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SUBTYPING AND SUBGROUPING: ANTECEDENTS AND CONSEQUENCES OF THE RECATEGORIZATION OF COUNTERSTEREOTYPIC TARGETS

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Jeanette M. Renaud

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SUBTYPING AND SUBGROUPING: ANTECEDENTS AND CONSEQUENCES OF THE RECATEGORIZATION OF COUNTERSTEREOTYPIC TARGETS

By

Jeanette M. Renaud

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ABSTRACT

SUBTYPING AND SUBGROUPING: ANTECEDENTS AND CONSEQUENCES OF THE RECATEGORIZATION OF COUNTERSTEREOTYPIC TARGETS

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Two studies were conducted in an attempt to address some important issues regarding the antecedents and consequences of categorizing target group members who violate a stereotype about the overall group. In particular, Study 1 examined the cognitive consequences of subtyping versus subgrouping atypical group members. It was expected that when an atypical group member was perceived as a subtype of the overall group, the overall group category would be inhibited. However, when an atypical group member was perceived as a subgroup of the overall group, the overall category would be relatively more activated. Study 2 addressed factors that might influence whether perceivers would subtype or subgroup atypical counterstereotypic target group members. It was predicted that perceivers' categorization of such targets would vary in the service of maintaining their overall group prejudice. Unfortunately, no evidence consistent with these predictions was found in either study. However, some unexpected results were found, and their implications are discussed.

Dedicated to Susanne Atherton, my strongest supporter

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INTRODUCTION

A Black lawyer violates aspects of the stereotype that many people hold about Blacks, namely that Blacks are poor and uneducated. When people encounter someone who violates an expectation based on that person's group membership (i.e., a stereotype about the group to which that person belongs) such as a Black lawyer, how do they ultimately view that person and how does that person's behavior impact the perceiver's group stereotype? For instance, would a Black lawyer be viewed as "Black," as a "lawyer," or as some subcategory (e.g., a "Black lawyer")? Further, if such a person can be categorized in multiple ways, what factors influence the way in which that person is ultimately viewed? For example, someone who has negative prejudice toward Blacks may be less likely than someone who has positive prejudice toward Blacks to incorporate positive traits, such as wealthy and intelligent, into their representation of Blacks after encountering a Black lawyer. Moreover, once a person is viewed as a member of a particular category, are categories to which that person could have been, but were not ultimately, placed affected? For instance, if the target is ultimately viewed as a "Black lawyer," rather than as "Black" or as a "lawyer," how might the categories of Blacks or lawyers be affected? The current research addressed these questions. In particular, the way in which targets who disconfirm a stereotype are categorized and whether such categorizations are influenced by perceiver motivations (i.e., the maintenance of prejudiced attitudes toward a particular group) were examined.

In addition, this research examined how the category used influences other potentially relevant categories that could have been used to view the person.

The continuum model of impression formation processes developed by Fiske and Neuberg (1990) suggests that impressions of individuals can be derived from category-based knowledge (i.e., impressions based on broad categories, such as race, gender, or age) or more individuated impressions (i.e., impressions that take into account the specific individual features of the target person). Impressions are initially category-based, and they progress toward more individuated judgments as the perceiver attends to the target person more effortfully. Thus, upon encountering a target person, perceivers initially categorize that target using a basic category such as race, gender, or age. Such categorizations are usually based on salient physical features of the target and are relatively automatic, thus not requiring much cognitive processing. In fact, it is believed that this initial process of categorization is primarily perceptual and automatic in nature, not requiring explicit or conscious intent on the part of the perceiver (Bruner, 1957). For example, upon encountering a Black lawyer, a typical perceiver would likely initially categorize him as a member of the Black racial category because skin color is typically a very salient feature. Of course, categorization based on race is not the only possibility. For instance, categorization could be based on gender, especially if gender is more accessible to the perceiver because of recent or frequent use (Higgins, 1996).

If the perceiver has no further interest in the target because the target is not relevant to the perceiver's goals (e.g., the perceiver will not interact with the

target) or because the perceiver lacks the cognitive resources to process additional information related to the target (e.g., the perceiver is distracted by another demanding task), progress along the impression formation continuum will stop and the target will be categorized as a member of the basic category (e.g., "Black").

If, however, the perceiver has the interest and the cognitive resources to process information about the target and is faced with a target who contradicts the stereotypic features associated with the initial basic category, Fiske and Neuberg (1990) argue that the target will be recategorized. One recategorization option is to use a subcategory of the basic category used in the initial categorization. For instance, if perceivers notice that the Black target is a lawyer, having characteristics that contradict at least two features of the "Black stereotype" (i.e., that Blacks tend to be poor and uneducated), they may recategorize him using a more refined subcategory of the overall group, such as "Black lawyer." Of course, it may also be possible that the perceiver would recategorize the target using a different basic category (e.g., man) in lieu of the original basic category (e.g., Black). However, if the initial categorization is based on a highly accessible social cue such as skin color, it is unlikely that the perceiver would, or even could, disregard this cue in an attempt to recategorize the target in a fashion that would not include such a salient feature (Fiske & Neuberg, 1990). Thus, the current discussion following Fiske and Neuberg (1990) will assume that recategorization of targets who disconfirm one or more aspects of a stereotype more often involves the use of a subcategory rather than

use of a completely different basic category. Figure 1 outlines the process of categorization for a counterstereotypic target in the current work.

Two primary types of subcategorization have been suggested in the literature: subtyping and subgrouping. Before continuing with the current discussion, each of these processes will be discussed in more detail.

Subtyping

Subtyping refers to the process of cognitively excluding (or "fencing off," as described by Allport, 1954) group members who possess attributes that contradict the stereotype for the overall group. Members of a subtype are viewed as "exceptions to the rule" about a basic-level social group. Although this conceptual definition is useful, it does not specify the conditions under which a target who disconfirms the group stereotype will be subtyped. For instance, will a target person who simply violates one aspect of a stereotype be subtyped? Further, does the extremity of the violation influence whether a target who disconfirms the group stereotype will be subtyped? A closer examination of the literature on subtyping can provide some indication as to the factors that influence the process of subtyping.

Much of the research on subtyping has provided participants with information about a number of members of a particular group. Some of these members are described as performing behaviors that are consistent with traits related to the overall group stereotype, whereas others are described as performing behaviors that are inconsistent with traits related to the overall group stereotype. Based on the information provided, participants are then asked to

make judgments about the group members and about the group as a whole. From these measures (to be discussed), researchers infer whether the group members who performed behaviors inconsistent with the group stereotype were "excluded" from the group members who performed behaviors consistent with the group stereotype. This is primarily examined by assessing whether exposure to the targets who performed behaviors inconsistent with the group stereotype had an impact on the perceiver's overall group stereotype (i.e., weakened the group stereotype).

In one of the first studies to examine the process of subtyping, Weber and Crocker (1983, Experiment 1) provided participants with information about 30 corporate lawyers. Although all participants were presented with the same overall proportion of stereotype-consistent (17%), stereotype-inconsistent (33%), and stereotype-irrelevant information (50%), the way in which the stereotype-inconsistent information was dispersed among the 30 members of the group of corporate lawyers was manipulated. For some participants, the stereotype-inconsistent information was dispersed across all 30 members of the group such that each member exhibited a single stereotype-inconsistent behavior. For other participants, the stereotype-inconsistent information was concentrated such that one-third of the members of the group each exhibited three stereotype-inconsistent behaviors. Results demonstrated that when the stereotype-inconsistent information was concentrated within fewer members of the group rather than spread among all members of the group, participants' overall group stereotype did not become weaker, suggesting that the disconfirming members

were viewed as separate from the overall group (i.e., as a subtype) rather than as full-fledged members of the overall group.

Because in their first study the number of disconfirming targets was confounded with the extremity of disconfirming targets, Weber and Crocker (1983) conducted a follow-up experiment to examine whether extremity alone might influence the process of subtyping by keeping the number of disconfirming members consistent while varying the number of stereotype-inconsistent behaviors each of those members performed. Thus, some participants were given information such that nine of the 30 corporate lawyers each exhibited a single stereotype-inconsistent behavior (moderate disconfirmation), whereas other participants were provided with information such that nine of the corporate lawyers each exhibited three stereotype-inconsistent behaviors (extreme disconfirmation). Results demonstrated that participants tended to subtype both groups of disconfirmers, suggesting that members did not have to violate the stereotype in an extreme manner in order to be subtyped. In other words, a single stereotype-inconsistent behavior was enough for subtyping to occur.

Johnston and Hewstone (1992) conducted a study similar to Weber and Crocker (1983) using a different target group, physics students. In particular, they provided participants with information about eight physics students. The same amount of stereotype-inconsistent information was either concentrated within two members or dispersed across six members of the group. Results replicated those of Weber and Crocker (1983), demonstrating that when the stereotype-inconsistent information was concentrated within a couple members

of the group, that counterstereotypic information was less likely to change the overall group stereotype than when the same stereotype-inconsistent information was dispersed across most members of the group.

In addition, Johnston and Hewstone (1992) found that participants judged targets who performed stereotype-inconsistent behaviors as less typical of the overall group when the stereotype-inconsistent behaviors were concentrated within a couple of group members than when they were dispersed across most members. Mediational analyses indicated that the perceived typicality of the disconfirming group members influenced stereotype change. Targets who disconfirmed the stereotype but were perceived as relatively typical group members were more likely to weaken the perceiver's overall group stereotype than were targets who disconfirmed the stereotype but were perceived as atypical group members. Thus, atypical disconfirming targets were more likely to be subtyped than were typical disconfirming targets.

In contrast to providing participants with information about several group members, some of whom disconfirmed the stereotype and others of whom confirmed the stereotype, more recent subtyping research has provided participants with a single member of a particular group who violated a single dimension of the stereotype associated with the overall group. For example, Kunda and Oleson (1995) provided participants with information describing a lawyer who was introverted, thus violating the stereotype that lawyers are extraverted. Although the research by Johnston and Hewstone (1992) showed that perceiving the target's disconfirming behaviors as atypical is a necessary

condition for subtyping to occur, information regarding a target's typicality may not always be readily available to perceivers.

Thus, Kunda and Oleson (1995) examined the possibility that participants will use neutral information as the basis to perceive a disconfirming target as atypical, and hence, justify subtyping the target. Accordingly, one-third of the participants in their study were also given information that the introverted lawyer worked for small law firm, another one-third were told that he worked for a large law firm, and the rest of the participants were given no information regarding the size of the law firm for which he worked. Results showed that participants who were given the additional piece of information (small or large firm size) were more likely to subtype the introverted lawyer than were participants who were not given any additional information. Kunda and Oleson (1995) reasoned that participants who were given the additional neutral information used it to perceive the target as atypical of the overall group, resulting in the target being subtyped. When the neutral information was available, the target's stereotype-inconsistent behavior did not weaken the overall stereotype of lawyers as being extraverted (a consequence consistent with subtyping). The target's stereotype-inconsistent behavior did, however, influence judgments of the subtyped group. In particular, participants came to believe that lawyers who work for small or large (depending on the condition) law firms were more likely to be introverted than lawyers in general.

In another set of studies, Kunda and Oleson (1997) examined the possibility that the extremity of the stereotype-inconsistent behavior that a target

person performed could be used as a means of perceiving the target as atypical. Participants read about a single target described either as a moderately unassertive feminist woman or as an extremely unassertive feminist woman. They found that participants were more likely to subtype the extremely unassertive feminist woman than the moderately unassertive feminist woman. Thus, greater extremity of deviance from the stereotype leads perceivers to view the target as more atypical, increasing the likelihood of subtyping despite the extreme behavior being especially at odds with the group stereotype.

The above findings suggest that the perception of atypicality is a necessary condition for subtyping to occur. Perceptions of typicality can be influenced by the way in which stereotype-inconsistent information is dispersed among group members, by providing an additional piece of information that perceivers can use to view a disconfirming target as an atypical group member, or by providing perceivers with information that the target disconfirms an aspect of the group stereotype in an extreme fashion. In sum, it seems that providing participants with a single target who violates a stereotype in a moderate way on at least one dimension with additional information that can be used to perceive the target as atypical of the overall group is sufficient to induce subtyping.

Despite considerable efforts by researchers (e.g., Weber-Kollmann, 1985), measures examining the process involved in subtyping are currently not available. To determine whether subtyping has occurred, most researchers look for changes in the overall group stereotype with respect to the disconfirming behaviors of the target. For example, if information about a lawyer who performs

behaviors that disconfirm the stereotype of lawyers being extraverted leads perceivers to view lawyers in general as more introverted than they originally believed, it is concluded that the behaviors of the disconfirming introverted lawyer were incorporated into the overall group stereotype and that subtyping did not occur. If, on the other hand, perceivers do not come to perceive lawyers in general as more introverted than they originally believed, it is concluded that perceivers subtyped the introverted lawyer. This is precisely how Kunda and Oleson (1995, Experiment 1) inferred that subtyping did occur. In other words, when a disconfirming target is subtyped, less change in the overall group stereotype occurs than when a disconfirming target is included in the overall group representation.

One measure that has begun to be used to assess subtyping is the perceived typicality of disconfirming targets. As discussed previously, perceived typicality is central to subtyping because perceiving disconfirming targets as atypical group members seems to be necessary for subtyping to occur. Following an examination of the available subtyping measures, Park, Wolsko, and Judd (2000) argued that perceived typicality is currently the best available measure to determine whether subtyping did occur. Richards and Hewstone (2001), in their review of the literature on subtyping, supported Park et al.'s (2000) claim by suggesting that perceived typicality as a measure of subtyping does represent the best approximation available. Therefore, although no direct measure of subtyping exists, the current work will infer subtyping by examining both perceived typicality of targets who disconfirm a group stereotype and

changes in the overall group stereotype. Similar to Kunda and Olson (1995), measures of the subtyped group (to be discussed) will also be used to assess subtyping. It should also be noted that using measures such as perceived typicality and changes in the overall group stereotype involve examining continuums and thus, these measures cannot pinpoint a discrete point at which subtyping has occurred.

