

On the predictive validity of implicit attitude measures: The moderating effect of perceived group variability[☆]

Alan J. Lambert^{a,*}, B. Keith Payne^b, Suzanne Ramsey^c, Lara M. Shaffer^c

^a Department of Psychology, Washington University, 1 Brookings Drive, St. Louis, MO 63130, USA

^b Ohio State University, USA

^c Washington University, USA

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Abstract

Social psychologists have recently shown great interest in implicit attitudes, but questions remain as to the boundary conditions under which such attitudes can predict subsequent judgments and behavior, including reactions toward single category members. In two experiments, we demonstrate the predictive validity of two priming-based measures of implicit attitudes, using a lexical decision task developed by Wittenbrink, Judd, and Park (1997) as well as a perceptual identification paradigm pioneered by Payne (2001). Moreover, we show that these effects were moderated by perceived group variability, such that implicit attitudes offered much stronger predictive leverage if the members of the target category (Blacks) were perceived to be homogenous than if they were not. The implications of the present research for the “moderator approach” previously employed in the explicit attitude literature are discussed.

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Research and theory in the psychological literature has recently shown a dramatic rise in the popularity of implicit measures of both judgment and memory (Bana-ji, 2001; Tulving & Craik, 2000). Social psychologists have, not surprisingly, shown especially strong interest in applying such techniques toward the measurement of people’s attitudes toward stereotyped groups. In particular, given the sensitive nature of such attitudes, and the reluctance for many people to openly express them (Gaertner & Dovidio, 1986), it stands to reason that researchers would be interested in measures that, at least

in theory, are less likely to be shaped by people’s efforts to consciously control their responses. Despite this growing interest, a number of important questions still surround implicit attitude measures. Chief among these is the extent to which these measures can, or cannot, offer strong leverage in predicting subsequent judgment and behavior. Although there is now an active literature devoted to this issue, a number of issues in this area remain unresolved (Fazio & Olson, 2003). The overriding goal of this article was to gain more insight into these considerations.

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* Corresponding author.

E-mail address: alambtr@artsci.wustl.edu (A.J. Lambert).

Emerging questions about implicit attitudes

Two of the earliest issues to arise in the social psychological literature concerned whether social scientists can accurately measure attitudes (Thurstone, 1928) and whether attitudes actually predict subsequent behavior (LaPiere, 1934). Although most social psychologists readily accepted Thurstone’s contention that attitudes can

indeed be measured, there was less agreement as to their predictive validity (e.g., Schuman & Johnson, 1976; Wicker, 1969). Ultimately, however, researchers realized that the question “do attitudes predict anything?” was too broad. Rather, it was more useful to consider the boundary conditions under which attitudes provide strong vs. weak leverage in prediction (Zanna & Fazio, 1982). Zanna and Fazio suggested that research in this area could be heuristically delineated into three stages, each one raising a different question, including (a) the “What” question (*what kind of attitudes predict what kinds of reactions?*), (b) the “When” question (*under which conditions could one expect such relations to be strong or weak*), as well as (c) the “Why” question (*what are the processes by which attitudes drive judgment and behavior?*).

It should be noted that the focus of the present research is on people’s impressions of a single group member, rather than overt behavior per se. Nevertheless, the issues raised by Zanna and Fazio (1982) are certainly relevant to present concerns. For one thing, there has long been debate as to the correspondence between global attitudes toward superordinate categories (e.g. *Blacks*) and people’s reactions toward a single category member (cf. Lord, Lepper, & Mackie, 1984). One pessimistic view is that group attitudes offer poor predictive validity in this regard, on the grounds that generalized, abstract attitudes should be only weakly correlated with more specific reactions (Fiske & Ajzen, 1975). This debate reached some degree of resolution in the 1980s, as researchers discovered that group attitudes can, under certain boundary conditions, offer excellent leverage in predicting reactions toward single category members. Importantly, however, this earlier work focused entirely on explicit measures of attitudes.

The rapid rise in popularity in implicit stereotyping measures has revitalized the debate over attitudinal prediction (e.g., Dasgupta & Greenwald, 2001; Karpinski & Hilton, 2001; see Fazio & Olson, 2003 for a review). In our view, greater insight into the predictive validity of implicit attitudes can be facilitated by considering the Zanna and Fazio (1982) framework, which seems just as applicable to present concerns as it did to the “older” literature on explicit attitudes. In particular, it seems fruitful to consider (a) what kind of criterion variables are predicted by such attitudes, (b) when such attitudes are either strongly or weakly correlated with a given criterion, and (c) the processes that are responsible for such relations, when they occur. We consider these issues in more detail below.

What kinds of criterion variables should be predicted by implicit attitude measures?

Some authors have recently suggested that implicit and explicit measures of attitudes predict different criterion variables. On the basis of their review of the litera-

ture, Dovidio, Kawakami, and Gaertner (2002, p. 62, emphasis added) concluded that “research examining explicit and implicit measures of racial attitudes suggests that both are systematically related to behavior, *but to different types of behavior*. Similarly, Kawakami and Dovidio (2001, p. 213) stated that the two kinds of measures “may be tapping different aspects of orientations toward others” and thus may predict different types of criterion variables. A somewhat weaker version of this argument avoids taking a strong “separate predictors” stance, but nonetheless argues that certain types of variables might be better predicted by implicit compared to explicit measures, whereas the reverse might be true in other cases (e.g. McConnell & Liebold, 2001; see also Fazio, Jackson, Dunton, & Williams, 1995). In particular, if implicit measures are better than explicit measures at tapping the “automatic” component of attitude independent of controlled processes, then it stands to reason that such measures would be better equipped to predict those kinds of reactions that are guided by largely automatic processes.

