation) for the stereotype to be activated automatically (Spencer & Fein 1994) [195].

Attributional Ambiguity: Self-Deception and Self-Presentation

Above, we noted that attributional processes contribute to the maintenance of stereotypes. Recent research suggests that they also play an important role in

stereotype application, on both the perceiver's and the target's side of the interaction. On the perceiver's side, people typically will not exhibit behaviors that could be seen as prejudiced when the conditions surrounding those behaviors make the meaning of the behavior attributionally clear. When choosing to sit far away from a disabled person would unambiguously be attributed to avoidance, for example, subjects choose to sit close to the disabled person. In contrast, when the meaning of the seating choice is ambiguous, subjects disproportionately choose to sit away from the person (Snyder et al 1979) [194]. In a related way, simply creating the illusion that evaluations are based on individuating information can free people to apply their stereotypes when they otherwise would not (Yzerbyt et al 1994) [227]. This finding is somewhat reminiscent of the research of Darley & Gross (1983) [31], who found that subjects were unwilling to make stereotypic judgments in the absence of individuating information.

On the target's side of the interaction, the importance of attributional ambiguity has become evident in the work of Crocker & Major (1989, Crocker et al 1991, Major & Crocker 1993) [29,30,131]. They argued that members of stigmatized groups are often confronted with attributionally ambiguous feedback concerning their performance. Negative feedback can be attributed to poor performance, but it can also be attributed to the prejudices of the evaluator. Similarly, positive feedback can be attributed either to good performance or to a desire on the part of the evaluator to avoid appearing prejudiced. Crocker & Major argued that this ambiguity leads to a variety of cognitive, affective, and motivational outcomes. Ambiguity can, for example, buffer members of a stigmatized group against negative feedback but it can also undermine self-esteem following positive feedback (Crocker et al 1991) [30].

Prejudice

Prejudice has traditionally been viewed as the application of social stereotypes. According to Allport's (1954) [1] classic definition, prejudice is "an antipathy based on a faulty and inflexible generalization" (p. 9). Thus, prejudice is seen both as an outgrowth of stereotyping and as negative evaluations of group members. In support of Allport's theorizing, the evaluative nature of people's attitudes toward members of different groups (prejudice) has been shown to be linked to the overall evaluative connotation of their beliefs (stereotypes) about group members (Eagly & Mladinic 1989; Haddock et al 1993, 1994; Stephan et al 1994; see also Kleinpenning & Hagendoorn 1991, 1993) [42,65,66,201,106,107].** Prejudice is clearly more than just antipathy, however, as it is comprised of different emotions in different contexts among different people (Altemeyer 1994; Batson & Burris 1994; Gaines & Reed 1995; Haslam et al 1992; Kleinpenning & Hagendoorn 1991, 1993; Smith 1993; Swim et al 1995) [2,13,60,72,106,107,187,208].

A variety of theories of prejudice have emerged in the past decade or so that are linked only loosely, if at all, to the stereotypes that people hold about

members of the targeted groups. Although these theories differ in whether people are thought to be consciously aware of their prejudices and in the importance placed on this awareness, they hold in common the view that negative evaluative or emotional responses to group members are the primary components of prejudice. For example, according to aversive racism (Dovidio & Gaertner 1991) [39], most people embrace egalitarian values yet have negative affect toward African-Americans. As a consequence, this negative affect is excluded from consciousness but has an important impact on behavior whenever the person can be unaware of the influence of her or his prejudices (e.g. when the behavior is attributionally ambiguous). Thus, for aversive racism, prejudice is nonconscious and it must remain so in order for it to have an impact on judgment and behavior.

Modern racism (McConahay 1986) [134] and symbolic racism (Sears 1988) [174] are similar to aversive racism in that the negative affect at the root of prejudice must be rationalized by linking it to nonracial issues such as politics in order for it to avoid conflict with egalitarian values. Because modern racism and symbolic racism link prejudice to politics, however, they are open to the criticism that they are simply tapping political conservatism and are not inherently measures of prejudice (Sniderman et al 1991) [190].