Subgrouping

Subgrouping is another form of subcategorization that has only recently been examined. Whereas subtyping involves excluding a counterstereotypic group member from the overall group category, subgrouping involves the inclusion of such a target in the overall group category. Thus, when a perceiver subgroups a target, the counterstereotypic information related to that target has an impact on the overall group representation. In particular, when a target is subgrouped, the perceiver's overall group representation becomes more heterogeneous, which is one reason subgrouping is viewed as a process by which stereotypes can ultimately be changed.

Much of the early research on subgrouping focused on simply having participants identify different subgroups within larger social groups, such as gender (Clifton, McGrath, & Wick, 1976; Vonk & Olde-Monnikhof, 1998), race (Judd, Park, Ryan, Brauer, & Kraus, 1995), and groups based on academic majors (Park, Ryan, & Judd, 1992). The primary method in these studies was to present participants with an overall group label and ask them to list as many different "types" of the group as they could. Other research provided participants

with subgroup labels (e.g., Devine & Baker, 1991) or pictures (Brewer, Dull, & Lui, 1981) and asked them to provide attributes related to each subgroup or to sort target descriptions based on the subgroups provided.

In a more recent study, Maurer, Park, and Rothbart (1995) directly compared the two processes of subtyping and subgrouping. They did so by providing participants with information about 16 members of the Big Brother group. The stimulus materials were designed such that the group could conceptually consist of five subcategories, four of which confirmed aspects of the group stereotype, each in a unique way, and one of which disconfimed aspects of the group stereotype. Participants were randomly assigned to one of three conditions: nonsort, subtype, and subgroup. In the nonsort condition, participants were simply told to use the information to form an impression of the group. In the subtype condition, participants were asked to sort the members of the group into two piles, one including those who fit the group and the other including those who did not fit the group. In the subgroup condition, participants were asked to sort the members into as many piles as they desired, "grouping together members who seem similar in some way and different from members in the other subgroups" (p. 814).

Maurer et al. (1995) expected that participants in the subtype condition would perceive the subcategory of members who disconfirmed the stereotype of the group as less typical than would either participants in the nonsort or subgroup conditions. By subtyping these disconfirming members, participants would perceive the overall group as more stereotypical and less heterogeneous than if

they had subgrouped the disconfirming members. Participants in the subgroup condition, on the other hand, were expected to perceive the subcategory of members who disconfirmed the stereotype as more typical than either participants in the nonsort or subgroup conditions. By including these members as a subgroup of the overall group, the overall group would then be perceived as less stereotypical and more heterogeneous than if the disconfirming members had been subtyped.

Three main dependent measures were used to examine these hypotheses. One was a measure of typicality in which participants were asked to rate each target on how typical each was of the overall group of targets. A mean and range estimation task was used to assess both stereotypic beliefs and perceived variability of the overall group. This was measured by having participants first indicate the group average and then the points at which the most extreme members of the group fall on the stereotypic traits. The group average served as the measure of stereotypic beliefs and the range around that group average served as the measure of perceived variability. The variability measure is important because it has been proposed as the most important consequence differentiating whether a target has been subtyped or subgrouped (Richards & Hewstone, 2001). Perceived variability of the overall group is greater when a counterstereotypic target has been subgrouped than when that target has been subtyped.

Results indicated that participants in the subtype condition viewed the disconfirming subcategory members as less typical of the group, which led them

to perceive the overall group as more stereotypical and less heterogeneous than did participants in either the subgroup or nonsort (control) conditions. Participants in the subgroup condition, on the other hand, viewed the disconfirming subcategory members as more typical of the group and came to view the overall group as less stereotypical and more heterogeneous than did participants in either the subtype or nonsort conditions. Thus, subtyping and subgrouping affected perceivers' group stereotypes, perceptions of group typicality, and perceptions of group variability.

In a second study, Maurer et al. (1995) examined whether participants would naturally subtype or subgroup participants without explicit instructions to do so. The procedure was similar to that of their first study except that a different target group was used. In particular, participants were provided with information about 15 members of a national gay-activist group. Again, the stimulus information was designed such that the group could conceptually consist of five subcategories, four of which confirmed the overall group stereotype each in a unique way, and one of which disconfirmed the overall group stereotype. Participants were asked to read through the information and form an impression of the overall group, similar to the nonsort condition in Study 1.

Results replicated those of Study 1, demonstrating that when perceivers viewed disconfirming members as atypical, they were more likely to perceive the overall group as more stereotypic and less heterogeneous than when perceivers viewed the disconfirming members as typical. This study is especially important because it shows that natural variability in the extent to which perceivers see

disconfirming members as typical exists and that it is associated with whether perceivers subtype or subgroup a target who violates a group stereotype even without explicit instructions.

It is important to note that participants in Maurer et al.'s (1995) studies were all given the same information. The way in which they approached social categorization influenced how they ultimately subcategorized targets who violated aspects of the group stereotype. Thus, it seems that a target who violates a perceiver's stereotype could ultimately be subtyped or subgrouped based on the goals of the perceiver (i.e., whether a counterstereotypic target is perceived as typical or atypical of the group). The current research examined another set of goals that may influence whether a disconfirming target is subtyped or subgrouped. In particular, the role of prejudice and the valence of the counterstereotypic behavior of the target in influencing whether a disconfirming target is subtyped or subgrouped were examined.

Motivated Subtyping versus Subgrouping

Because one of the main consequences of subtyping is that the overall group stereotype remains unchanged, some researchers have argued that subtyping may be influenced by the motivation to maintain group stereotypes or group prejudices. Arguing one's motivation to maintain one's prejudiced attitudes is a primary function of subtyping, McConnell (1998) proposed the motivated subtyping hypothesis. According to this hypothesis, the extent to which a perceiver's attitudes about a target group are consistent with the valence of counterstereotypical behaviors performed by a disconfirming group member will

influence whether subtyping will occur. For example, if perceivers who hold negative prejudices toward a group observe an atypical target performing a positive counterstereotypical behavior, they are more likely than perceivers who hold positive prejudice toward that group to subtype the target rather than to perceive the target as part of the overall group in order to preserve their negative attitudes. If, on the other hand, perceivers who hold positive prejudices toward the group observe an atypical target performing a negative counterstereotypical behavior, they are more likely than perceivers who hold negative prejudice toward the group to subtype that target rather than perceive the target as part of the overall group in order to preserve their positive attitudes. Motivation in this case refers to the maintenance of one's evaluation of the group. Indeed, a great deal of research has shown that people work hard to maintain strong attitudes and beliefs in the face of disconfirming information (e.g., Ditto & Lopez, 1992; Kunda, 1990; Sinclair & Kunda, 1999). In addition, extreme attitudes have been shown to be more resistant to change (e.g., Osgood & Tannenbaum, 1955; Sherif & Hovland, 1961).

McConnell (1998) examined the motivated subtyping hypothesis by having participants who varied in their feelings toward Blacks (i.e., those who held relatively positive attitudes toward Blacks, those who held relatively negative attitudes toward Blacks, and those who held relatively neutral attitudes toward Blacks) read about six Black college male targets. Three of the six targets confirmed one of two stereotypes that were varied between participants. The stereotype was either positive (i.e., athletic) or negative (i.e., hostile), which was

varied between subjects. Two of the six targets, on the other hand, disconfirmed the relevant stereotype (i.e., in the positive stereotype condition the disconfirmers violated the positive stereotype that Blacks are athletic, whereas in the negative stereotype condition the disconfirmers violated the negative stereotype that Blacks are hostile). The extent to which the disconfirmers were prototypic of Black men in general was also varied between subjects. For some participants, the disconfirmers were prototypic (i.e., they had prototypical names and came from urban backgrounds). For other participants, the disconfirmers were nonprototypic (i.e., they had nonprototypical names and came from rural backgrounds).

When perceivers who held relatively negative attitudes toward Blacks were presented with nonprototypic targets (i.e., rural Blacks) who disconfirmed a negative stereotype (i.e., the targets' benevolent behaviors were incongruent with the perceiver's group attitudes), they should have been motivated to subtype that target. Also, when participants who held relatively positive attitudes toward Blacks were presented with nonprototypic targets who disconfirmed a positive stereotype (i.e., the targets' behaviors were incongruent with the perceiver's group attitudes), they should have been motivated to subtype that target. However, when participants who held relatively negative attitudes toward Blacks were presented with nonprototypic targets that disconfirmed a positive stereotype (i.e., the targets' behaviors were congruent with the perceiver's group attitudes), they should not have been motivated to subtype that target. And similarly, when participants who held relatively positive attitudes toward Blacks were presented

with nonprototypic targets that disconfirmed a negative stereotype (i.e., the targets' benevolent behaviors were congruent with the perceiver's group attitudes), they should also not have been motivated to subtype that target.

The pattern of findings for the negative stereotype condition was as McConnell (1998) predicted. However, the pattern of findings for the positive stereotype condition was not entirely consistent with expectations in that participants with positive attitudes toward Blacks did not subtype atypical nonathletic Blacks, as it was predicted they would. One reason offered to explain why this was the case is that subtyping nonathletic Blacks may have been undesirable in the sense that doing so would involve endorsing a stereotype, something those with positive attitudes toward Blacks may wish to avoid.

The current research attempted to extend the motivated subtyping hypothesis by examining processes that lead to both subtyping and subgrouping. It is believed that either outcome is possible depending on the goals of the perceiver (Maurer et al., 1995). It was expected that when perceivers did not subtype a counterstereotypic target, they would subgroup that target instead. More specifically, when perceivers who held relatively negative attitudes toward a particular group were presented with atypical targets who disconfirmed a negative stereotype (i.e., the targets' behaviors were incongruent with the perceiver's group attitudes), they should have been motivated to subtype that target. When participants who held relatively positive attitudes toward the particular group were presented with atypical targets who disconfirmed a positive stereotype (i.e., the targets' behaviors were incongruent with the perceiver's

group attitudes), they should have been motivated to subtype that target. However, when participants who held relatively negative attitudes toward the group were presented with typical targets who disconfirmed a positive stereotype (i.e., the targets' behaviors were congruent with the perceiver's group attitudes), they should have been motivated to subgroup that target. And, when participants who held relatively positive attitudes toward the group were presented with typical targets who disconfirmed a negative stereotype (i.e., the targets' behaviors were congruent with the perceiver's group attitudes), they should have been motivated to subgroup that target.

When a counterstereotypic target has been subgrouped, perceived typicality of the target to the overall group and perceived variability of the stereotype for the overall group should be greater than when the target has been subtyped. In addition, stereotypic beliefs of the overall group should be weakened when a counterstereotypic target has been subgrouped but not when that target has been subtyped. In addition, perceived variability and stereotypic beliefs for the subcategory itself should be greater when the target has been either subtyped or subgrouped, indicating that the target was recategorized rather than simply categorized as just a group member or as being ignored.

In sum, when a counterstereotypic target is encountered, that target can be categorized in at least one of three ways. If the perceiver lacks interest or cognitive resources or simply discounts or ignores the counterstereotypic information, the target should be categorized using a basic category based on a salient feature of the target (what I will refer to as "grouping"). If, on the other

hand, the perceiver has interest and resources to continue to process the counterstereotypic information related to the target, a process of subcategorization should be implemented. This subcategorization will be based on how typical the counterstereotypic target is perceived to be of the overall group. If the perceiver is motivated to maintain group prejudice and the target's counterstereotypic behavior is congruent with that prejudice, the target should be perceived as relatively typical and thus be classified as a subgroup of the overall group. If the perceiver is motivated to maintain group prejudice but the target's counterstereotypic behavior is incongruent with that prejudice, the target should be perceived as relatively atypical and thus be subtyped.

Activation and Inhibition of Group Categories, Subtypes, and Subgroups

In addition to examining the role of motivation in affecting whether perceivers subtype or subgroup a deviant target, the current research also investigated the cognitive representation and relations between subcategories (i.e., subtypes and subgroups) and the overall group category by examining the relative activation and inhibition of subcategories and of the overall group category when a counterstereotypic person is encountered. Activation, in this case, refers to the extent to which social categories become activated in memory (or the relative degree to which they are brought to mind) upon encountering a counterstereotypic target. For instance, when one encounters a Black lawyer, most perceivers should, at least initially, categorize that target as Black. Thus, the "Black" category perceivers have in memory would become activated. When a category becomes active in memory, attributes associated with it also become

active in memory (Collins & Loftus, 1975). Thus, if perceivers categorize the target as Black, attributes (including stereotypes and attitudes) associated with the "Black" category will also become activated and influence perceptions and judgment (Bruner, 1957; Higgins, Rholes, & Jones, 1977; Fazio, Jackson, Dunton, & Williams, 1995; for a review, Smith, 1998).

If perceivers proceed to subcategorize the Black lawyer by subtyping him, the "Black" category may then become inhibited. Inhibition, in this case, refers to a category that has become even less active than it was at its baseline level. For instance, following subtyping, the "Black" category may actually be inhibited or be at a lower level of activation potential than it was before the perceiver encountered the target. Alternatively, if perceivers subcategorize the Black lawyer by subgrouping him, the "Black" category should be relatively active in memory.

Macrae, Bodenhausen, and Milne (1995) examined both activation and inhibition of social categories for a target who could be categorized by more than one superordinate category. Participants watched a video of an Asian woman (i.e., a target who could be categorized as an Asian, as a woman, or as both). Prior to viewing the video, some participants were primed with words related to women to make the woman category more active in memory in order to encourage categorizing the target as a woman, whereas others were primed with words related to the Asian category in order to encourage categorizing the target as Asian, and still others were not primed with either category (i.e., control participants). After viewing the video, participants were asked to perform an

allegedly unrelated lexical decision task. This task involves having participants judge as quickly and as accurately as possible whether letter strings presented on a computer monitor are "words" or "nonwords" by pressing one of two keys on a computer keyboard. The time between the presentation of the letter string and the participant's response was recorded by the computer, and this response latency constituted the main dependent measure. The stimuli presented consisted of words that were stereotypic of women but not of Asians, words that were stereotypic of Asians but not of women, and words that were not stereotypic of women or of Asians, in addition to nonword letter strings.