The available literature appears consistent with this argument. In a recent review, Fazio and Olson (2003) summarized the results of 25 studies that investigated the predictive validity of implicit measures. Out of the 24 studies that obtained positive findings (the one null finding reviewed by Fazio and Olson was by Karpinski & Hilton (2001)), nearly all were focused on the ability of implicit measures to predict relatively hard-to-control (i.e. “subtle”) criterion variables, such as nonverbal behaviors by Whites directed toward a Black individual (e.g., Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Fazio et al., 1995; McConnell & Liebold, 2001) or other types of reactions that are relatively difficult to control/monitor (Bessenhoff & Sherman, 2000; Fazio & Hilden, 2001; Spalding & Hardin, 1999). Importantly, in those studies that measured both implicit and explicit measures in the same design, implicit measures often, but not always, predicted the afore-mentioned criterion variables better than the explicit measures.¹

In general, then, research to date has tended to promote the idea that explicit and implicit attitude measures are differentially able to predict different types of social

¹ Arkes and Tetlock (in press) have recently critiqued research and theory on implicit measures, arguing that the typical criterion measures used in this area (e.g., eye-blinks) have uncertain construct validity. This point does not, however, directly apply to present concerns because we do not use the kind of non-verbal criterion variables critiqued in their analysis. In addition, although Arkes and Tetlock raise a number of legitimate concerns regarding the connection between implicit measures and prejudice, this issue also is largely irrelevant to this article. This is because we conceptualize our implicit tasks as measures of *attitude*, rather than prejudice. Although this distinction seems subtle, the latter construct makes claims about the legitimacy/rationality of perceivers whereas the former construct does not (see Lambert, 2004 for a related discussion).

reactions. In our view, however, it seems likely that explicit and implicit measures might often be strongly correlated with the *same* social reactions. Stated differently, the two measures could contribute additively in terms of explaining variation along any given criterion variable. The reason is that, for many types of complex social reactions, automatic *and* controlled processes are likely to operate.

The process of forming an impression of another person represents a likely example of when this might occur. For example, consider the sequence of processes involved when a White perceiver initially meets a single Black male. Depending on the nature of this judgmental setting, automatic and controlled mechanisms are likely to play important roles in determining the perceiver's overt responses to queries about the target (e.g., "So, what did you think of Jerry?"). Upon initially assessing the fact that the target person is Black, this recognition can lead to the automatic activation of the perceivers' own personal attitude toward this racial group and, once activated, such attitudes have the capacity to influence attention to and encoding of social behaviors, especially if these behaviors are ambiguous (Herr, Sherman, & Fazio, 1983; Wyer & Srull, 1989). Other aspects of the impression formation process may involve more deliberative mechanisms. For example, controlled processes may guide not only formulation of the final response ("seems like a smart guy") but also, comprehension of, and reasoning about, possibly contradictory information available about the target person (Wyer & Srull, 1989). Finally, and perhaps more relevant to current concerns, the attitude literature has shown that both automatic (Fazio, 1995) and controlled/deliberate mechanisms (Ajzen & Fishbein, 1980) may guide the relation between attitudes and behavior.

One way to distinguish the contribution of implicit and explicit processes is to separate a complex reaction into discrete aspects (e.g., non-verbal versus verbal reactions) that might be differentially sensitive to implicit versus explicit processes. Another approach is to examine the unique variance in the same criterion variable that is attributable to implicit and explicit processes. We take this latter approach, using regression analysis to separate the contributions of implicitly and explicitly assessed attitudes to impressions of a single category member.

Third variable (individual difference) moderators

One of the key conclusions to arise from the Zanna and Fazio (1982) framework is that the relation between attitudes and specific kinds of social reactions (e.g. toward a single group member) ought to be moderated by other individual difference variables. There are many such known moderators of *explicit* attitudes, but sur-

prisingly little is known about the moderators of implicit attitudes. To our knowledge, the only known individual moderator involving implicit attitudes is motivation to engage in effortful (controlled) processing. In all but one study, this variable was operationalized via Dunton and Fazio's Motivation to Control Prejudicial Reactions (MCPR) scale (Dunton & Fazio, 1997; Fazio et al., 1995; Olson & Fazio, 2004; Payne, 2001; Towles-Schwen & Fazio, 2003). The one exception is a study by Florack, Scarabis, and Bless (2001), who used the Need for Cognition scale (NFC). Theoretically, the MCPR and NFC scales are similar in that high scores indicate relative higher motivation to engage in effortful processing. In each of the studies cited above, implicit attitude measures were more strongly correlated with the criterion variable when motivation for effortful processing was low (i.e., among participants scoring low in MCPR or NFC). These findings are consistent with Fazio's (1990) MODE model, in that automatic processes are likely to dominate people's reactions toward their social environment unless they have both the motivation and opportunity to engage in controlled processing (see also Wilson & Brekke, 1994). Because participants low in MCPR (or NFC) should theoretically be less likely to engage in such controlled processing, this could explain why implicit measures offered better predictive validity in these cases.

It is important to note that such research on moderators of the relation between attitudes and some criterion variable is distinct from efforts to show that performance on the *implicit task itself* can be modified to some extent (e.g., Blair & Banaji, 1996; Blair, Ma, & Lenton, 2001; but see Bargh, 1999). These latter kind of efforts typically involve direct experimental intervention to see if certain participants can be made to respond differently (e.g., on the IAT) than they otherwise would. This is different from asking whether certain individual difference variables naturally tend to moderate the predictive validity of implicit measures, absent any kind of intervention by the experimenter.