Ambivalent racism (Hass et al 1991) [73] is similar to these other theories of prejudice in that it holds that people are deeply conflicted about their prejudiced feelings. In ambivalent racism, people's egalitarian ideals lead them to embrace equality and feel a sense of sympathy for the underdog, but their Protestant work ethic suggests that individuals are responsible for their own fate. These conflicting values lead ambivalent racists to heap great praise on successful African-Americans but simultaneously to denigrate African-Americans who are not perceived as embracing the Protestant work ethic. This ambivalence is also thought to lead to a fundamental instability in the reactions of such people to African-Americans, depending upon which sentiments are most available at the time a judgment or behavior is required.

Devine and her colleagues (Devine et al 1991, Devine & Monteith 1993, Monteith 1993, Monteith et al 1993) [35,34,140,141] have recently proposed a somewhat orthogonal conception of prejudice that revitalizes Allport's (1954) [1] early notions of prejudice with and without compunction. According to this model, the critical difference between high- and low-prejudice individuals is that low-prejudice individuals have internalized standards for how they should respond to group members, and they experience feelings of guilt and self-criticism whenever they violate these standards. These feelings, in turn, motivate vigilance and an increased consistency among personal standards, thoughts, and behaviors. High-prejudice persons, on the other hand, follow external societal standards for how they should respond to group members, and as a consequence they feel only generalized negative affect, as well as other-directed affect such as anger and irritation, when they violate these standards. These feelings should, if anything, only increase the prejudice of such individuals, as they

blame the group members for their own negative reactions to them.

Finally, it should be noted that prejudice has historically been defined not only as negative attitudes or affect directed toward particular groups but also as a tendency to prejudge members of a group on the basis of their group membership (cf Brewer 1994) [21]. The idea that prejudice contains a processing component (such as prejudgment) has been recaptured in a recent proposal that prejudice should be conceived and operationalized as the tendency to engage in stereotypical processing of group members (von Hippel et al 1995) [212]. Such a notion of prejudice differs from the theories discussed above by suggesting that not only negative evaluations define prejudice but also the way people process information about others. This notion of prejudice also differs from the theories discussed above in that it explicitly links prejudice with stereotyping. Prejudiced people are defined as those who show stereotypic biases in their encoding of members of a particular group, and nonprejudiced people are defined as those who do not show such biases. Consistent with these ideas, von Hippel et al (1995) [212] demonstrated that a process measure of prejudice (derived from Maass et al 1989, 1995) [123,122] can predict evaluations of group members when an evaluation-based measure, derived from modern racism theory, cannot (see also Dovidio et al 1995, Fazio et al 1995) [38,46].

CHANGE

Determining the conditions under which stereotypes change has been a central concern of recent research (for reviews see Hewstone 1989, Stroebe & Insko 1989) [75,203]. Within this research, two related questions have been asked. First, what are the cognitive and motivational resources necessary for the processing of stereotype-inconsistent information (cf Brewer 1988, Fiske & Neuberg 1990, Hewstone 1989) [20,53,75]? In general, the assumption has been that it is easier to maintain a stereotype than to change it, as numerous processes contribute to the maintenance of even unimportant stereotypes (see section on Maintenance). Second, assuming that the perceiver has sufficient motivation and resources to engage in stereotype revision, what form will the revision take?

Models of Change

To date, four models of change have been proposed. The bookkeeping model (Rothbart 1981) [164] posits that stereotypes are updated incrementally. Each inconsistency that is processed leads to a small change in the stereotype. The conversion model (Rothbart 1981) [164] posits that stereotype change occurs in a dramatic fashion, but only after some critical level of inconsistency has been encountered. The subtyping model (Brewer et al 1981) [22] posits that inconsistent information is simply recategorized under a new subsidiary classification. Finally, exemplar-based models assume that stereotypes consist of representations of specific individuals (Smith & Zarate 1992) [189]. From this perspective, stereotypes change when new exemplars are added or when different exemplars are

retrieved. Thus, like the bookkeeping model, an exemplar-based model suggests that stereotypes change in response to each processed inconsistency. Because the stereotype of the group is dependent upon the exemplars called to mind rather than on an abstracted representation, however, an exemplar-based model allows for much greater change than the bookkeeping model does in response to perceived inconsistency or a new perspective on the part of the perceiver.