If stereotypic concepts related to a category were already activated in memory by the priming manipulation, participants should be faster to respond to concepts associated with that category on the lexical decision task than participants who were not primed with either category. The relative speed of a response following priming (i.e., facilitation) reflects the extent to which the concept and the primed category are associated in memory. Conversely, if stereotypic concepts related to the other category are actively inhibited, participants should be slower to respond to those concepts than participants who were not primed with either category. This would demonstrate inhibition of an alternative category. This is exactly what Macrae et al. (1995) observed. When participants were primed with the "woman" category, they were significantly faster than control participants to respond to words that were stereotypic of women, demonstrating activation of the "woman" category. In addition, these same participants were significantly slower than control participants at

responding to words that were stereotypic of Asians, demonstrating inhibition of the "Asian" category. Conversely, when participants were primed with the "Asian" category, they were significantly faster than control participants to respond to words that were stereotypic of Asians, demonstrating activation of the "Asian" category. In addition, these same participants were significantly slower than control participants at responding to words that were stereotypic of women, demonstrating inhibition of the "woman" category. Thus, when a perceiver can categorize a target using more than one social category, the category that "wins" becomes activated in memory and the category that "loses" is inhibited.

Rudman and Borgida (1995) examined activation and inhibition with respect to subordinate categories of women. Male participants first watched either a video containing a number of sexist commercials (to prime them with the category of sexual object women, a subcategory of women) or a control video containing nonsexist commercials targeted for men. Both videos contained commercials featuring beer, cologne, cars, and clothing. Those commercials included in the sexist video condition were rated as relatively high in sexism and eroticism, whereas those commercials included in the control video condition were rated as relatively low in sexism and eroticism in a pretest study. After viewing the video, participants performed an allegedly unrelated lexical decision task similar to that used by Macrae et al. (1995). The stimuli presented consisted of both sexist and nonsexist words, in addition to nonword letter strings. Results demonstrated that when men were primed with the subcategory sexual object women they were faster to respond to the sexist words than were control

participants. The authors inferred that this demonstrated activation of the subcategory of sexual objects women. These participants were also slower to respond to the nonsexist words than were controls, which the authors inferred as demonstrating inhibition of a nonsexual objects women subcategory.

It is not clear, however, whether the results of Rudman and Borgida's (1995) study actually demonstrate activation and inhibition of "subcategories" of women. The traits associated with broad subcategories such as sexual object women and nonsexual object women are likely to be negatively correlated at the onset. Thus, activating traits associated with one of these broad subcategories may inhibit opposing traits simply because such traits are negatively correlated, and not because activation of one of the subcategories inhibits activation of the other subcategory.

Therefore, the current research examined activation of subcategories and of the overall group category when a target is subtyped or subgrouped by focusing on the activation level of categories rather than the activation level of the traits associated with the categories. As previously mentioned, a counterstereotypic target should be categorized with a basic category during initial categorization. However, when a disconfirming target is subtyped, the counterstereotypic information associated with that target is less likely to become incorporated into the overall group representation. Thus, it was expected that when a disconfirming target was subtyped, the overall group category would be inhibited. Such inhibition would prevent the counterstereotypic information from being incorporated into the overall group representation, thereby providing a

means by which overall group stereotypic beliefs and prejudice can be maintained. On the other hand, when a disconfirming target is subgrouped, the counterstereotypic information does become incorporated into the overall group representation, ultimately reducing the overall group stereotype. Therefore, it was expected that when a disconfirming target is subgrouped, the overall group category would remain activated and the disconfirming target's behavior would be incorporated with the overall group knowledge.

EXPERIMENT 1: ACTIVATION AND INHIBITION OF GROUP CATEGORIES, SUBTYPES, AND SUBGROUPS

The first experiment examined the relative activation and inhibition of subcategories and of the overall group category when a target is subtyped or subgrouped. Unlike previous experiments that focused on the attributes associated with the categories or subcategories involved (e.g., Macrae et al., 1995; Rudman & Borgida, 1995) this study focused on the activation of the superordinate categories and of the subcategories in the same experiment.

Overview

Participants were presented with images of social group members who fit different subcategories of Black men based on a pretest study. For the first part of the study, another image (the target) of either a person (i.e., a very typical Black man or a very typical White man) or of an object (i.e., a typical sofa or a typical chair) was presented after each initial image (the prime) presentation. Participants responded as quickly as possible using one of two keys to indicate whether the target image was a person or an object. For the second part of the study, the target image that followed each prime was either of a typical Black man or of a typical White man (i.e., no objects were presented). Participants responded as quickly as possible using one of two keys to indicate whether the person depicted in target image was Black or White. The predictions were the same for both parts of the study. In particular, it was expected that when a group member presented as a prime was subgrouped, the overall group category would be activated, facilitating responses to members who fit the overall group

category. For instance, when a typical Black male target image was preceded by a prime image of a moderately typical subcategory member (i.e., a group member who is likely to be subgrouped), responses to the typical Black male target should be relatively faster than when that target is preceded by a neutral image prime (i.e., a series of five ampersands). When a group member presented as a prime was subtyped, on the other hand, it was expected that the overall group category would be inhibited, slowing responses to members who fit the overall group category. Thus, when a typical Black male target image was preceded by a prime image of an atypical subcategory member (i.e., a group member who is likely to be subtyped), responses to the typical Black male target should be relatively slower than when that target was preceded by a neutral prime image.

METHOD

Participants and Design

The design of the study was a 5 (Prime: Black subgroup member, Black subtype member, typical Black group member, typical White group member, or control) X 3 (Target: typical Black group member, typical White group member, or object) within-subjects design.

A power analysis was conducted to determine the number of participants necessary to detect a 2-way interaction in the current study. At an alpha level of .05, with two within-subject factors, a large effect size of .40, and a desired power level of .80, it was determined that a total of 26 participants would be adequate

(Cohen, 1988). Ultimately, 47 White students participated in the primary experiment for credit in their introductory psychology course.

Materials

Stimulus Development. In order to identify typical and atypical subcategories college students perceive within the overall category of Blacks, a pretest was conducted in which 49 participants were given instructions that included an example of typical (e.g., birds that fly, birds that chirp) and atypical (e.g., birds that don't fly, birds that talk) birds. They were then provided with various superordinate social groups (including Blacks) and asked to list typical and atypical types for each group.

Images representing members from each of the subcategories that at least 33% of participants listed (Gilbert & Hixon, 1991) combined with what prior research (e.g., Devine & Baker, 1991) identified as different subcategories of Blacks were found via the internet. These subcategories included athletes, businessmen, criminals, doctors, educated, poor, musicians, and religious. In addition, images of Black men who fit the overall category of Blacks (i.e., very typical) were sought. These images were to be used as primes and as targets for the first experiment. The goal was to obtain four images that represented members from six different subcategories (three relatively typical subcategories, or subgroups, and three relatively atypical subcategories, or subtypes), in addition to 12 images that represent members who fit the overall category of Blacks (i.e., those who were unlikely to be subcategorized).

The target images for the first part of the study involved two main types: persons and objects. The person target images consisted of Black men who were rated as very typical of the overall Black category and of White men who were rated as very typical of the overall White category. The object targets consisted of typical sofas, chairs, and tables. The target images for the second part of the study consisted only of images of very typical Black men and of very typical White men.

Once the images were collected, a second pretest was conducted. The images were randomly presented on a computer to 46 participants who rated how typical the target (e.g., a Black man) depicted in each was of the overall category (e.g., Blacks) by typing a number based on a scale ranging from 1 (not at all typical) to 9 (extremely typical). Of the 260 images presented, 95 depicted Black men, 111 depicted White men, 24 depicted women, and 30 depicted furniture. Images rated low in typicality depicting a Black man who belonged to one of the subcategories identified by participants in the first pretest were classified of members of subcategories that were more likely to be subtyped than subgrouped, which should be more likely to inhibit the overall group category upon presentation. Images rated as moderately typical depicting a person who belonged to one of the subcategories identified by participants in the first pretest were classified as members of subcategories that were more likely to be subgrouped than subtyped, which should be more likely to activate the overall group category upon presentation. And, images rated as extremely typical depicting a person who did not appear to belong to a particular subcategory

identified by participants in the first pretest were classified as members who fit the overall group category rather than a subcategory of the group. Thus, these images should activate the overall group category only.

Based on these typicality ratings, four images were identified for each of the following Black subtypes: businessmen (*M* = 5.91), doctors (*M* = 5.36), and educated (*M* = 6.10). In addition, four images were identified for each of the following Black subgroups: athletes (*M* = 6.81), musicians (*M* = 6.81), and religious (*M* = 6.31). And, 12 images were identified for the overall Black category (*M* = 7.21). For consistency, four images depicting White men in each of the same subcategories were also selected for the main experimental session. Thus, images for the following groups were selected: businessmen (*M* = 7.55), doctors (*M* = 7.17), educated (*M* = 7.52), athletes (*M* = 6.53), musicians (*M* = 5.52), religious (*M* = 5.25), and typical (*M* = 7.64). In addition to these experimental primes, a neutral prime image consisting of a series of five ampersands was used in the task (Fazio et al., 1995). Responses to targets following this neutral prime were used as baseline comparisons to responses to targets of the same type that followed the experimental primes. The images selected and their mean typicality ratings are presented in Appendix A.

Procedure

Upon arrival to the lab, participants were told that the study was examining how quickly and accurately people categorize people and objects. At private workstations, they completed the categorization task.

Categorization Task. While seated in front of a computer monitor, participants were presented with an orienting stimulus (i.e., a "+") for 2500 ms followed by a randomly selected prime (i.e., Black subtype, Black subgroup, Black group, White group, or neutral image) presented for 315 ms (similar to the procedure used by Fazio, et al., 1995). Participants were told that although they did not have to respond to the first image, they should attend to it because there would allegedly be a memory test for the images they had seen later in the experimental session. Immediately following the presentation of this prime image, a randomly selected target image (either a person or an object) was presented. The participants' task was to decide as quickly and as accurately as possible whether the target image presented was a person or an object by pressing one of two buttons on the keyboard labeled "Person" and "Object." This task consisted of an initial 36 practice trials which included images not used in later trials, 144 experimental trials in which either a Black typical image or a White typical image was the target, and 144 filler trials in which an image of a typical piece of furniture was the target. For the experimental trials, each prime was presented twice, once followed by a Black typical target image and once followed by a White typical target image. The trials and images presented were randomized differently for each participant. In addition, following the 36 practice trials and at each 72 trial-interval, participants were given a one-minute rest period during which a message was displayed on the screen to remind them to pay attention to the first image but to base their judgments on the second image. Response latencies between the presentation of the target image and the key

press were recorded by the computer and were used to determine whether the target category was activated or inhibited following activation of the primed concept (the first image).

Immediately following this task, participants performed a similar task in which they categorized the persons depicted in the target images as either "Black" or "White." This task consisted of 144 experimental trials with a one-minute rest period after the first block of 72 trials to remind participants of the instructions. No practice or filler trials were used in this part of the study. For the experimental trials, each prime was presented twice, once followed by a Black typical target image and once followed by a White typical target image. The trials and images presented were randomized differently for each participant. The categorization task was implemented using DirectRT Precision Timing Software (Jarvis, 2002).

RESULTS

Responses to the target images were first checked for correctness. For the first part of the study (i.e., person versus object judgments), it was important that participants pressed the key corresponding to "person" (as opposed to the key corresponding to "object") when a person was depicted in the target image. For the second part of the study (i.e., Black versus White judgments), it was important that participants pressed the key corresponding to "Black" when a Black target image was presented and "White" when a White target image was presented. The overall error rates for the first and second parts of the study were

low (2% and 3%, respectively). Only correct responses were included in the analyses (see Fazio, 1990).

A $\log_{10}$-transformation was performed on each of the correct response latencies (Fazio, 1990), and facilitation scores were then calculated by subtracting the average response latency for each prime-target combination from the average response latency for the same target when preceded by the control prime. Thus, greater positive facilitation scores indicated that a particular target was more strongly associated with the primed concept relative to a neutral concept (i.e., the control prime). In particular, mean facilitation scores were calculated for each type of prime image (i.e., Black typical member, Black subgroup member, Black subtype member, and White typical member) that was followed by Black typical target images. Also, mean facilitation scores were calculated for each type of prime image (i.e., Black typical member, Black subgroup member, Black subtype member, and White typical member) that was followed by White typical target images. Positive facilitation scores indicated responses faster than baseline (suggesting activation of the target given its prime), whereas negative facilitation scores indicated responses slower than baseline (suggesting inhibition of the target given its prime).

A 4 (Prime type: Black subgroup member, Black subtype member, typical Black group member, or typical White group member) X 2 (Target Type: typical Black group member or typical White group member) repeated measures ANOVA was conducted on the facilitation scores. Table 1 shows the expected pattern of results. In particular, it was expected that responses to Black targets

would be fastest (suggesting strong activation of the Black category) when preceded by Black typical primes as compared to the other three prime types. Because it was assumed that Black subgroups are related to the overall Black category, responses to Black targets should be relatively faster when preceded by Black subgroup primes than when preceded by Black subtype primes or White typical primes, demonstrating that subgrouping results in activation of both the subgroup and overall group categories. Black subtypes, on the other hand, have attributes that contradict the overall group stereotype. Thus, it was expected that responses to Black targets would be moderately slower (suggesting inhibition of the Black category) when preceded by Black subtypes than when preceded by Black typical primes or by Black subgroup primes. Because beliefs about Blacks and Whites are often contradictory, it was expected that responses to Black targets will be slowest when preceded by White typical primes (reflecting inhibition of the Black category) than when preceded by any of the other three prime types.

For White targets, it was expected that responses would be slower (suggesting inhibition) when preceded by Black typical primes or Black subgroup primes than when preceded by Black subtype primes or White typical primes. However, because subtypes have attributes that oppose the overall Black category and may share attributes that may be more consistent with the overall White category, responses to White targets may be relatively faster when preceded by a Black subtype prime than when preceded by Black typical primes or by Black subgroup primes. Finally, responses to White targets should be

fastest when preceded by White typical primes than when preceded by any of the other three types of primes.