On the moderating role of perceived group variability

Conceptually, both MCPR and NFC represent moderators that map on to goal-directed activity, namely, chronic motivation to engage in controlled/effortful processing. Another approach is to explore the existence of moderators that are relevant to the strength of the implicit attitude itself. There is ample precedent for this approach, which has shown that natural variation in, or experimental manipulation of, attitude strength has implications for the degree to which people use/apply their attitudes in responding to persons or objects in their social environment (Petty & Krosnick, 1995). There is currently some disagreement as to the exact

conceptualization of attitude strength, but it appears to be a multidimensional construct, consisting (at least) of two dimensions, certainty and importance (Visser, Krosnick, & Simmons, 2003).

Although it is not yet been conceptualized in this way, we believe that perceived group variability of social categories (Judd & Park, 1988; Lambert & Wyer, 1990; Park & Rothbart, 1982) may also represent an attitude strength moderator, especially in the sense of attitude certainty. On intuitive grounds alone, it seems likely that people would be more certain of their group attitudes if they perceive its members to be all alike than if they do not. Empirical evidence for this supposition is provided by Lambert, Barton, Lickel, and Wells (1998), who found that participants exhibited (a) faster response times to attitudinal queries about the group, and (b) greater subjective confidence in these attitudes, if the group was perceived to be homogeneous than if it was not. Relatedly, Ryan, Judd, and Park (1996) found that participants who viewed the group as homogenous (vs. heterogeneous) tended to be more confident in their impressions of a single group member. The fact that perceived homogeneity was associated with faster attitudinal decisions as well as greater subjective confidence is of particular importance to present concerns, because latency of response and subjective confidence are two important, although certainly not the only, markers of attitude strength (Petty & Krosnick, 1995).

Given the linkage between perceived group variability and at least two validated markers of attitude strength, this suggests, in turn, that group variability might act as a “third variable moderator.” That is, the correspondence between group attitudes and specific reactions toward a single group member might be stronger if the members of the group were perceived to be homogeneous than if they were perceived in more heterogeneous terms. We are not aware of any research to date (using explicit or implicit attitudes) that has directly demonstrated that group variability could play this kind of moderating role.

Experiment 1

Method

Participants and design

A total of 85 non-Black college undergraduates participated in return for partial completion of course credit. The first phase of the experiment measured relevant individual differences. In a second and ostensibly unrelated task, participants were asked to form an impression of an ambiguously described target person whose race (Black or White) was manipulated between conditions. Inclusion of the White target provides a control condition in which, in contrast to the Black target, we

did not expect any of the individual differences measures to correlate with participants' impressions.²

Measurement of individual difference variables

After preliminary instructions, implicit attitudes were assessed using a lexical decision task similar to that developed by Wittenbrink, Judd, and Park (1997, 2001). In particular, participants were asked to indicate whether a string of characters was a word or not by pressing either “yes” or “no” on the keyboard. Participants were additionally informed that these letter strings would be immediately preceded by a distinct string of characters but they should ignore these and simply respond to the second string. Each trial consisted of the following series of events: (a) a fixation point that remained on the screen for 200ms, (b) a blank screen that lasted 300ms, (c) a prime that remained on the screen for 200ms, followed immediately by (d) the target stimulus, which remained on the screen until the participant made his or her response. Participants were informed that accuracy was most important but, while remaining accurate, they should respond as quickly as they could (Fazio, 1990).

Priming stimuli. On each trial, participants were primed either with the word BLACKS, WHITES, or with a neutral prime (XXXXXX). As noted above, the prime was presented on the screen for 200ms and then was immediately followed by the target stimuli. Thus, the SOA in this task was 200ms.

Target stimuli. Participants were presented with 48 different types of target stimuli that were closely related to the stimuli used by Wittenbrink, Judd, and Park (2001). Of these, 12 were non-words and 36 were words. Of these 36, half were positive and half were negative. In addition, one third of these words were relevant to the Black stereotype, one third was relevant to the White stereotype, and one third was unrelated to either stereotype. (See the Appendix for the full list of words.) Thus, participants were presented with a total of 144 trials generated by the factorial combination of the three prime types crossed with 12 non-words and 36 words. These 36 words included 6 words in each cell of a 2 (positive vs. negative) × 3 (stereotypically Black, stereotypically White, unrelated) matrix of target stimuli.

Analytic technique for RTs

As an initial step, incorrect responses to the word trials (calling a word a non-word) were coded as missing

² There were actually a total of 93 participants who originally participated in this study. However, eight of these participants later failed to correctly recall the race of the Black target in the impression formation stage of our research. To facilitate direct comparison across analyses we present data from the 85 participants who correctly recalled the Black target's race. (Analyses on the full sample of 93 participants resulted in a very similar pattern of results.)

data. Following this, exceptionally long or short RTs for (correct) word trials were analyzed using the following strategy (for a similar analytic technique, see Lambert, 1995; Lambert et al., 1998). First, responses faster than 200 ms or more than three standard deviations above the mean RT for that participant (averaging across his or her responses to all of the correct word trials) were treated as missing. Together, these two procedures (elimination of incorrect responses on word trials, and trimming of correct responses that were excessively long or short) eliminated only 2% of the responses to word trials averaged across all three studies. All remaining valid response latencies were submitted to a natural log transformation to further reduce the positive skew typically associated with RT distributions. Although all subsequent analyses were performed on the natural logs, the implications of our data are more easily understood when expressed in terms of milliseconds. (Results were virtually identical, regardless of whether the RTs were log-transformed or not.)