The subtyping model of stereotype change has received the lion's share of attention (Hewstone et al 1992a, Johnston & Hewstone 1992, Kunda & Oleson 1995) [77,92,115]. In large part, this is because there are two theories concerning the impact of subtyping. One view of subtyping holds that it serves primarily to maintain stereotypic beliefs. If, for example, we expect Germans to be efficient but we meet an inefficient German professor, we may form a subtype of German professors that includes the expectation that German professors are inefficient (Weber & Crocker 1983) [215]. Notice that this process renders inefficiency among German professors less surprising, while preserving the belief that Germans, in general, are efficient. Allport (1954) [1] anticipated this line of reasoning when he discussed the functions of refencing.

Work by Brewer (Brewer 1988, Brewer et al 1981) [20,22], however, challenges the notion that subtypes serve primarily to maintain stereotypes. According to Brewer's analysis, as our perceptions of groups become sufficiently differentiated, subtypes replace superordinate categorizations and become base level categories themselves. Like furniture dealers who find the concept of "chair" too general to have any utility, our experience with some groups (e.g. men and women, young and old) is sufficiently rich to render the superordinate categorizations (e.g. men, old people) relatively uninformative. As a consequence, people are likely to rely on subtypes of such groups rather than on the group in general when making stereotype-relevant judgments. In support of such a possibility, activation of certain female subtypes has been shown to inhibit activation of competing subtypes (Rudman & Borgida, in press) [168]. To the extent that subtyping leads to changes in base level categorization in such a fashion, it contributes to meaningful stereotype change in the sense that greater variability is likely to be reflected in perceiver's responses to members of the same superordinate category (Park et al 1992) [155].

To date, investigators have obtained at least some evidence to support all four models (Hewstone et al 1992b) [79]. What has remained difficult has been to specify the conditions under which each model is likely to apply, with evidence for different models sometimes emerging from the same set of data (e.g. Weber & Crocker 1983) [215]. Two important factors contribute to this confusion. First, investigators have yet to agree on what constitutes appropriate measures of change. Consider, for example, research on subtyping. At one extreme, representational change accompanied by little change in the perception of the "typical" group member has been taken as evidence of subtyping (e.g. Devine & Baker 1991, Johnston & Hewstone 1992) [33,92]. At the other extreme, subtyping has been

inferred when specific conditions promote stability in the perception of the group despite the atypicality of specific group members (e.g. Kunda & Oleson 1995) [115]. Second, evidence for the various models of stereotype change seems to be differentially likely to emerge depending upon the particular function served by the stereotype for a particular individual in a particular context (Snyder & Miene 1994) [192]. Thus, the context-dependent functionality of stereotyping probably plays just as important a role in stereotype change as it does in the formation, maintenance, and application of stereotypes.

Inhibition

A question that is tightly tied to issues of stereotype change, particularly in the wake of recent analyses concerning the lack of intentionality associated with many stereotypes (Devine 1989, Devine et al 1991, Perdue & Gurtman 1990) [32,35,158], is whether stereotypes can be inhibited by conscious action on the part of the perceiver. Macrae, Bodenhausen, and their colleagues (Bodenhausen & Macrae 1996; Macrae et al 1994b,c) [17,127,129] have conducted a number of studies investigating the effect that conscious suppression of stereotypic thinking has on stereotype activation. Building on Wegner's (1994) [216] model of thought suppression, they proposed that the ironic monitoring process caused by suppression leads to repeated activation of the content of the stereotype. This repeated activation, in turn, serves to prime the contents of the stereotype. When suppressors subsequently encounter members of stereotyped groups, the primed content of the stereotype leads them to interpret the target's behavior in stereotype-consistent ways. Consistent with this analysis, Macrae et al (1994b) [127] found that subjects who had been instructed to suppress stereotypic thoughts were more likely to avoid interacting with the target of the stereotype than were subjects given no such instructions.