However, the actual mean facilitation scores for each judgment task, which are presented in Table 2, did not reveal the predicted pattern. Contrary to predictions, no significant effects were found for the first part of the study (i.e., person versus object judgments, top panel of Table 2). However, there was a marginally significant interaction between prime type and target type, $F(3,138) = 3.76$, $p < .06$. Planned contrasts showed a significant difference in response latencies to White versus Black targets when preceded by a Black typical prime, $F(1,46) = 4.14$, $p < .05$. Surprisingly, responses to White targets were faster than responses to Black targets following Black typical group primes.

Also contrary to predictions, no significant effects were found for the second part of the study (i.e., white versus black judgments; bottom panel of Table 2).

Interestingly, the overall mean latency scores for both parts of the study ($M = .07$ for the first part and $M = .02$ for the second part) were significantly greater than baseline, $t(46) = 6.70$, $p < .001$ for the first part and $t(46) = 4.28$, $p < .001$ for the second part. Participants responded faster to Black and White typical targets overall when preceded by any of the primes depicting a person than when preceded by the neutral prime image.

DISCUSSION

The predicted pattern of results would have demonstrated that when an atypical target is subtyped, the overall group category is subsequently inhibited.

Such an outcome would support a mechanism by which atypical group members' counterstereotypic behaviors would have little to no impact in changing group stereotypes. Because atypical targets are presumably categorized using basic social categories (e.g., Blacks), at least initially (Fiske & Neuberg, 1990), the inhibition of the overall social group category could explain why encountering such targets does not affect overall group stereotypes. On the other hand, when an atypical target is recategorized as a subgroup member, the overall group category should remain activated. Various researchers have postulated relations such as these (e.g., Allport, 1954; Kunda & Oleson, 1995, 1997; Maurer et al., 1995; McConnell, 1998), but they have not studied category activation directly. This experiment, on the other hand, was the first to examine category activation and inhibition for groups, subgroups, and subtypes. Unfortunately, it provided no evidence consistent with the predicted pattern of results.

There was, however, an unexpected finding. It was found that participants tended to respond faster to White typical targets that followed Black typical group primes than they responded to Black typical targets that followed Black typical group primes. Examination of the means for both judgment tasks of the study suggest that in general, participants tended to respond slightly faster to target images belonging to the White superordinate category than to target images belonging to the Black superordinate category. Interestingly, participants were especially fast to respond to target images belonging to the White superordinate category than they were to respond to target images belonging to the Black superordinate category when the preceding prime was an image belonging to the

Black superordinate category. One possibility for this finding is that White primes in general may not evoke a social category for White participants. Black typical group primes, on the other hand, would be especially likely to evoke racial categories, which in turn would activate the Black category as well as activating the White category. This heightened activation might then lead participants to respond especially fast to White typical targets that followed Black typical group primes.

It is important to note that this experiment differed from previous studies that examined the activation and inhibition of social categories in a number of ways. First, other studies (i.e., Macrae et al., 1995; Rudman & Borgida, 1995) primed participants and measured the activation of social categories or subcategories in two separate tasks. Participants were first primed with one of two superordinate (e.g., Asian or woman) or subordinate (e.g., women as sexual objects or women as non-sexual objects) categories and then performed a task to measure activation and inhibition of both of those superordinate or subordinate social categories. The current study combined the priming of multiple superordinate and subordinate categories and the measurement of activation and inhibition of the broader superordinate categories in one task. More specifically, participants were primed with various images depicting individuals belonging to one of two superordinate categories (i.e., Black or White) or one of six subordinate categories (e.g., Black businessmen, White musicians), while measuring the activation and inhibition of the superordinate categories.

Second, whereas previous studies relied on stereotypic words associated with a category or subcategory to measure activation and inhibition of the broader social categories or subcategories, the current study used images depicting actual social group members to measure activation and inhibition of the broader social categories. As pointed out by Fazio et al. (1995), using images should activate group membership more directly than the use of stereotypic words, providing a more ecologically valid assessment of what happens when a person actually encounters a member of a particular social group. However, there has been some controversy in the literature regarding whether social categories are automatically activated upon encounter with a group member. In particular, some have argued that encountering social group members should automatically activate group knowledge (e.g., Devine, 1989) especially for social groups whose accessibility in memory is strong (e.g., Fazio et al., 1995). Others have argued (e.g., Gilbert & Hixon, 1991; Spencer, Fein, Wolfe, Fong & Dunn, 1998) that merely encountering a social group member does not necessarily result in the activation of the social group in memory. Instead, they have argued that perceivers must adopt evaluation goals in order for social category activation to have its full effect. The paradigm used by Fazio et al. (1995) relies on judging the connotation of target words that follow image primes. Perhaps such evaluative goals are necessary for full social category activation to occur. Indeed, similar arguments have been made about when spontaneous trait inferences will be rendered (e.g., Bassili & Smith, 1986) and for when priming has behavioral consequences (e.g., Bargh & Chartrand, 1999). Thus, perhaps

the current judgment task did not lead to activation of the intended social categories because the target judgment task was not evaluative in nature.

A final possibility is that perhaps subtyping-induced inhibition was not observed because, in fact, targets who have appeared to be subtyped were actually ignored rather than "refenced" (Allport, 1954). Indeed, the primary measure of subtyping used in most studies is the amount of change in stereotype strength after encountering counterstereotypical information associated with atypical group members. When there is little or no change in stereotype strength, it is inferred that subtyping occurred. Perhaps these atypical group members are actually ignored and not subtyped. Ignoring these targets would produce little or no change in stereotype strength (the "result" reported to support subtyping in numerous studies), and the overall social category would not need to be inhibited to produce this outcome.

Although the lack of support for inhibition and activation following the presentation of nonprototypic group members was disappointing, it is possible that less-than-typical counterstereotypical group members may be treated differently than typical counterstereotypical group members. As acknowledged above, it is possible that "subtyping consistent" outcomes might be observed even if nonprototypical group members who violate group stereotypes are ignored. Thus, a second study was conducted to explore the implications of counterstereotypical group members' behaviors for judgments of the overall group, and for knowledge about subcategories related to the overall group, in particular.

EXPERIMENT 2: MOTIVATED SUBTYPING VERSUS SUBGROUPING

Whereas Experiment 1 examined the consequences of subtyping and subgrouping targets who belong to preexisting subcategories for the average college student, Experiment 2 examined the recategorization of targets who violate an overall group stereotype in a novel manner. Research (e.g., Johnston & Hewstone, 1992; Weber & Crocker, 1983) has established that perceived typicality of a counterstereotypic target to the overall group influences whether that target will be subtyped. In particular, when a counterstereotypic target is perceived as relatively typical of the overall group, the target seems to be included in the overall group and the stereotype for the overall group is weakened. However, when a counterstereotypic target is perceived as relatively atypical of the overall group, the target will be subtyped and thus the stereotype will remain unchanged.

Thus, the current research argued that differences in whether a target would be subtyped or subgrouped based on perceiver motivations should only occur when the target is perceived to possess an attribute that is nonprototypic of the overall group. The way in which that nonprototypic information is used will be based on the motivations of the perceiver. In particular, it was expected that when perceivers were motivated to maintain group prejudice and the target's counterstereotypic behavior was congruent with that prejudice, the target would be perceived as relatively typical and thus, the target be recategorized as a subgroup member of the overall group even though information suggests the target is atypical. On the other hand, when perceivers were motivated to

maintain group prejudice but the target's counterstereotypic behavior was incongruent with their prejudice, the nonprototypic information would be used to perceive the target as atypical and thus, the target would be subtyped. In the former case, group stereotypes should be weakened by the incorporation of stereotype inconsistent information with overall group knowledge. In the latter case, however, group stereotypes should remain unchanged because the target's counterstereotypic behavior would be associated with a subtype category instead of with the overall group.

Overview

Participants who varied in their level of prejudice (i.e., negative prejudice, neutral prejudice, and positive prejudice) toward the target group were presented with information about a target member who performed a counterstereotypic behavior. For some participants, this counterstereotypic behavior was positive (thus violating a negative group stereotype), whereas for other participants the behavior was negative (thus violating a positive group stereotype). In addition, the extent to which the target possessed a prototypic attribute was also varied. In particular, for some participants the target was presented as being relatively prototypic of the overall group, whereas for other participants the target was presented as being relatively nonprototypic of the overall group.

In order to assess whether participants categorized the target as a group member, or recategorized the target by subtyping or subgrouping, two classes of dependent measures were collected from participants: those involving perceptions of the overall group and those involving perceptions of the

subcategory. For perceptions of the overall group, perceived typicality of the target to the overall group was assessed, and both the extremity and variability of the stereotypic trait for the overall group were measured before and after the presentation of the target information. For perceptions of the subcategory, the extremity and variability of the stereotypic trait were assessed both before and after the presentation of the target information. It was expected that the counterstereotypic target would be grouped, subgrouped, or subtyped, and the expected pattern of results is outlined in Table 3.

In particular, it was expected that when the target was grouped, perceived typicality of the target to the overall group would be greater than when the target was subtyped or subgrouped. In addition, the stereotype would be weaker and perceived variability of the stereotypic attribute would be greater for the overall group than when the target was subtyped or subgrouped. For example, if the target was an unintelligent gay male police officer (who violates the stereotype that gay men are intelligent), participants should report that gay men in general are less intelligent when they have grouped the target than when they have subcategorized the target. In addition, they should perceive greater variability in intelligence for gay men in general following grouping than following subcategorization. There should be no change in stereotypic beliefs or perceived variability when the target is grouped.

When the target was subgrouped, perceived typicality of the target to the overall group should be greater than when the target was subtyped but less than when the target was grouped. The stereotype for the overall group should also

be weakened moderately but to a lesser degree than when the target was grouped. In addition, perceived variability of the stereotypic attribute with regard to the overall group should be greater than when the target was subtyped but not as great as when the target was grouped. With regard to subcategory perceptions, the stereotype for the overall group should only be weakly associated with the subgroup. The counterstereotypic attribute, on the other hand, should be more strongly associated with the subgroup than with the overall group. For example, the subcategory of gay male police officers would be perceived as extremely unintelligent. Thus, it was expected that the subgroup would be perceived as even more counterstereotypic following subgrouping than following grouping. In addition, perceived variability of the stereotype for the subcategory should become less extreme following subgrouping than following grouping, suggesting that the subgroup was perceived as more homogeneous than before. For example, participants should report less variability in intelligence for gay male police officers when the target was subgrouped than when the target is grouped.

When the target was subtyped, perceived typicality of the target to the overall group should be the lowest compared to when the target is grouped or subgrouped. Further, the stereotype and its perceived variability for the overall group should remain unchanged with regard to the overall group following subtyping. However, the stereotype should be weaker with regard to the subcategory when the target was subtyped than when the target was grouped, whereas the counterstereotypic attribute should be stronger with regard to the

subtype when the target was subtyped than when the target was grouped. Thus, it was expected that the subtype would be perceived as more counterstereotypic than initially perceived. In addition, perceived variability of the stereotype for the subcategory should become less extreme following subtyping than following grouping, suggesting that the subtype was perceived as even more homogeneous than it was before.

METHOD

Stimulus Development

A number of pretests were conducted in order to determine the social group to be used, the stimuli for the positive and negative counterstereotypic behaviors that the target person from that group would perform, and the prototypical or nonprototypical information to be associated with that target person for the current study. For the first pretest, 68 participants were presented with a number of attributes, some of which have been shown to be stereotypic of gay men and some of which are irrelevant to gay men. They first estimated the proportion (from 0 to 100) of people in the general population who they believe possessed each attribute. They then rated the desirability of each of those attributes on a scale ranging from 1 (not at all desirable) to 9 (extremely desirable). Finally, they estimated the proportion (from 0 to 100) of gay men who possessed each of the same attributes.

A diagnosticity ratio was calculated based on a procedure developed by McCauley and Stitt (1978; McCauley, Stitt, & Segal, 1980), who suggested that when the probability of an attribute given a particular social category is greater

than the probability of the same attribute given people in general, a stereotype exists in the mind of the perceiver. The diagnosticity ratio quantifies the extremity of a stereotype belief, and is expressed as p(attribute | target group) divided by p(attribute | people in general). To the extent that the ratio deviates from 1.0, a stereotypic belief for the group exists.

In addition, to assess participants' prejudice toward gay men, participants indicated using a feeling thermometer how favorably they evaluate the typical gay man on a scale ranging from 100 degrees (extremely favorable) to 0 degrees (extremely unfavorable) with a midpoint of 50 degrees (neither favorable nor unfavorable).

The most common positive and negative attributes that both positive and negative prejudice participants held as a stereotype of gay men to the same degree (based on the diagnosticity ratios) were selected to use as the stimuli for the current study. "Intelligent" was selected as the positive attribute and "promiscuous" was selected as the negative attribute. For the pretest participants, the mean stereotype diagnosticity ratio for intelligent was 1.16 (*SD* = .62) and the mean stereotype diagnosticity ratio for promiscuous was 1.00 (*SD* = .89). The mean desirability for intelligent was 8.65 (*SD* = .73) and the mean desirability for promiscuous was 2.06 (*SD* = 1.64). To be certain that these stereotypes were held to a similar extent by participants who varied in their level of prejudice toward gay men, the diagnosticity ratios for intelligence and promiscuous were analyzed in one-way analyses of variance (ANOVAs) with prejudice level (positive, neutral, or negative) as the independent variable.

Results showed no difference in stereotype strength across participants who varied in their level of prejudice toward gay men (for intelligence, $F(2,67) = .47$, *ns*, and for promiscuity, $F(2,67) = 1.22$, *ns*). Thus, participants differed in their level of prejudice, but not in the strength with which they held the stereotypic belief that gay men are intelligent and promiscuous.