After the analyses described above, within-subject facilitation scores for the Black and White primes for each of the 108 critical word trials were constructed by subtracting the response time for the Black or White prime from the neutral (XXXXXX) prime. (For example, two facilitation scores were constructed for the target word *hostile*, based on subtracting each participant's RT to this word when preceded by the Black or White prime from that participant's RT to that same word when preceded by the XXXXXX prime.) Larger facilitation scores thus indicate relatively faster responses to the target word compared to the neutral prime. Six composite RT indices were then formed, averaging across the 6 individual word facilitation scores in each cell of the 2 (positive vs. negative) \times 3 (Black, White, or irrelevant) within-subject matrix.

Next, we formed a smaller number of theoretically meaningful "contrast indices" similar to that used by Wittenbrink et al. (1997), each of which was designed to provide information about somewhat different aspects of participants' stereotypes about Blacks vs. Whites. In all three cases, higher scores indicate greater implicit prejudice. The *Stereotypic Prejudice* index measures the relative facilitation of Black vs. White primes toward words that are both evaluatively and descriptively related to the belief systems associated with these groups, based on an average of (a) relative speed of responding toward positive items stereotypic of Whites (e.g., *intelligent*) when participants are primed with WHITES, and (b) the relative speed of responding to negative items stereotypic of Blacks (e.g., *hostile*) when participants are primed with BLACKS. The *Generalized Prejudice/Positive* contrast included only positive target words. This within-subject contrast reflects the extent to which the positive words, independent of stereotype relevance, were facilitated more by the White prime than

by the Black prime. Conversely, the *Generalized Prejudice/Negative* contrast reflects an average of the extent to which each of the negative words were facilitated by priming BLACKS minus the facilitation produced by priming WHITES. [Note that in all three cases (including the Generalized Prejudice/Positive index), higher values represent relatively more negative sentiments towards Blacks compared to Whites.] For more details regarding the construction of these indices, see Wittenbrink et al. (1997).³

Following completion of the implicit attitude task, participants completed several explicit measures. Participants' attitudes towards Blacks were most directly measured via their responses to the Modern Racism Scale (MRS; McConahay, 1986). We also included two measures of values, the Right Wing Authoritarianism (RWA, Altemeyer, 1998) and Social Dominance Orientation (SDO; Pratto, Sidanius, Stallworth, & Malle, 1994) scales. Although none of the items in the latter two scales makes any specific reaction toward Blacks, these instruments are sometimes used to predict race-related judgments and decisions (Biernat & Crandall, 1999).

The MRS consists of seven items, all worded specifically with respect to Blacks (e.g., "Blacks should not push themselves where they are not wanted"). The RWA consists of 32 items, worded in both a pro-trait ("It is always better to trust the judgment of the proper authorities in government and religion than to listen to the noisy rabble rousers in our society who are trying to create doubt in people's minds") as well as in a con-trait direction (e.g., "Our country needs free thinkers who will have the courage to defy traditional ways even if this upsets many people"). The SDO consists of 16 items, half of which are worded in a pro-dominant/anti-egalitarian direction ("Some groups of people are simply inferior to other groups") and half of which are worded in an anti-dominant/pro-egalitarian direction ("Group equality should be our ideal"). In all cases, participants were asked to express their agreement/disagreement with items by pressing any key in an array of keys marked from -3 (*strongly disagree*) to $+3$ (*strongly agree*).

At the end of the experiment, we collected information on the perceived variability of Blacks using a "frequency distribution" procedure commonly used in the social categorization literature (cf. Lambert, 1995; Lambert & Wyer, 1990; Park & Judd, 1990; Wyer, 1973).

³ Although this analytic approach emphasizes individual differences, supplemental analyses on the overall pattern of RTs revealed a prime \times valence interaction, $F(1, 83) = 5.17, p < .05$ which reflected the fact that Black primes facilitated responses to negative targets whereas White primes facilitated responses to positive targets (cf. Wittenbrink et al., 1997). However, the three-way prime \times valence \times stereotypic relatedness interaction was not reliable, $p > .10$.

Table 1
Correlations among individual difference variables—Experiment 1

	1	2	3	4	5	6	7
1. Modern Racism	—						
2. Right Wing Authoritarianism	.59**	—					
3. Social Dominance	.51**	.44**	—				
4. Perceived Group Variability	.03	-.05	.16	—			
5. Implicit Stereotypic Prejudice	.13	.11	-.04	-.11	—		
6. Implicit General Prejudice/Negative	.14	.13	.02	-.24*	.36**	—	
7. Implicit General Prejudice/Positive	.06	.08	.00	.04	.34**	.17	—

Note. Values represent zero-order correlations among individual difference variables, collapsed over experimental condition. All attitude/value instruments coded such that higher values represent more negative sentiments towards Blacks.

* $p < .05$.

** $p < .01$.

Participants were presented with a scale ranging from 0 (*not at all likeable*) to 10 (*extremely likeable*) in which a series of blank lines were drawn above each of these 11 numbers. Participants were asked to imagine, out of a sample of 100 Blacks selected randomly from the population, how many Blacks they would assign a rating of “0” with respect to likeableness, how many they would assign a “1,” and so on up to 10. Computation of the standard deviation of each resulting distribution for each participant constituted our operationalization of perceived group variability.⁴

Correlations among individual difference measures

Table 1 shows the pattern of zero-order correlations involving all of the individual difference variables measured in our study, including the Modern Racism Scale (MRS), Right-Wing Authoritarianism (RWA), Social Dominance Orientation (SDO), the group variability index, and the three implicit indices derived from the Wittenbrink et al. task. Moderately strong correlations were found among the MRS, RWA, and SDO scales, replicating previous research (Biernat & Crandall, 1999). However, there are no significant relations between these measures and the implicit indices, consistent with the premise that explicit and implicit measures are tapping largely separate constructs (cf. Cunningham, Preacher, & Banaji, 2001). The general stereotypic index was, not surprisingly, related to both the negative and positive prejudice indices, but the latter two indices were not related to one another. This latter null finding indicates that the degree to which negative words were differently facilitated by Black vs. White primes was not related to the pattern of facilitation for positive words,

and vice versa. Second, perceived group variability was negatively correlated with both the stereotypic prejudice as well as the negative prejudice indices, although this relation was reliable only in the latter case.