The Macrae et al results suggest that suppression does not provide a very effective route to stereotype inhibition. Extending this line of reasoning, recent work by Hilton et al (1993) [86] provides an alternative way of thinking about stereotype inhibition. Specifically, Hilton et al argued that stereotypes should be viewed as naive theories about groups. These theories are linked to perceivers' general knowledge, and they provide explanatory frameworks for information about the group. In other words, stereotypes consist of knowledge about the attributes associated with a particular group and the causal connections between attributes (see also Sedikides & Anderson 1994) [175].

It follows from this line of reasoning that one way to change stereotypes is to examine the causal links between stereotyped attributes. When confronted with the category "African-American male," for example, both high- and low-prejudiced individuals may anticipate meeting a man who is likely to be poor (Devine 1989) [32]. But whereas the prejudiced individual is willing to attribute this characteristic to the dispositional nature of African-American males, the nonprejudiced person has an explanation based on limited opportunity and

structural barriers. As a consequence, the affective response to the target may depend importantly upon the explanation given (Weiner 1990; see also Whitley 1990) [217,218]. This view of stereotyping suggests that one way to inhibit stereotypic reactions to a target is to think more about the explanations, not to suppress thinking.

Finally, it should be noted that not all strategies of thought control are equally likely to be doomed to failure. People can be quite successful at monitoring their own responses when they feel they have violated their personal standards (Monteith 1993) [140]. Indeed, this issue of personal standards may be a critical factor in determining when suppression will fail or succeed. Consider the work of Macrae et al (1994b) [127] and Monteith and her colleagues. In the Macrae et al (1994b) [127] experiments, subjects were asked to suppress their stereotypes about skinheads. Given the typical beliefs about skinheads, it seems likely that the subjects had no strong desire not to stereotype skinheads and thus did not inhibit the priming effects that emerged as a consequence of their earlier stereotype suppression. In the Monteith (1993, Monteith et al 1993) [140,141] experiments, nonprejudiced subjects did have a strong desire not to stereotype homosexuals and thus were more successful in their efforts to inhibit stereotypic responding. This notion of personal commitment or involvement in the goal to not stereotype seems to play a critical role and can also be seen in research on outcome dependency and accountability. Specifically, this research has shown that causing people to become personally involved with the targets of their stereotypes or accountable for the consequences of their stereotyping leads them to individuate the targets and rely less on stereotypes in their judgments (Schaller et al 1995, Tetlock 1992) [173,209].

GENERAL CONCLUSIONS

We began this review by suggesting that it is difficult to settle on a single account of why stereotypes emerge, because stereotypes serve different functions in different contexts. In some situations, stereotypes simplify the processing demands on the perceiver. In other situations, they enrich perception by enabling the perceiver to go beyond the information given. In still other situations, they help the perceiver justify a particular conclusion or behavior. Consistent with these observations, the literature reviewed here suggests that stereotypes are formed and maintained through a variety of cognitive and motivational processes. Sometimes stereotypes are born from self-fulfilling prophecies, while other times they have their genesis in illusory correlations and perceptions of out-group homogeneity. Similarly, sometimes stereotypes are nurtured by our tendency to assimilate events to primed categories, while other times they are maintained by our tendency to remember information selectively. Thus, to the extent that there is a single message to be gleaned from the current review, it is that there is indeed no single message: Stereotypic thinking is clearly multiply mediated.