An additional pretest was conducted on the attributes selected (i.e., intelligence and promiscuous) to confirm that they were indeed considered as stereotypic attributes for the group of interest. Thus, 28 participants estimated the proportion of gay men in general (from 0 to 100) who possessed each attribute. In addition, because prototypicality has been identified in previous research as a factor influencing subtyping, another attribute (i.e., target's occupation) unrelated to the stereotypes selected for the group (i.e., intelligent and promiscuous) was identified and used to manipulate the prototypicality of the target person in the main experimental session. In order to ensure that the positive and negative stereotype attributes selected as stimuli were unrelated to this prototypicality factor, participants were also asked to estimate the proportion of gay men (from 0 to 100) with different occupations who possessed each attribute. These occupations included police officer and interior designer. Paired t-tests indicated participants did not perceive a difference in either intelligence or promiscuity between police officers and interior designers, $t(27) = -1.39$, *ns* and $t(27) = .84$, *ns*, respectively. Thus, these two occupations were used to manipulate the prototypicality of the target person in the main experimental session. Identifying the target's occupation as an interior designer should lead

participants to perceive him as prototypical of gay men in general, whereas identifying the target's occupation as a police officer should lead participants to perceive him as nonprototypical of gay men in general.

From the results of these pretest studies, four vignettes purportedly based on interviews with gay men attending a "Gay Lifestyles of the New Millennium" conference were developed. Specifically, participants in a third pretest were presented with information about a homosexual male target who described his behavior as being either positively counterstereotypic (e.g., non-promiscuous) or negatively counterstereotypic (e.g., unintelligent). To ensure that ratings were based on the information about the counterstereotypic attribute of interest and not influenced by other factors, they were not given any information about his occupation (i.e., the prototypicality factor). Thirty-four participants read one of the two vignettes and then rated the target on how intelligent and promiscuous they perceived him to be on separate scales ranging from 1 (not at all intelligent or not at all promiscuous) to 7 (extremely intelligent or extremely promiscuous). One-way ANOVAs with type of vignette (unintelligent target or non-promiscuous target) as the independent variable were conducted on the ratings for intelligence and promiscuous, separately. Results showed that the target in the "unintelligent" vignette was perceived to be relatively low in intelligence (M = 3.88, SD = 1.05), as intended, and somewhat high in promiscuity (M = 5.41, SD = 1.54), as would be expected based on the stereotype of gay men as promiscuous when no information about promiscuity is given,

$F(1,33) = 33.29$, $p < .001$. The target in the "non-promiscuous" vignette was perceived as relatively low in promiscuity ($M = 2.59$, $SD = 1.70$), as intended, and somewhat high in intelligence ($M = 6.06$, $SD = 1.14$), as would be expected based on the stereotype of gay men as intelligent when no information about intelligence is given, $F(1,33) = 25.74$, $p < .001$.

Prescreening

In a mass prescreening, 477 students in introductory psychology courses at Michigan State University responded to two questionnaires prior to being asked to participate in the main experimental session. One of these questionnaires assessed their stereotypes about homosexual men and the other assessed their attitudes toward homosexual men. The two questionnaires are described below.

Stereotypes about Homosexual Men. Similar to the pretest, participants first estimated the proportion (from 0 to 100) of people in the general population who they believed possessed a series of attributes, including the positive stereotypic trait (i.e., intelligent) and the negative stereotypic trait (i.e., sexually promiscuous) identified in the pretest described above. Next, they rated the desirability of each of those attributes on a scale ranging from 1 (not at all desirable) to 9 (extremely desirable). Then they estimated the proportion (from 0 to 100) of homosexual men who possess each of the same attributes.

Prejudice Toward Homosexual Men. In order to assess participants' prejudice toward homosexual men, participants indicated how favorably they view homosexual men in general on a scale ranging from 100 degrees

(extremely favorable) to 0 degrees (extremely unfavorable) with a midpoint of 50 degrees (neither favorable nor unfavorable).

Recruitment Criteria. To be selected to participate in the primary experimental session, participants needed to have diagnosticity ratios for at least one of the critical traits greater than 1.0, indicating that they believe intelligent or promiscuous is a stereotype associated with gay men. In addition, participants selected must have rated the desirability of each trait as intended (i.e., intelligent as desirable and promiscuous as undesirable). Of the 477 prescreening participants, 378 met these criteria and were invited via e-mail to participate in the main experimental session. Among these participants, the mean stereotype diagnosticity ratio for intelligent was 1.61 (*SD* = 1.37) and the mean stereotype diagnosticity ratio for promiscuous was 1.89 (*SD* = 1.70). The mean desirability for intelligent was 8.13 (*SD* = .96) and the mean desirability for promiscuous was 2.33 (*SD* = 1.53). These participants were then classified based on their prejudice toward homosexual men. In particular, those who reported scores above 50 on the feeling thermometer were classified as having positive prejudice toward homosexual men, those who reported scores below 50 were classified as having negative prejudice toward homosexual men, and those who reported scores of 50 as having neutral prejudice toward homosexual men.

To be certain that these stereotypes were held to a similar extent by participants who varied in their level of prejudice toward gay men, the diagnosticity ratios for intelligence and promiscuous were analyzed in one-way analyses of variance (ANOVAs) with prejudice level (positive, neutral, or

negative) as the independent variable. Results showed no difference in strength of stereotype across participants who varied in their level of prejudice toward gay men (for intelligence, $F(2,377) = 1.31$, *ns*, and for promiscuity, $F(2,377) = 1.21$, *ns*). Thus, participants differed in their level of prejudice, but not in the strength with which they held the stereotypic belief about the target group, ensuring that strength of stereotype did not differ as a function of participant prejudice.

Main Experimental Session

Participants and Design.

The design of the study was a 3 (group prejudice: positive, negative, or neutral) X 2 (valence of the stereotype violated: positive or negative) X 2 (prototypicality: prototypical or nonprototypical) between-subjects factorial design. Participants were randomly assigned to one of the four following conditions: prototypical target who violated a positive stereotype, prototypical target who violated a negative stereotype, nonprototypical target who violated a positive stereotype, or nonprototypical target who violated a negative stereotype.

A power analysis was conducted to determine the number of participants necessary to detect a 3-way interaction in the current study. At an alpha level of .05, with three between-subjects factors, a moderate effect size of .25, and a desired power level of .80, it was determined that a total of 156 participants would be adequate (Cohen, 1988). Thus, every attempt was made to obtain this desired number of participants.

Six to ten weeks after the prescreening, participants meeting the recruitment criteria outlined above were invited to participate in the main

experimental session via e-mail. If interested, they were to select a session posted on the Michigan State University Department of Psychology's Subject Pool Website. Immediately after selecting a session, they were prompted to complete a brief pre-experimental questionnaire on the website. Ultimately, 151 students participated in the main experiment for credit in their introductory psychology courses, in addition to the opportunity to win one of two cash prizes (one for $50.00 and the other for $75.00) in a drawing conducted on the last day of the semester. These participants had a mean stereotype diagnosticity ratio for intelligent of 1.66 (*SD* = 1.99) and a mean stereotype diagnosticity ratio for promiscuity of 1.67 (*SD* = 1.37). The mean desirability for intelligent was 8.09 (*SD* = 1.09) and the mean desirability for promiscuous was 2.61 (*SD* = 1.85). Of these participants, 62 were classified as having relatively positive affect toward gay men (*M* = 77.65, *SD* = 12.52), 41 were classified as having relatively negative affect toward gay men (*M* = 29.49, *SD* = 13.29) and, 48 were classified as having relatively neutral affect toward gay men (*M* = 50.00, *SD* = 0.00).

Procedure

Pre-Experimental Questionnaire. Stereotypicality and perceived variability were measured both before and after the presentation of the target information in order to examine changes in overall group stereotype strength and perceived variability as a function of being exposed to the counterstereotypical target. Thus, immediately after scheduling a session for the main experiment on the Subject Pool website, participants were presented with a number of attributes

and behaviors, including the stereotypic positive and negative attributes selected for the main study (i.e., intelligent and promiscuous). Similar to the procedure used by other researchers (e.g., Jones, Wood, & Quattrone, 1981; Park & Judd, 1990; Park, et al., 1992), they indicated where, on average, homosexual men fall with regard to each attribute or behavior on a scale ranging from 0 (e.g., extremely unintelligent) to 100 (e.g., extremely intelligent). They then indicated the highest and lowest points at which homosexual men might fall on the continuum with regard to each attribute. From this, a range score was calculated by taking the absolute value of the difference between the lowest and highest ratings for each participant (Maurer et al., 1995).

Main Experimental Session. Upon arrival to the lab, participants were told that the study was exploring how people form impressions of others based on varying degrees of information. In order to enhance privacy, participants completed the study individually at private computer workstations. They were told that the computer would randomly select and present an excerpt of an interview from a database developed from interviews of people attending various conferences around the country. It was emphasized that they should read the information carefully because they would be required to answer questions about the target later in the study. Specifically, they were presented with information about a homosexual male target who described his behavior as being either positively counterstereotypic (e.g., non-promiscuous) or negatively counterstereotypic (e.g., unintelligent). In addition, participants were given information indicating that the target was either prototypical of homosexual men

in general (e.g., is an interior designer) or not nonprototypical of homosexual men in general (e.g., is a police officer). The program used to present the information about the target and obtain the measures was MediaLab2001 (Jarvis, 2002). The excerpts presented to participants are presented in Appendix B.

Following the presentation of this information, participants responded to two classes of dependent measures: those applying to the overall group (i.e., homosexual men in general) and those applying to each of the subcategory groups (i.e., homosexual male interior designers and homosexual male police officers). They then responded to some questions intended to ensure that they had read the information presented in the excerpt thoroughly.

Dependent Measures

Group Perceptions

Perceived Typicality. Participants indicated how typical the target was of homosexual men in general on a scale ranging from 1 (not at all typical) to 9 (extremely typical), with a midpoint of 5 (moderately typical).

Stereotype Strength and Perceived Variability (Time 2). Participants were again presented with a number of attributes and behaviors, including the stereotypic positive and negative behaviors associated with the target presented to participants when they scheduled a session for the main experiment via the Michigan State University Psychology Subject Pool website. They indicated where the average homosexual man falls with regard to each attribute or behavior on a scale ranging from 0 (e.g., not at all promiscuous) to 100 (e.g., extremely promiscuous), and both the highest and lowest points at which

homosexual men in general might fall. The first score served as the measure of stereotype strength. The range for each attribute was calculated by taking the absolute value of the difference between the lowest and highest ratings for each participant. The ranges for the critical traits provided measures of perceived variability.

Subcategory Perceptions

Stereotype Strength and Perceived Variability (Time 2). Participants were again presented with a number of attributes and behaviors, including the stereotypic positive and negative behaviors associated with the target presented to participants earlier. They indicated where the average homosexual male interior designer and the average homosexual male police officer (separately) would fall with regard to each attribute or behavior on a scale ranging from 0 (e.g., not at all intelligent) to 100 (e.g., extremely intelligent), and both the highest and lowest points at which homosexual male interior designers and police officers in general might fall. The first score was the measure of stereotype strength for the subcategory. The range for each attribute was calculated by taking the absolute value of the difference between the lowest and highest ratings for each participant. The ranges for the critical traits provided measures of perceived variability for the subcategory.

Manipulation Checks

Participants were told that the study was also examining how accurately people remember information presented in digital format. They were asked to recall the target's first name, age, sexual orientation, occupation, and the name

of the conference in which the interview took place. These measures were used to ensure that participants could recall the important information related to the manipulations.

RESULTS

Manipulation Checks

Because the predictions depended on whether the target's behavior was perceived as counterstereotypical and whether the target himself was perceived as prototypical, it was important that participants read the information provided in the excerpts thoroughly. Thus, responses to the manipulation checks were assessed for correctness. Participants who could not recall the target's occupation and could not recall either the target's sexual orientation or the name of the conference in which the interview took place were excluded from the analyses (23 could not). The remaining 128 participants had a mean stereotype diagnosticity ratio for intelligent of 1.64 (*SD* = 2.01) and a mean stereotype diagnosticity ratio for promiscuous of 1.65 (*SD* = 1.46). The mean desirability for intelligent was 8.10 (*SD* = 1.00) and the mean desirability for promiscuous was 2.55 (*SD* = 1.77). Of these participants, 52 were classified as having relatively positive affect toward gay men (*M* = 78.54, *SD* = 13.24), 33 were classified as having relatively negative affect toward gay men (*M* = 29.45, *SD* = 13.11) and, 43 were classified as having relatively neutral affect toward gay men (*M* = 50.00, *SD* = 0.00).

Tests of Main Hypotheses

Difference scores were calculated for stereotype change and perceived variability with regard to both the overall group and the subcategory measures. In particular, the mean of the stereotype measure at Time 1 was subtracted from the mean of the stereotype measure at Time 2. Negative scores indicated that the stereotype was weaker following the presentation of the target information. For perceived variability, the absolute value of the difference between the lowest and the highest point on the continuum was calculated for participants separately at Time 1 and at Time 2. Perceived variability absolute differences at Time 1 were then subtracted from the perceived variability absolute differences at Time 2 to produce a change in perceived variability score. Greater change in variability scores indicated that the stereotype became more variable (i.e., less homogeneous) after the presentation of the target information.

To test the hypotheses, 3 (prejudice level: positive, negative, or neutral) X 2 (valence of the stereotype violated: positive or negative) X 2 (target prototypicality: prototypical or nonprototypical) ANOVAs were conducted on the group level perceived typicality scores, group level stereotype change scores, group change in variability scores, subcategory level stereotype change scores, and the subcategory change in variability scores, separately. Table 4 shows the expected outcomes in terms of categorization and recategorization of the target based on prototypicality, perceiver prejudice level, and valence of the stereotype violated. A main effect for prototypicality was expected for group-level judgments, such that when the target was prototypic, he would be perceived as a

more typical member of the overall group, stereotypes for the overall group would become weaker, and perceived variability of the overall group would be greater (no changes in the subcategory stereotype or perceived variability were expected). Contrary to the predictions, no significant main effects were found for perceived typicality, $F(1,127) = 2.00$, *ns*, group stereotype change, $F(1,127) = .21$, *ns*, or perceived variability of the overall group, $F(1,127) = .00$, *ns*. Consistent with predictions, no main effect was found for stereotype change, $F(1,127) = .63$, *ns,* or change in stereotype variability, $F(1,127) = .90$, *ns*, for the subcategory ratings.