Impression formation task

After completing the individual difference measures, participants engaged in a 10-min distractor task. Following this, they completed an impression formation task similar to that used in our previous research (Lambert, Cronen, Chasteen, & Lickel, 1996; Lambert et al., 2003) in which participants were told that we were generally interested in the processes by which people form evaluative impressions of others. Following these initial instructions, participants were presented with a biographical sketch that had supposedly been filled out by a particular individual (male in all cases) which included information about his name, address, social security number, place of birth, current educational status, academic major, expected graduation date, citizen status, gender, as well as his ethnic background (which was checked either “Black/African American” or “White/Caucasian” depending on the condition to which participants had been assigned). The target’s race was thus only one of a dozen or so pieces of incidental background information presented about the target person, and gave no indication that participants should either consider it or ignore this information in forming their impressions.

All participants were then given identical information about the target. In our earlier research (Lambert et al., 1996), we had demonstrated through pre-testing that the target information was relatively ambiguous with respect to his academic performance as well as his general level of intelligence (i.e., could be interpreted in a relatively favorable or unfavorable manner). We focused on academic performance/intelligence because of its relevance to the stereotype of Blacks vs. Whites. We also included a short passage from Srull and Wyer (1979) that was ambiguous with respect to the stereotypic dimension of hostility (Devine, 1989).

⁴ It could be argued that asking people to indicate the perceived variability of a group along a general likeableness dimension is different from the way that group variability is often assessed in the literature, namely, in terms of the perceived variation along one or more trait dimensions (e.g., *kind*). However, the results of this experiment were replicated in Experiment 2, in which variability was, in fact, assessed with respect to specific trait dimensions.

Dependent variables

Evaluative and trait ratings. Participants indicated their overall reaction to the target along a scale ranging from -5 (*very unfavorable*) to $+5$ (*very favorable*) and then indicated how much they would like to meet him along a scale ranging from -5 (*not at all*) to $+5$ (*very much*). These ratings were then followed by a series of 27 trait ratings in which participants judged the target along the following qualities using a scale ranging from 0 (*not at all*) to 10 (*extremely*): *likeable, sociable, successful, energetic, unfriendly, intelligent, competent, unmotivated, patient, self-assured, incompetent, polite, lazy, bright, argumentative, aggressive, impatient, hard worker, athletic, easy to get along with, impolite, trustworthy, cooperative, hostile, shy, responsible, and ambitious*.

Free recall task. Because our primary interest was in the Black target, it was important for our purposes that participants noticed the race of this person. For this reason, we included a surprise recall task later in the experiment in which participants were asked to recall as much information as they could from the biographical sketch, which included a dozen or so pieces of information about the target. (This is a stringent test of awareness, because this task was a free, but not cued, recall task.) Eight participants assigned to the Black target condition failed to recall the race of the target. These participants were excluded from the outset of these analyses. At the completion of the experiment, participants were completely debriefed, thanked for their participation, and dismissed.

Results

Preliminary analyses

To reduce the number of target judgments to a smaller number of theoretical meaningful constructs, principal components analyses were performed on the individual target ratings, collapsed over race of the target. (Separate analyses on the Black and White targets revealed a similar pattern of loadings.) These analyses yielded four meaningful components with eigenvalues greater than 1.0, and appeared to represent indices of general liking, intelligence, hostility, and laziness. The items that loaded highly (better than .60) on each of these components are as follows (numbers in parentheses represent internal reliabilities for that component after averaging over items, reverse scoring where necessary): (a) liking: overall evaluation, desire to meet, and trait ratings of *likeable* and *sociable*; ($\alpha = .88$); (b) intelligence: trait judgments of *successful*, *intelligent*, *competent*, and *bright*; ($\alpha = .92$); (c) hostility: trait ratings of *argumentative*, *hostile*, *impatient*, *patient*, *aggressive*, and *impolite*; ($\alpha = .89$), and (d) laziness: trait ratings of *unmotivated*, *lazy*, *hardworking*, *responsible*, and *ambitious*; ($\alpha = .90$). After converting all of these variables to

z scores, composites were formed on the basis of averages of the relevant items noted above. For ease of interpretation, all four of these indices were coded such that higher numbers indicate more favorable judgments of the target.

Correlational regression analyses

Table 2 shows the relation between the seven predictor variables and judgments of the target, broken down separately for the Black target (top panel) and the White target (bottom panel) for each of the separate target dimensions, as well as an average of all four dimensions. (In the latter case correlations were assessed by first averaging the four dimensions into a single index, and then computing the relation between this index with each of the separate attitude measures). Consider first the Black target. Consistent with the previous literature (Biernat & Crandall, 1999), all of the three explicit attitude/value measures (MRS, RWA, and SDO) were negatively correlated with target impressions, but this pattern was clearly strongest for the MRS. This is almost certainly due to the fact that the MRS, but not the RWA and SDO scales, refers specifically to Blacks.

Of greater interest, the implicit measures also predicted participants' judgments of the target person. This was especially true of the Stereotypic Prejudice index and, to a lesser degree, Generalized Prejudice/Negative index. In contrast, the Generalized Prejudice/Positive index was not correlated with judgments at all. As for perceived group variability, this variable was positively correlated with target judgments. This indicates that participants who perceived Blacks as more variable tended to respond more favorably to the target, and vice versa. (Moderator analyses involving group variability will be considered in the next section.)