Nevertheless, although the field has made significant progress toward understanding individual mechanisms that are implicated in stereotypic thinking, we are struck by four areas of research in which the questions continue to outweigh the answers. First, it is evident from this review that we know much more about where stereotypes come from than about how to make them go away. On the positive side, the multiply mediated nature of stereotypes implies that a variety of factors should attenuate stereotypic thinking. Consistent with this logic, several factors have been found to influence the processes that contribute to stereotypic thinking. As noted above, for example, illusory correlations are less likely to emerge when evaluations are made on-line or when information processing is disrupted. Similarly, perceptions of out-group homogeneity can be reduced by encouraging cooperation and fostering individuation. Thus, it is possible to imagine a variety of interventions that could be deployed to combat the processes that lead to stereotypic thinking (see also Leippe & Eisenstadt 1994, Mackie et al 1992) [117,124].

On the negative side, however, the multiply mediated nature of stereotypic thinking also implies that stereotypes are unlikely to respond to a single cure. To the extent that stereotypes are formed and maintained through a variety of processes that work individually and in concert, it becomes difficult to imagine interventions that successfully block all of the routes to stereotypic thinking. Indeed, the literature reviewed here suggests that the intervention side of the stereotyping problem is even more complicated than we might have originally imagined.

Second, this review suggests that we are only just beginning to get a handle on the nonconscious components of stereotyping. Beginning with Brewer's (1988) [20] suggestion that category-relevant features are likely to be activated automatically upon an encounter with a category member, a substantial number of important papers have changed the way we think about stereotype activation and application. Following in this tradition, research by Greenwald & Banaji (1995) and Banaji & Greenwald (1995) [64,4] and many others is beginning to challenge traditional ideas of what it means to hold a stereotype and how it is that stereotypes manifest themselves. Although there is naturally some controversy about the meaning and importance of the nonconscious components of stereotypes, the research on nonconscious stereotyping strongly suggests that simply asking people to describe members of various groups will, at best, provide an incomplete understanding of their stereotypes.

Third, we still know little about the consequences of stereotyping for the stereotyped individual. While a number of researchers have decried the paucity of research on the "victims" of stereotyping (e.g. Gaines & Reed 1995) [60], the issue continues to be explored by relatively few individuals. It is worth noting, however, that the research that does exist suggests that the paradigms and problems that are proving fruitful in the study of the so-called perpetrators of stereotyping may also prove fruitful in the study of the victims of

stereotyping (e.g. Crocker & Major 1989, Crocker et al 1991, Frable 1993, Frable et al 1990, Major & Crocker 1993) [29,30,58,59,131].

Finally, the extensive research on the cognitive roots of stereotyping suggests that a fertile but relatively unexplored approach is to examine the impact of individual differences in cognitive functioning on the stereotyping process (see Ford & Kruglanski 1996, Neuberg & Newsom 1993, Schaller et al 1995) [55,148,173]. The literature reviewed herein highlights the important role that cognitive factors (and often the motivations behind them) play in stereotype formation, maintenance, application, and change. Nowhere should this be more apparent than in individual differences in cognitive styles and capabilities. And yet, while there has been a substantial amount of research on individual differences in proclivities toward stereotyping and prejudice (Altemeyer 1994; Devine 1989; Dovidio & Gaertner 1991; Haddock et al 1993, 1994; Monteith 1993) [2,32,39,65,66,140], almost no research has taken advantage of the central findings of the stereotyping literature and searched for individual differences in the tendency to form illusory correlations, for example, or to perceive out-group homogeneity. Undoubtedly, much of what we currently regard as error variance in the tendency to show such biases has important causes and significant practical and theoretical implications for our understanding of stereotypes and stereotyping.

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*Park et al also demonstrated that in-groups are perceived to have more subgroups than out-groups, suggesting that perceptions of subgroups may be a critical factor contributing to the out-group homogeneity effect (see also Kraus et al 1993) [109].

**However, this relationship may be mediated by emotional responses or symbolic beliefs (Esses et al 1993, Haddock et al 1993) [44,65].

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