A 3-way interaction among prejudice level, valence of the stereotype, and prototypicality was also predicted. In particular, it was expected that the combination of prejudice level and valence of the target's counterstereotypic behavior would influence recategorization only when the target was nonprototypic. Thus, when the target was nonprototypic, subtyping would be possible, but its occurrence would depend on the perceiver's prejudice level and the congruence of the valence of the target's counterstereotypic behavior with the perceiver's prejudice (i.e., when the perceiver had positive prejudice toward the target group and the target's counterstereotypic behavior was negative, and when the perceiver had negative prejudice toward the target group and the target's counterstereotypic behavior was positive), the target would be subtyped. This would be demonstrated by ratings of the target as relatively atypical of the overall group, no change in the stereotype for the overall group (i.e., the stereotype was maintained or possibly strengthened), and no change in

perceived variability with regard to the overall group. In addition, perceptions of the subcategory would become more stereotypic and perceived variability would be lower (i.e., the subcategory would be perceived as more homogeneous) than it was previously.

However, when the target is nonprototypic and the perceiver's prejudice level is consistent with the valence of the target's counterstereotypic behavior (i.e., when the perceiver has positive prejudice toward the target group and the target's counterstereotypic behavior is positive and when the perceiver has negative prejudice toward the target group and the target's counterstereotypic behavior is negative), the target will be subgrouped. This would be demonstrated by ratings of the target as moderately typical of the overall group, weakening of the stereotype for the overall group, and greater perceived variability with regard to the overall group. In addition, perceptions of the subcategory would become more stereotypic and perceived variability would be more homogeneous.

Finally, when the target is prototypic, one would expect grouping to occur. In other words, the target's counterstereotypic behaviors would be incorporated into group knowledge, leading to perceptions that the target was relatively typical of the overall group, and producing a reduction in the strength of the stereotype for the overall group, and greater perceived variability with regard to the overall group. However, unlike the prediction for subgrouping, judgments of qualities ascribed to the subgroups would remain unchanged.

As Table 5 reports, contrary to predictions, no 3-way interactions for perceived typicality of the target to the overall group, $F(2,126) = .61$, *ns*, change in stereotype of the overall group, $F(2,126) = .52$, *ns*, or change in perceived variability of the stereotype for the overall group, $F(2,126) = .45$, *ns*, were found. In addition, no 3-way interactions were found for change in the stereotype related to the subcategories, $F(2,126) = .51$, *ns*, or for change in perceived variability of the stereotype related to the subcategories, $F(2,126) = 1.82$, *ns*.[1]

There were, however, a number of unanticipated significant findings. In particular, there was a main effect of the valence of the target's counterstereotypic behavior for perceived typicality, $F(1,126) = 104.38$, $p < .001$. When the target's counterstereotypic behavior was positive in nature (i.e., nonpromiscuous), participants perceived him as relatively more typical of gay men in general ($M = 6.13$, $SD = 1.21$) than when the target's counterstereotypic behavior was negative (i.e., unintelligent) in nature ($M = 3.64$, $SD = 1.42$).

There was also a main effect for the valence of the target's counterstereotypic behavior for group stereotype change, $F(1,126) = 11.41$, $p < .01$, which was qualified by a 2-way interaction with target prototypicality, $F(1,126) = 4.83$, $p < .05$. As shown in Table 6, the relation between the target's prototypicality and group stereotype change varied as a function of the valence of the target's counterstereotypic behavior. In particular, the overall finding of stronger stereotypes following negative counterstereotypic behaviors and weaker stereotypes following positive counterstereotypic behaviors was stronger when the target was prototypic (i.e., an interior designer) than when he was

nonprototypic (i.e., a police officer). Although this finding was as expected for the positive counterstereotypic condition (i.e., weaker promiscuity stereotypes for gay men in general resulting from encountering a prototypic nonpromiscuous gay man), the reversal for the negative counterstereotypic behavior condition was not consistent with expectations.

In addition, there was a significant 2-way interaction between perceiver prejudice level and target prototypicality for group stereotype change, $F(2,126) = 4.38$, $p < .05$. Table 7 shows that perceivers with positive prejudice toward gay men showed evidence of the expected typicality effect. In particular, the group stereotypes for those with positive prejudice became weaker after encountering prototypical counterstereotypic targets, but showed relatively little change in stereotypes after encountering nonprototypical counterstereotypic targets, $t(50) = -12.02$, $p < .05$. Those with negative and neutral prejudice toward gay men, however, showed the opposite pattern (i.e., little or no change in stereotypes after encountering prototypical counterstereotypic targets and weaker stereotypes after encountering nonprototypical counterstereotypic targets).

For subcategory stereotype change, there was a main effect for the valence of the target's counterstereotypic behavior, $F(1,126) = 4.81$, $p < .05$. The stereotype of the subcategory became weaker when the target's counterstereotypic behavior was negative ($M = -3.34$, $SD = 18.49$) than when the target's counterstereotypic behavior was positive ($M = 4.52$, $SD = 18.28$). There was also a main effect for perceiver's prejudice level on subcategory stereotype

change, $F(2,126) = 5.37$, $p < .01$. The stereotype of the subcategory became stronger for perceivers with negative attitudes toward gay men in general ($M = 8.94$, $SD = 19.84$) than for perceivers with either positive attitudes ($M = -1.48$, $SD = 18.15$) or neutral attitudes ($M = -2.40$, $SD = 17.08$) toward gay men in general.

DISCUSSION

If results were as predicted, they would have suggested that the way in which an atypical counterstereotypic group member target was recategorized was influenced by the congruency between the perceiver's attitudes and the valence of the target's counterstereotypic behavior. When the perceiver's attitudes and the valence of the target's behavior were incongruent with one another, the target would be excluded from the perceiver's overall group representation (i.e., subtyped) if any additional information suggested that the target could be considered as atypical. However, when the perceiver's attitudes and the valence of the target's counterstereotypic behavior were congruent, the target would be included within a subset of the perceiver's overall group representation (i.e., subgrouped), even in cases where additional information might suggest the target was potentially atypical. However, no evidence consistent with the predicted results was found.

Yet, there were some unexpected findings with regard to both group stereotype change and subcategory stereotype change. For group stereotype change, the valence of the target's counterstereotypic behavior influenced the perception of typicality of that target to the overall group. In particular, positive

counterstereotypic targets (i.e., those who were nonpromiscuous) were perceived as more typical of gay men in general than were negative counterstereotypic targets (i.e., those who were unintelligent). Prototypicality of the target was the only factor predicted to influence perceived typicality. The valence of the target's counterstereotypic behavior was expected to work in combination with the target's prejudice to affect the way in which the target was categorized. Thus, the finding that the valence of the target's counterstereotypic behavior (and not the prototypicality of the target itself) had an effect on participants' perception of typicality is surprising. One explanation for this finding may be based on the specific stereotypes used. For instance, promiscuity could be perceived as a more malleable trait than intelligence. Thus, it may have been easier for participants to perceive a nonpromiscuous gay man, as opposed to an unintelligent gay man, as more typical of gay men in general because promiscuity could be viewed as conduct that one chooses, whereas intelligence may be viewed as a trait over which one does not have a choice. In addition, closer examination of the promiscuous excerpt used in the current study reveals that it may have unwittingly suggested to participants that the target actually was promiscuous at one time, but changed his behavior when he met his current partner.

Another finding with regard to group stereotype change was based on the valence of the target's counterstereotypic behavior in combination with the target's prototypicality. In particular, weaker promiscuity stereotypes for gay men in general were found after encountering a prototypic nonpromiscuous gay man,

which is what would be expected if such a target was grouped. In addition, relatively little change in intelligent stereotypes for gay men in general as a result of encountering a nonprototypic unintelligent gay man was as expected if such a target was subtyped. However, weaker promiscuity stereotypes for gay men in general as a result of encountering a nonprototypic nonpromiscuous gay man and stronger intelligent stereotypes for gay men in general as a result of encountering a prototypic unintelligent gay man were not consistent with what would be expected if these targets were subtyped and grouped, respectively. In fact, it was predicted that the nonprototypic nonpromiscuous gay man would be subtyped and thus, he should have no effect on the overall group stereotype. It was also predicted that the prototypic unintelligent gay man would be grouped and thus, the stereotype of gay men as intelligent would have become weaker rather than stronger. The latter of these two findings seems to be consistent with a boomerang effect, which suggests that stereotypes may become stronger after encountering very counterstereotypic targets (Kunda & Oleson, 1997). As previously discussed, participants perceived the unintelligent gay target as relatively atypical of gay men in general, which may have led them to contrast him from the group as a whole, leading them to view the overall group as even more stereotypic than they did prior to encountering such a counterstereotypic target. The reason for weaker stereotypes following a nonprototypic nonpromiscuous gay man is less clear. One possibility is that because participants tended to perceive the nonpromiscuous gay man as more typical of

gay men in general, they incorporated him into their overall group representation, thus weakening their stereotype of gay men as promiscuous.

There was also some evidence to support the basic prototypicality effect found in previous subtyping research. In particular, the interaction between perceiver prejudice level and target prototypicality for group stereotype change suggests that after encountering a prototypical counterstereotypic target, those with positive prejudice toward gay men revealed weaker group stereotypes, consistent with what would be expected if the target was categorized as a group member. And similarly, after encountering a nonprototypical counterstereotypic target, those with positive prejudice toward gay men revealed relatively little change in their group stereotypes, consistent with what would be expected if the target was subtyped. Those with negative prejudice toward gay men and those with neutral prejudice toward gay men, however, showed the opposite pattern. In particular, after encountering a prototypical counterstereotypic target, those with negative or neutral prejudice revealed relatively little change in their group stereotypes, consistent with what would be expected if the target was subtyped. And, after encountering a nonprototypical counterstereotypic target, those with negative or neutral prejudice reported relatively weaker group stereotypes, a finding that would be expected if the target was grouped. Thus, only the positive prejudice perceivers demonstrated the basic prototypicality effect. In many of the studies exploring subtyping (e.g., Brewer et al., 1981; Johnston & Hewstone, 1992), the targets were members of groups for which participants should have relatively positive evaluations (e.g., librarians, physics majors, grandmothers).

Thus, perhaps the current results for neutral and negative prejudice participants are not entirely at odds with the literature because the majority of studies in the literature have used relatively likable target groups for which most participants would have relatively positive attitudes. Perhaps positive attitudes toward targets induce relatively more positive affective states for the perceiver, which lead them to process target information with less effort (Schwarz & Clore, 1996) and thus make subtyping more likely (especially if subtyping really results from ignoring atypical targets rather than actively inhibiting social categories as suggested by Study 1).

There were also two findings with regard to subcategory stereotype change. First, it was shown that those with negative attitudes toward gay men in general revealed stronger subcategory stereotypes than did those with either positive or neutral attitudes toward gay men. It was expected that subcategory stereotypes would change only as a result of the target being subcategorized and that this change would be in the form of weaker subcategory stereotypes rather than stronger subcategory stereotypes. Stronger subcategory stereotypes suggest that negative prejudice participants may have incorporated the unintelligent or nonpromiscuous target into their overall group representation, and then contrasted that group with the subcategories of gay male interior designers and gay male police officers, somewhat similar to the boomerang effect described in relation to the finding that stronger group stereotypes were revealed after encountering a prototypic unintelligent gay man.

A second finding with subcategory stereotype change was based on the valence of the target's counterstereotypic behavior. Subcategory stereotypes became weaker after encountering a target who behaved in a negatively counterstereotypic (i.e., unintelligent) manner than after encountering a target who behaved in a positively counterstereotypic (i.e., nonpromiscuous) manner. Weaker subcategory stereotypes are consistent with a subcategorization process in which the subcategory is perceived as even more counterstereotypic than before. Thus, it seems that unintelligent targets were more likely to be subcategorized than were nonpromiscuous targets. This is consistent with the previous finding that unintelligent targets were perceived as less typical of gay men in general than were nonpromiscuous targets. Together these findings suggest that unintelligent targets were perceived as relatively atypical of gay men in general and thus, were subtyped, leading the subcategory to be viewed as extremely counterstereotypic.

GENERAL DISCUSSION

The two studies were designed to address some important issues with regard to the antecedents and consequences of categorizing target group members who violate a stereotype related to the overall group. In particular, the first study examined the consequences of encountering typical and atypical group members with regard to category activation and inhibition. If the predicted results would have been borne out, a process by which counterstereotypic information is blocked from incorporation into the stereotype for the overall group when a target is subtyped would have been revealed. Heretofore, the process underlying subtyping has not been well understood, and unfortunately, Study 1 did not shed much light on it either.

The second study examined possible antecedents that might lead one to subtype or subgroup an atypical target and to observe its implications on group-relevant judgments. If the results would have been as predicted, they would have supported previous findings with regard to the influence of perceived typicality on the process of subtyping as well as the motivated subtyping hypothesis, which suggests that the social categorization can serve to reaffirm one's strongly held prejudices. In addition, the findings would have contributed to previous work (the motivated subtyping hypothesis in particular) by highlighting another subcategorization process perceivers may use when encountering an atypical group member, namely subgrouping. Unfortunately, Study 2 neither replicated previous findings nor extended our understanding of subcategorization processes very much.

Still, there were some interesting findings with regard to both studies that deserve further discussion. Although the first study was not successful in demonstrating activation and inhibition of categories and subcategories following exposure to group targets, the design of the study was novel. As discussed, the study used images to both prime and measure activation and inhibition of group categories and subcategories. Previous studies examining activation and inhibition of group categories and subcategories used stereotypic words related to the group categories and subcategories instead. Although the study's predictions were not supported, it does highlight a potential alternative method for priming and measuring activation and inhibition of group categories and subcategories. As noted previously, it may be the case that such methods must be incorporated with additional goals to fully activate the social category (e.g., Gilbert & Hixon, 1991; Bargh & Chartrand, 1999). Clearly, future research should explore what sort of processing objectives are necessary to maximize the likelihood of observing social category activation and inhibition.