In presenting these data, we make the important assumption that these variables are relevant only to White's perceptions of Blacks. If this assumption is correct, one should not expect any of these variables to correlate with reactions toward the White target, and this is generally what the data show. This asymmetry was confirmed by regression analyses. (Prior to these and all other regression analyses to be reported below, all variables were converted to z scores.) These analyses showed a significant Predictor \times Ethnicity interaction in the case of the Modern Racism Scale ($\beta = -1.10$, $p < .01$) as well as the Stereotypic Prejudice index ($\beta = -.78$, $p < .01$). (These analyses are not relevant to the RWA and SDO as well as the remaining two implicit indices, because none of these measures were reliably correlated with the Black target in the first place.)

Analyses involving the group variability measure were less clear-cut, as the positive correlations observed

Table 2
Correlation of individual difference variables pertaining to blacks with judgments of black vs. white target—Experiment 1 ($N = 85$)

	Overall liking	Intelligence	Hostility	Laziness	Average of four composites
<i>Black target (n = 48)</i>					
Implicit measures					
Stereotypic Prejudice	-.21	-.30*	-.11	-.33*	-.30*
General Prejudice/Negative	-.26	-.24	.03	-.33*	-.25
General Prejudice/Positive	.01	-.12	.08	-.11	-.05
Explicit measures					
Modern Racism	-.34*	-.29*	-.35*	-.31*	-.40**
Right Wing Authoritarianism	-.27	-.14	-.19	-.18	-.25
Social Dominance	-.30*	-.16	-.08	-.15	-.22
Perceived Group Variability	.26	.31*	.29*	.24	.34*
<i>White target (n = 37)</i>					
Implicit measures					
Stereotypic Prejudice	.08	.09	.26	.25	.26
General Prejudice/Negative	-.32	-.25	.31	.14	-.06
General Prejudice/Positive	.05	.26	-.11	.13	.14
Explicit measures					
Modern Racism	.22	.07	.20	.07	.21
Right Wing Authoritarianism	-.15	-.08	.08	-.06	-.08
Social Dominance	-.06	.08	-.10	.05	.03
Perceived Group Variability	.26	.13	.08	.09	.21

Note. In all cases, negative correlations indicate evaluative consistency between appraisals of the target and appraisals of the group.

* $p < .05$.

** $p < .01$.

for both the White and Black targets were not significantly different from one another. The fact that group variability was correlated in somewhat similar fashion to the Black and the White target suggests that this finding had nothing to do with racial stereotyping per se. Although the reasons for this effect are not clear, this does not qualify any of the implications to be drawn from the analyses reported below, which focus on the moderating role of group variability vis a vis group attitudes.

Before turning to the moderator analyses, it is useful to show more formally that the implicit stereotypic index was able to predict judgments of the target, above and beyond the variance accounted for by explicit attitude/value measures. This analysis is important given the current controversy over the predictive validity of implicit measures (Fazio & Olson, 2003). To this end, we ran a regression analysis in which the MRS, RWA, SDO scales were simultaneously entered along with the three implicit indices to determine the degree to which each of these variables could uniquely predict reactions toward the Black target. Results revealed a reliable effect of the Stereotypic Prejudice term ($\beta = .37, p < .05$) and a marginal effect of MRS ($\beta = .38, p = .07$); none of the other terms were reliable, all $ps > .15$. Hence, these data clearly show that the Stereotypic Prejudice index was able to predict explicit impressions of the target,

above and beyond the variance accounted for by other explicit measures.⁵

Moderator analyses involving group variability

The preceding analyses showed that explicit as well as implicit racial attitude measures predicted reactions toward a single Black target, but these correlations were rather small. For reasons discussed earlier, however, there are theoretical and empirical reasons to believe that group variability would serve to moderate the degree to which group attitude measures would be correlated with judgments of a single group member. Descriptively, this would suggest that the correlations shown in the top half of Table 2 would be much stronger

⁵ Analyses on the overall reaction to the target (averaging across the standardized composites described above) revealed more positive ratings to the Black compared to the White target ($M_s = .20$ vs. $-.26$), $F(1,83) = 4.59, p < .001$. This finding is generally consistent with previous research (Biernat & Crandall, 1999), which shows that White college participants generally do rate Black target persons more favorably than White targets. This finding is almost certainly due to the fact that, on average, college undergraduates in the United States are generally concerned with avoiding outright expression of negative prejudice. Nevertheless, our main concern was the individual differences in target ratings and how these might be predicted by the various attitude measures considered here.

Table 3
Correlations among individual difference variables and judgments of black target at high vs. low perceived variability—Experiment 1

	Overall liking	Intelligence	Hostility	Laziness	Average of four composites
<i>Low perceived variability (homogeneous; n = 24)</i>					
Implicit Measures					
Stereotypic Prejudice	-.56**	-.34	-.33	-.62**	-.53**
General Prejudice/Negative	-.58**	-.43*	-.09	-.49*	-.47*
General Prejudice/Positive	-.28	-.20	-.13	-.20	-.23
Explicit Measures					
Modern Racism	-.49*	-.63**	-.58**	-.37	-.59**
Right Wing Authoritarianism	-.46*	-.59**	-.40*	-.38	-.53**
Social Dominance	-.43**	-.48**	-.32	-.25	-.43*
<i>High perceived variability (heterogeneous; n = 23)</i>					
Implicit Measures					
Stereotypic Prejudice	.17	-.17	.04	.08	.04
General Prejudice/Negative	.32	.22	.17	.09	.28
General Prejudice/Positive	.45*	.24	.12	.28	.37
Explicit Measures					
Modern Racism	-.16	-.12	-.21	-.16	-.14
Right Wing Authoritarianism	-.10	.32	-.05	.03	.07
Social Dominance	-.35	-.07	-.02	-.20	-.22

Note. In all cases, negative correlations indicate evaluative consistency between appraisals of the target and appraisals of the group.