The findings of Study 1 seem to suggest that the White typical group category tended to be more active overall than did the Black typical group category. This was especially apparent when a Black typical group member image preceded it as the prime. As mentioned previously, it is possible that White primes in general may not evoke a social category for White participants in the same way Black typical group primes would. In particular, Black typical group primes should be especially likely to evoke race, which would in turn activate the Black category as well as the White category. This heightened

activation would then lead participants to respond especially fast to White typical targets that followed Black typical group primes.

Study 2 attempted to identify conditions under which perceivers would group, subtype, or subgroup counterstereotypic targets, and it sought to demonstrate how such categorizations would affect judgments of the overall group and of subcategories related to the overall group in particular. Group stereotype change effects provided some evidence that perceivers did group or subtype targets under certain conditions. However, because there were no effects for perceived group variability, there is no evidence to suggest that perceivers subgrouped atypical targets. Although the prototypicality factor did not lead participants in general to categorize typical targets as group members and to categorize atypical targets as subcategory members, it did influence those with positive attitudes toward gay men to do so. In particular, positive prejudice participants demonstrated the basic typicality effect found in previous research, which has demonstrated that when a target was typical of the overall group, that target is more likely to be incorporated into the overall group representation, whereas when a target was atypical of the overall group, the target is more likely to be excluded (i.e., subtyped) from the overall group representation (Johnson & Hewstone, 1992). Positive prejudice participants demonstrated weaker group stereotypes after encountering a prototypical counterstereotypic target suggesting they grouped these targets. After encountering a nonprototypical counterstereotypic target, however, positive prejudice participants demonstrated very little change in their group stereotypes, which is consistent with subtyping

these targets. Thus, the positive prejudice participants showed the anticipated prototypicality effect.

Interestingly, negative and neutral prejudice participants showed the opposite effect, suggesting that they grouped the nonprototypical counterstereotypic target and subtyped the prototypical counterstereotypic target. As noted earlier, most studies in the subtyping literature have presented target groups that are relatively positive in nature (e.g., librarians, grandmothers). Perhaps "typicality effects" observed in these studies (e.g., Brewer et al., 1981; Johnston & Hewstone, 1992) occur for perceivers processing information about "likable" target groups. It is possible that processing information about positive targets reduces the cognitive expenditures that perceivers devote to targets, which could result in their ignoring atypical counterstereotypical targets rather than actively subtyping them (Schwarz & Clore, 1996). This explanation is consistent with the current findings for positive prejudice participants, and suggests that subtyping might occur because atypical targets are ignored rather than "refenced" through active inhibition (which is consistent with the findings of Study 1).

It is also interesting to note that some of the findings also support a boomerang effect. Although it was predicted that group stereotypes or subcategory stereotypes would become weaker following either grouping or subcategorization, there were some instances in which group stereotypes and subcategory stereotypes actually became stronger. This finding is consistent with a boomerang effect, which occurs when a counterstereotypic target leads to

contrast effects with the overall group or subcategory to which the target was not included (Kunda & Oleson, 1997). There are three instances in which stereotypes became stronger. When a prototypical negative counterstereotypic (i.e., unintelligent) target was encountered, group stereotypes became stronger, suggesting that the target was subtyped and then that subcategory was used as a contrast for the overall group. This would lead participants to perceive the overall group as even more stereotypic than before. Again, because participants perceived the unintelligent gay target as relatively atypical of gay men in general, it may have been relatively easy for them to subtype him and thus use the subcategory within which he was placed (i.e., gay male interior designers) as a contrast to the overall group, leading to the boomerang effect. Interestingly, however, this subtyping did not lead to weaker subcategory stereotypes, as would be expected.

The other two instances of stronger stereotypes following encounters with target group members were found for subcategory stereotypes. In particular, after encountering a positive counterstereotypic target, subcategory stereotypes became stronger, suggesting that such targets were grouped and then the overall group was used as a contrast for the subcategory. Also, negative prejudice participants demonstrated stronger subcategory stereotypes overall, suggesting they tended to group targets, regardless of their prototypicality or the valence of their counterstereotypic behavior, and then used the group as a contrast for the subcategory, leading them to perceive the subcategories as more stereotypic than before.

These boomerang effects, although not the focus of the primary predictions in the current study, are still important. In many cases, boomerang effects that result from contrast effects suggest to perceivers that the stereotypes should be even more strongly endorsed upon encountering targets who violate them. That is, when a counterstereotypical target is used as a contrast standard, it can become "the exception that proves the rule," allowing participants to maintain strong (or stronger) stereotypes in the face of disconfirming evidence. Although it seems evident that encountering counterstereotypic targets should weaken stereotypes, the current results (and those reported by others, such as Kunda & Oleson, 1997) indicate that this is not always case the case. Although these processes are not fully understood, it is clear that additional research is needed to understand when and why counterstereotypical cases lead to stronger group stereotypes.

One limitation of Experiment 2 is that a number of participants had to be dropped from the analyses because they either did not initially read the information presented thoroughly or did not retain the information they did process, which ultimately reduced the ability to detect a moderate effect for the predicted 3-way interaction. It was emphasized to participants in the instructions that they would be asked questions about the excerpt later in the study, so they should have been induced to thoroughly read and retain the relatively small amount of information given in the excerpt. However, it is clear that not all participants took the task as seriously as hoped. It should be noted, however, that power analyses indicated that the current sample size in Study 2 was

reasonable for observing significant effects, thus it seems that low power was not a critical problem in Study 2. Moreover, the sample size in Study 1 was more than sufficient to observe the intended results. Thus, sample size is probably not a major culprit in the lack of success observed in the current work.

As mentioned earlier, it is possible that evaluative goals are required to observe full social category activation and inhibition effects (e.g. Gilbert & Hixon, 1991). It is interesting to note that no systematic exploration of how processing goals affect priming has been conducted in the social cognitive literature. Although some have speculated about the importance of instruction set in assimilation and priming effects (e.g., Bargh & Chartrand, 1999; Bassili & Smith, 1986), no programmatic work has tackled these issues directly. Clearly, additional work is needed to explore these issues more fully in order to understand when social category activation and inhibition should be observed.

Stereotypes of social groups have been shown to be quite resilient to change, even when information that runs counter to those stereotypes is encountered. Thus, future research should continue to focus on factors that might influence people to change their negative group stereotypes, and ultimately, negative group prejudice. In addition to considering how maintaining important self-relevant beliefs affects social categorization (e.g., Kunda & Oleson, 1997; Sinclair & Kunda, 1999), research should consider how affect influences social categorization processes and stereotyping as well (e.g., Bodenhausen, Kramer, & Suesser, 1994; Schwarz & Clore, 1996). Affect may not only be important as a motivator, but affect can guide the mechanisms by

which social information is processed as well. Although the current work may not represent a major advance in our understanding of these important issues, it is hoped that the issues identified in the current work will be addressed by future researchers to better understand how stereotypes are maintained and modified.

FOOTNOTES

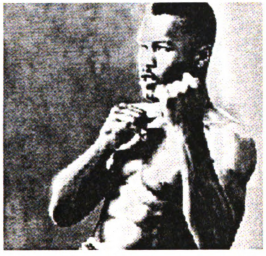
[1]In addition to examining the hypotheses with an ANOVA, a 3 (prejudice level: positive, neutral, or negative) X 2 (valence of the stereotype violated: positive or negative) X 2 (target prototypicality: prototypical or nonprototypical) multivariate analysis of variance (MANOVA) was conducted on the group level judgments (i.e., typicality of target, group stereotype change, and group stereotype variability change) and on the subcategory level judgments (i.e., subcategory stereotype change and subcategory variability change), separately. Neither of these 3-way interactions obtained. Multiple regression analyses with prejudice level as a continuous variable, and valence of stereotype violated and target prototypicality as dummy coded variables and all 2-way interactions and the 3-way interaction were also conducted on each of the dependent measures. None of the predicted 3-way interaction terms was significant: *beta*=.25, *t*(126)=1.40, *ns* for target typicality, *beta*=.01, *t*(126)=.06, *ns* for group stereotype change, *beta*=-.40, *t*(126)=-1.63, *ns* for group stereotype variability change, *beta*=.12, *t*(126)=.51, *ns* for subcategory stereotype change, and *beta*=-.21, *t*(126)=-.89, *ns*. Thus, these additional analyses did not provide any evidence in support of the primary hypotheses.

APPENDICES

APPENDIX A

Images used in Experiment 1

Black Athlete Images



M=6.65 (*SD*=1.57)

M=6.85 (*SD*=1.66)

M=7.25 (*SD*=1.62)

M=6.70 (*SD*=1.59)

Black Musician Images

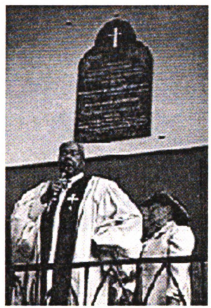
M=6.30 (*SD*=2.03)

M=7.25 (*SD*=1.77)

M=7.25 (*SD*=1.33)

M=6.90 (*SD*=1.74)

Black Preacher/Religious Images



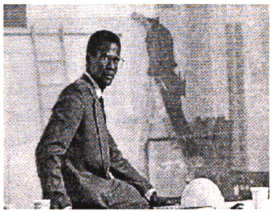
M=6.50 (*SD*=2.01)

M=6.30 (*SD*=2.03)

M=6.45 (*SD*=1.57)

M=6.15 (*SD*=2.03)

Black Businessmen Images



M=4.95 (*SD*=1.64)

M=5.60 (*SD*=2.06)

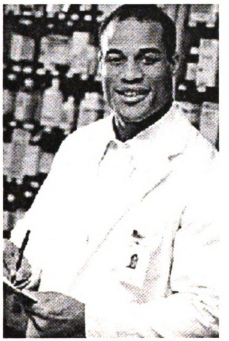
M=5.65 (*SD*=1.90)

M=5.35 (*SD*=1.42)

Black Doctor/Medical Images

M=4.95 (*SD*=1.96)

M=4.65 (*SD*=1.84)

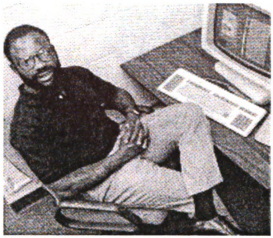


M=4.80 (*SD*=2.17)

M=5.05 (*SD*=1.90)

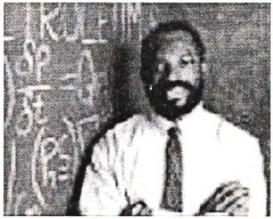
Black Educated Images

M=6.05 (*SD*=1.39)



M=5.90 (*SD*=1.71)

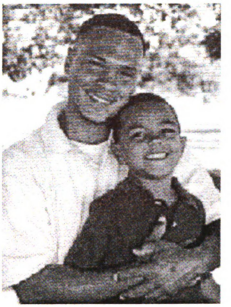
M=4.90 (*SD*=1.94)



M=5.45 (*SD*=2.01)

Black Typical Images

M=6.90 (*SD*=1.71)



M=6.65 (*SD*=1.63)

M=7.50 (*SD*=1.40)

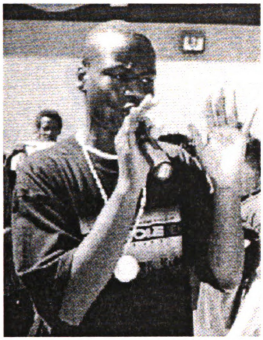
M=7.55 (*SD*=1.23)

M=7.75 (*SD*=1.37)

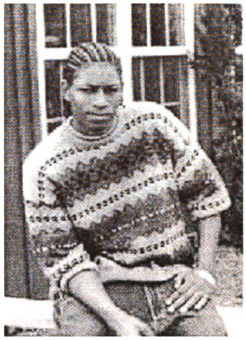
M=7.20 (*SD*=1.47)

M=7.45 (*SD*=1.39)

M=7.05 (*SD*=1.28)

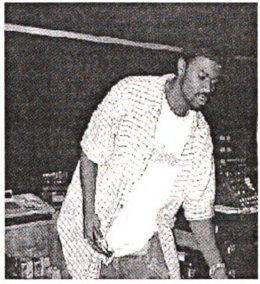


M=7.05 (*SD*=1.54)



M=7.00 (*SD*=1.34)

M=7.45 (*SD*=1.43)

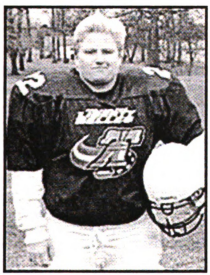


M=6.80 (*SD*=2.09)

White Athlete Images

M=6.67 (*SD*=1.87)

M=6.43 (*SD*=1.68)



M=6.52 (*SD*=1.67)

M=6.50 (*SD*=1.56)

White Musician Images

M=5.35 (*SD*=1.73)

M=5.63 (*SD*=1.81)

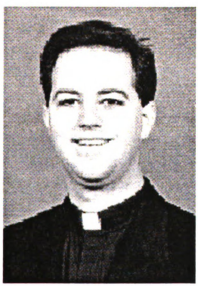
M=5.80 (*SD*=1.77)

M=5.30 (*SD*=1.59)

White Preacher/Religious Images

M=5.33 (*SD*=2.03)

M=4.13 (*SD*=2.09)



M=5.63 (*SD*=2.11)

M=5.91 (*SD*=2.13)

White Businessmen Images

M=7.50 (*SD*=1.33)

M=7.63 (*SD*=1.29)

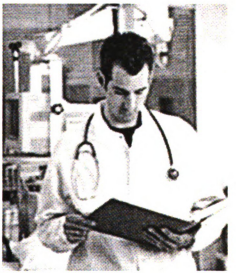
M=7.41 (*SD*=1.63)

M=7.65 (*SD*=1.32)

White Doctor/Medical Images

M=6.67 (*SD*=1.81)

M=7.33 (*SD*=1.35)



M=7.39 (*SD*=1.37)

M=7.28 (*SD*=1.49)

White Educated Images

M=7.65 (*SD*=1.32)

M=6.89 (*SD*=1.39)

M=7.80 (*SD*=1.22)

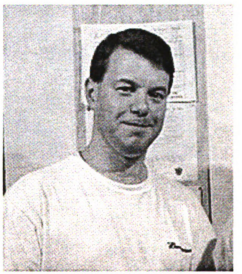
M=7.72 (*SD*=1.19)

White Typical Images

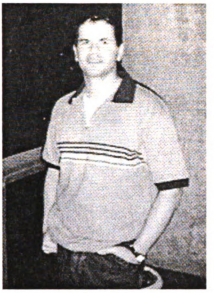
M=8.09 (*SD*=1.07)

M=8.04 (*SD*=1.07)

M=7.67 (*SD*=1.28)



M=7.67 (*SD*=1.37)



M=7.65 (*SD*=1.39)

M=7.65 (*SD*=1.29)

M=7.57 (*SD*=1.17)

M=7.57 (*SD*=1.36)

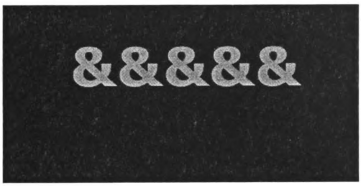
M=7.54 (*SD*=1.35)

M=7.50 (*SD*=1.38)

M=7.13 (*SD*=1.26)

M=7.59 (*SD*=1.38)

Neutral Prime Image



APPENDIX B

Stimuli Used in Experiment 2

Negative Stereotype (Promiscuous) Violation by Prototypical Target Condition

---

Excerpt of Interview from "Gay Lifestyles in the New Millennium" Conference

Date: January 28, 2002

Name: Phil M[redacted]
Gender: Male
Age: 32
Sexual orientation: Homosexual
Occupation: Interior Designer

Interviewer: Can you tell me a bit about the intimate relationships in your life?
Subject: My partner and I have been together for over two years now. I pretty much consider myself married at this point.