* $p < .05$.

** $p < .01$.

among those participants who perceive Blacks in homogeneous, rather than heterogeneous, terms. As seen in Table 3 (which displays correlations as a function of high vs. low levels of group variability) that was in fact the case.⁶

More formal tests of moderation are provided by regression analyses, in which group variability was treated as a continuous variable. Here again the analyses involving implicit attitudes are of greatest theoretical importance, given the paucity of studies taking a moderator approach to implicit attitude measures. As seen in the previous set of analyses, the Stereotypic Prejudice index was most strongly correlated with the Black target and the moderator analyses were most conclusive for this index as well. In particular, entry of the relevant interaction (implicit attitude \times group variability) term accounted for a significant amount of variance in impressions of the Black target, $\beta = -.36$, $p = .008$. As for the other predictors, a marginal Attitude \times Variability interaction emerged for the Generalized Prejudice/Negative index ($p = .10$) but the remaining variables did not yield statistically reliable interactions, all $ps > .15$. (In both of these cases, the overall three-way interaction involving target ethnicity was not reliable, $p > .20$.) In the case of the MRS scale, this null result was due to the fact that this measure continued to be

negatively correlated, albeit weakly, with the Black target even when the group was perceived as heterogeneous.⁷

Discussion

Experiment 1 yielded two findings of main theoretical interest. First, an implicit measure of participants' attitudes towards Blacks significantly predicted their explicit impressions of a single Black target. Moreover, this was true, over and above the variance accounted for by the other explicit measures. This finding adds to our understanding of implicit measures insofar as these data show that the predictive validity of such measures are not solely limited to the kinds of hard-to-control criterion variables most often investigated by previous researchers (Fazio & Olson, 2003). Second, perceived group variability acted as a moderator variable, determining the strength of the relation between group attitude measures and participants' impressions of the target. Interestingly, the evidence for such moderator

⁶ One participant out of the 48 individuals who rated the Black target failed to complete the group variability task.

⁷ In both experiments, analyses of the distribution task revealed negative correlations between group variability and central tendency. That is, participants perceiving the group as heterogeneous also tended to see the group, on the average, in more negative terms. This relation was not significant in Experiment 1 ($r = -.19$, ns) although it was reliable in Experiment 2 ($r = -.44$, $p < .01$). However, inclusion of central tendency in the regression analyses had virtually no effects on the results, showing that our effects were indeed due to group variability rather than central tendency.

was evident for the implicit, but not the explicit, attitude measure.

It should be acknowledged that formal support for the moderation of group variability was somewhat circumscribed, emerging in regression analyses only for the one implicit attitude measure that was most strongly correlated with impressions of the Black target. For this reason, and to further establish the replicability and generalizability of our findings, we conducted an additional experiment using a more reliable operationalization of group variability and a different measure of implicit attitudes.

Experiment 2

Experiment 2 was similar to Experiment 1 in many respects, except for the following differences. First, and of greatest theoretical importance, we operationalized implicit attitudes using a different measure, Payne's (2001) perceptual identification task (see also Lambert, Payne, Jacoby, Shaffer, Chasteen, & Khan, 2003; Payne, Lambert, & Jacoby, 2002). The Payne task uses a dependent variable different from that of the Wittenbrink et al. task (object identification rather than lexical decision) and uses faces rather than semantic letter strings as primes. Second, we employed a more reliable measure of group variability which used multiple, rather than just one, stereotypic dimensions. Third, given the null findings found with the White target in the first experiment, we focused only on participants' impressions of a Black target. Other minor changes are noted below in the context in which they become relevant.

Method

Participants and design

The sample included a total of 60 participants, none of whom were Black.

Procedure and materials

As in the first experiment, Experiment 2 consisted of two main phases, assessment of individual differences, followed by an ostensibly unrelated impression formation task. Participants first completed the MRS and RWA. (Given the relatively weak effects associated with the SDO scale, this was dropped in this study.) Participants then completed a variation on Payne's (2001) perceptual identification task, described in more detail below.

Payne's (2001) perceptual identification task

Participants were informed at the outset that the task which they were about to complete was a test of speed and accuracy. The experimenter told participants that they would see pairs of pictures flashed on the computer

monitor. They were instructed to do nothing with the first picture, which would always be a face; it was explained that the face would signal that the target was about to appear. They were instructed to respond to the second picture, which would always be either a gun or a tool. The participants' task was to correctly identify each target by pressing a corresponding key on the keyboard that was marked either GUN or TOOL.

On each trial, the face appeared for 200ms, which was replaced immediately by the target. Thus, the SOA was 200ms. After the target was presented for 200ms, it was replaced by a visual mask, which remained on the screen until the participant responded. For each trial, the next prime appeared 500ms after the previous response. This task contained a total of 8 different types of faces (4 Black, 4 White) and 8 different types of targets (4 guns, 4 tools), yielding 64 unique trials per block. After one practice block, participants completed a set of 384 critical trials across 6 blocks. The order of trials was randomized for each participant. (After discarding some excessively long RTs that appeared to represent lapses in attention, responses faster than 200ms or more than three standard deviations above the mean RT for each individual participant was treated as missing prior to analyses.)