Interviewer: When you're not attending conferences such as this one, what do you do with your spare time?
Subject: I enjoy watching movies... in fact, my partner and I are both movie buffs, so we spend a lot of time going to the theatre and having "Blockbuster" movie nights.

Interviewer: Are you enjoying the conference?
Subject: Yes, I am. It's been interesting to see what other people are up to. We've run into some old friends... it's been nice catching up with them.

Interviewer: Have you had a chance to go to any clubs while you've been in town for the conference?
Subject: That's not really something I have an interest in anymore. I've really just been hanging out with my partner, enjoying one another's company.

Negative Stereotype (Promiscuous) Violation by Non-prototypical Target Condition

---

Excerpt of Interview from "Gay Lifestyles in the New Millennium" Conference

Date: January 28, 2002

Name: Frank G[redacted]
Gender: Male
Age: 32
Sexual orientation: Homosexual
Occupation: Police Officer

Interviewer: Can you tell me a bit about the intimate relationships in your life?
Subject: My partner and I have been together for over two years now. I pretty much consider myself married at this point.

Interviewer: When you're not attending conferences such as this one, what do you do with your spare time?
Subject: I enjoy watching movies... in fact, my partner and I are both movie buffs, so we spend a lot of time going to the theatre and having "Blockbuster" movie nights.

Interviewer: Are you enjoying the conference?
Subject: Yes, I am. It's been interesting to see what other people are up to. We've run into some old friends... it's been nice catching up with them.

Interviewer: Have you had a chance to go to any clubs while you've been in town for the conference?
Subject: That's not really something I have an interest in anymore. I've really just been hanging out with my partner, enjoying one another's company.

Positive Stereotype (Intelligent) Violation by Prototypical Target Condition

---

Excerpt of Interview from "Gay Lifestyles in the New Millennium" Conference

Date: January 28, 2002

Name: Phil M[redacted]
Gender: Male
Age: 32
Sexual orientation: Homosexual
Occupation: Interior Designer

Interviewer: Can you tell me a bit about your educational background?
Subject: Well, I dropped out of high school in the 10th grade. I ended up getting my GED a few years back, because I wanted to take some college classes. I took a couple of math classes at night at a community college, but didn't do very good, so I decided not to waste my time.

Interviewer: When you're not attending conferences such as this one, what do you do with your spare time?
Subject: I watch a lot of TV. Reality shows are my favorite. When there is nothing on TV, I try to read to keep up to date on current events, but I get kind of bored with that real fast.

Interviewer: Are you enjoying the conference?
Subject: Yeah. It's been interesting to see what other people are up to. We ran into some old friends... it's been nice catching up with them.

Interviewer: Have you had a chance to go to any clubs while you've been in town for the conference?
Subject: Oh, every night so far. It's the best thing about coming to these things. But, it kind of makes it hard to get up in the morning, with a hangover and all.

Positive Stereotype (Intelligent) Violation by Non-prototypical Target Condition

---

Excerpt of Interview from "Gay Lifestyles in the New Millennium" Conference

Date: January 28, 2002

Name: Frank G[redacted]
Gender: Male
Age: 32
Sexual orientation: Homosexual
Occupation: Police Officer

Interviewer: Can you tell me a bit about your educational background?
Subject: Well, I dropped out of high school in the 10th grade. I ended up getting my GED a few years back, because I wanted to take some college classes. I took a couple of math classes at night at a community college, but didn't do very good, so I decided not to waste my time.

Interviewer: When you're not attending conferences such as this one, what do you do with your spare time?
Subject: I watch a lot of TV. Reality shows are my favorite. When there is nothing on TV, I try to read to keep up to date on current events, but I get kind of bored with that real fast.

Interviewer: Are you enjoying the conference?
Subject: Yeah. It's been interesting to see what other people are up to. We ran into some old friends... it's been nice catching up with them.

Interviewer: Have you had a chance to go to any clubs while you've been in town for the conference?
Subject: Oh, every night so far. It's the best thing about coming to these things. But, it kind of makes it hard to get up in the morning, with a hangover and all.

APPENDIX C

Table 1. Activation and Inhibition Expectancies for Experiment 1

	Target	
Prime	Black	White
Black typical	Strong Activation	Strong Inhibition
Black subgroup	Moderate Activation	Strong Inhibition
Black subtype	Moderate Inhibition	Weak Activation
White typical	Strong Inhibition	Strong Activation

APPENDIX D

Table 2. Mean Facilitation Scores and Standard Deviations for Experiment 1 (Person Versus Object Judgments) and Experiment 2 (Black Versus White Judgments)

Person versus Object Judgments

	Target	
Prime	Black	White
Black typical	1.13 (*SD*=1.32)	1.30 (*SD*=1.39)
Black subgroup	1.15 (*SD*=1.24)	1.18 (*SD*=1.26)
Black subtype	1.15 (*SD*=1.30)	1.20 (*SD*=1.26)
White typical	1.13 (*SD*=1.24)	1.18 (*SD*=1.30)

Black versus White Judgments

	Target	
Prime	Black	White
Black typical	1.07 (*SD*=1.18)	1.07 (*SD*=1.24)
Black subgroup	1.07 (*SD*=1.20)	1.05 (*SD*=1.15)
Black subtype	1.05 (*SD*=1.15)	1.03 (*SD*=1.15)
White typical	1.20 (*SD*=1.15)	1.05 (*SD*=1.18)

APPENDIX E

Table 3. Group Level and Subcategory Level Predictions for Experiment 2

	Categorization		
Dependent Measures	Grouping	Subgrouping	Subtyping
Group Perceptions			
Perceived typicality	Greatest	Moderate	Lowest
Stereotype change	Least stereotypic	Less stereotypic	No change
Perceived variability	Most heterogeneity	Moderate heterogeneity	No change
Subcategory Perceptions			
Stereotype change	No change	More counterstereotypic	More counterstereotypic
Perceived variability	No change	More homogeneous	More homogeneous

APPENDIX F

Table 4. Categorization and Recategorization Expectations for Experiment 2

Valence of Stereotype Violated	Perceiver Prejudice		
	Positive	Negative	Neutral
Prototypical Targets			
Positive	Grouping	Grouping	Grouping
Negative	Grouping	Grouping	Grouping
Nonprototyical Targets			
Positive	Subtyping	Subgrouping	Subtyping
Negative	Subgrouping	Subtyping	Subtyping

APPENDIX G

Table 5. Actual Group Level and Subcategory Level Means and Standard Deviations for Experiment 2

	Perceiver Prejudice		
Target Prototypicality	Positive	Negative	Neutral
Prototypical Targets			
Group Perceptions:			
Perceived typicality	5.46 (1.89)	5.41 (1.77)	4.88 (1.96)
Stereotype change	-9.17 (19.36)	1.12 (19.95)	2.60 (15.64)
Perceived variability	-6.79 (56.14)	-4.18 (18.50)	15.24 (27.35)
Subcategory Perceptions:			
Stereotype change	-2.96 (17.92)	13.71 (17.50)	-.88 (19.37)
Perceived variability	2.13 (29.97)	26.41 (39.15)	17.04 (42.72)
Nonprototypical Targets			
Group Perceptions:			
Perceived typicality	4.61 (1.73)	4.88 (1.63)	4.78 (1.80)
Stereotype change	2.86 (12.50)	-3.19 (11.55)	-5.67 (16.94)
Perceived variability	-2.82 (24.31)	1.44 (27.53)	7.39 (19.33)
Subcategory Perceptions:			
Stereotype change	-.21 (18.57)	3.88 (21.44)	-4.50 (13.50)
Perceived variability	10.68 (26.65)	12.63 (23.29)	4.72 (25.50)

APPENDIX H

Table 6. Two-Way Interaction between Valence of the Target's Counterstereotypic Behavior and Target Prototypicality for Group Stereotype Change

	Valence of Target's Counterstereotypic Behavior	
Target Prototypicality	Positive (Nonpromiscuous)	Negative (Unintelligent)
Prototypic (Interior designer)	-8.84 (SD=17.83)	7.14 (SD=16.00)
Nonprototypic (Police Officer)	-3.35 (SD=13.50)	1.00 (SD=14.40)

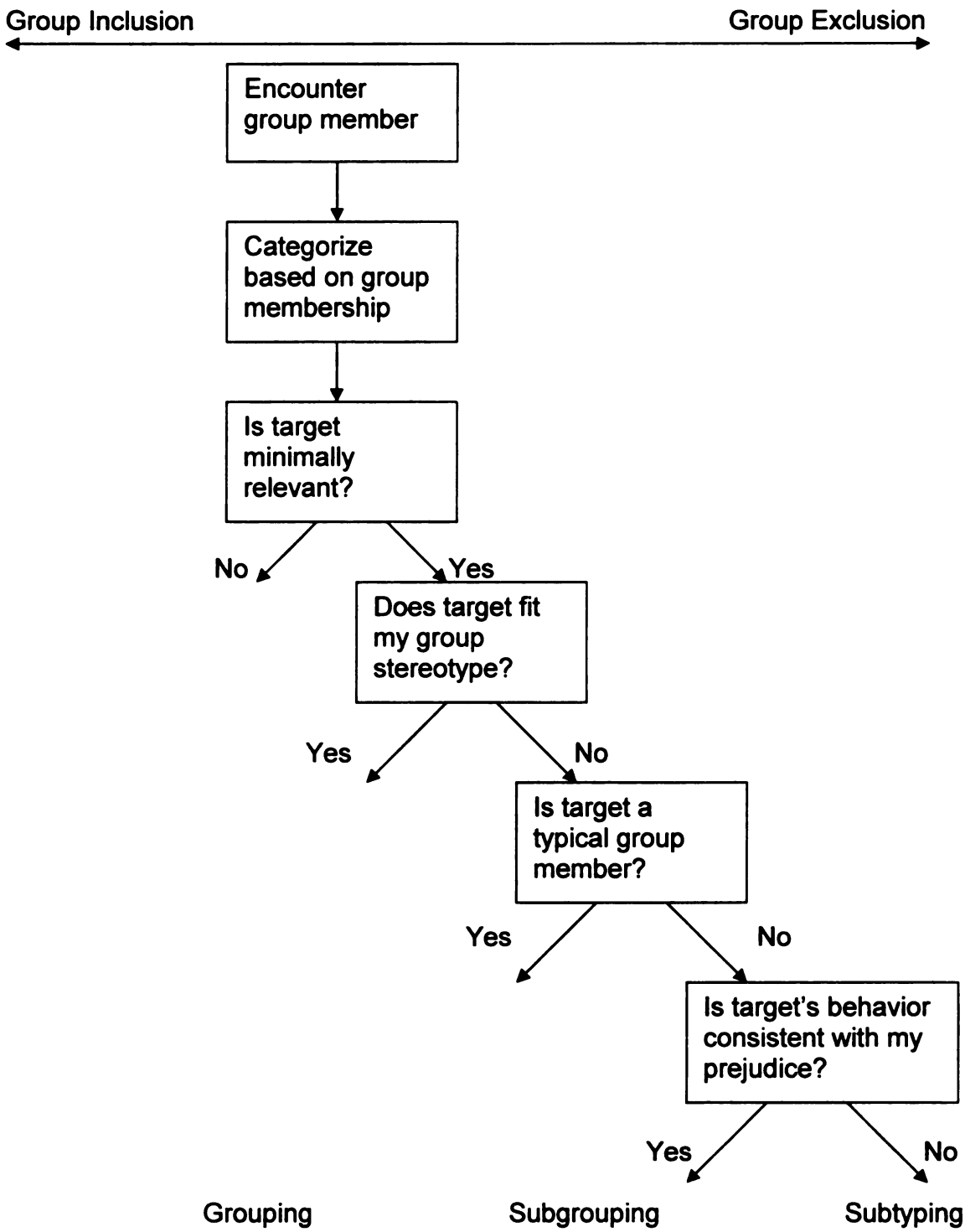
APPENDIX I

Table 7. Two-Way Interaction between Perceiver's Prejudice Level and Target's Prototypicality for Group Stereotype Change

	Perceiver's Prejudice Level		
Target Prototypicality	Positive	Neutral	Negative
Prototypic (Interior designer)	-9.17 (SD=19.36)	2.60 (SD=15.64)	1.12 (SD=19.95)
Nonprototypic (Police Officer)	2.86 (SD=12.50)	-5.67 (SD=16.94)	-3.19 (SD=11.55)

APPENDIX J

Figure 1. Process of Categorizing a Counterstereotypic Group Member



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