Preliminary analyses revealed a strong prime \times target valence interaction, $F(1,59) = 21.43$, $p < .001$ similar to that reported by Payne (2001). This reflected the tendency for participants to respond more quickly on stereotype-consistent (Black-gun, White-tool) compared to stereotype inconsistent (Black-tool, White-gun) trials. As in Experiment 1, however, we were primarily interested in individual differences in performance on this measure. Hence, to conduct analyses parallel to those reported in Experiment 1, we constructed a stereotypic index based on the average RTs on incongruent trials minus RTs on congruent trials. Moreover, as in the Wittenbrink et al. task, it is useful to form separate indices as a function of what class of target stimulus (here, a gun vs. a tool) participants to which participants are responding. One index was formed on the basis of all gun trials by subtracting RTs on incongruent (White-gun) pairings minus congruent (Black-gun) pairings. A second index was formed on the basis of all tool trials by subtracting RTs on incongruent (Black-tool) pairings minus congruent (White-tool) pairings. In both cases, higher values on these indices indicate greater level of stereotypic responding.

We had no strong theoretical basis for predicting whether indices based on gun vs. tool trials would offer better leverage in predicting reactions to the single Black target. Nevertheless, it is worth noting that guns are obviously negative, and are strongly connected to Whites' perceptions of Blacks as being more violent than Whites. However, tools are relatively neutral

and are not part of the stereotype of either Whites or Blacks. In this type of paradigm, it could be that the speed of responding to a clearly negative/stereotypic object would offer more leverage in predicting responses to a single Black target, especially given that some of his behaviors were ambiguous with respect to the hostile/unfriendly dimension. As will be seen presently, this was in fact the case.

Impression formation task

The method and materials of the impression formation task was generally similar to that of Experiment 1. However, the target description was expanded slightly to convey additional, but still ambiguous, implications with respect the target's dispositional level of responsibility/laziness, a quality that is highly relevant to the negative stereotype about Blacks as held by Whites (Devine, 1989). Hence, this version of the target description contained implications with respect to three distinct trait dimensions, including intelligence, hostility/friendliness, and responsibility. After reading the target passage, participants expressed their impression of the target using the same 29 items as was used in Experiment 1.

As part of preliminary analyses, principal components analyses were conducted on the afore-mentioned items. Consistent with expectations, these analyses yielded three primary factors with eigenvalues greater than 1.0, each corresponding to one of the three *a priori* defined dimensions of interest, namely, intelligence, responsibility, and friendliness. After computing three factor scores for each participant (using the regression method), an overall index of target favorableness was formed by averaging across these three scores. (Analyses on the three individual dimensions as well as on a simple mean of the 29 items yielded a similar pattern of results.)

Assessment of group variability

One weakness of the group variability task in Experiment 1 was that it was based on participants' subjective frequency distribution for just one general dimension (*likeableness*). In Experiment 2, participants completed frequency distributions for four dimensions, including the same likeableness dimension used in the earlier study, as well as three dimensions corresponding to the same traits implicated by the target paragraph (*intelligence, kindness, and responsibility*). The standard deviations of these four dimensions were highly correlated with one another ($r_s = .55-.74$) indicating that the perceived variability of the group with respect to any given dimension was highly predictive of the perceived variability of the group along any of the other three dimensions. Hence, an overall composite of group variability was formed on the basis of an average of these four sets of standard deviations ($\alpha = .89$).

Results

Preliminary analyses

In initial analyses, we calculated zero order correlations among all of the variables relevant to this study, including the two implicit indices, MRS, RWA, the group variability measure, and the composite judgment of the Black target. As expected, the MRS was negatively correlated with judgments of the target, $r = -.26$, $p < .05$. Second, the group variability measure was also negatively correlated with target judgments ($r = -.31$, $p < .05$), indicating that participants who viewed Blacks in heterogeneous terms tended to judge the target more negatively. This finding is the opposite of what occurred in Experiment 1, in which participants who viewed the group as heterogeneous rated the target more positively. Although this reversal is puzzling, it confirmed our overall view of group variability and the kind of role it most consistently played in our paradigm. In other words, group variability did not show a consistent pattern in terms of how it was *directly* correlated with judgments of single group members (or group attitude measures). On the other hand, it played a much more consistent role as a moderator, as we will show below.

Apart from a marginally significant correlation between MRS and RWA ($r = .23$, $p = .08$) there was no relation among or between the explicit and implicit measures of attitudes (all other $r_s < .05$, $p_s > .50$). These null effects were of limited interest, as they simply showed that the various attitude instruments (MRS, RWA, and the two implicit indices) captured relatively independent aspects of participants' beliefs and/or associations with Blacks.

Relation between predictor variables and judgments of the target person

To facilitate comparison with Experiment 1, it is again useful to provide a descriptive account of the pattern of zero-order correlations between the target impression index and the various predictors in this design (MRS, RWA, and the two implicit attitude indices). These data are shown in Table 4 for the entire sample (left side), participants who viewed the group in relatively homogenous terms (middle) as well as participants who view the group as heterogeneous (right). Consider first the correlations for the entire sample. Aside from the significant effect of MRS already noted, neither of the two implicit indices was significantly correlated with judgments of the target. Taken on its own, one might conclude that the implicit task was simply not very useful in predicting target impressions.

However, this conclusion would be misleading, because group variability once again emerged as a strong moderator of the implicit attitude index. As seen in Table 4, higher scores on the gun RT index were strongly associated with more negative impressions of the target, but this was only true among participants who viewed

Table 4

Correlations among individual difference variables and judgments of black target at high vs. low perceived variability—Experiment 2 ($N = 60$)

	Entire sample	Low perceived variability (homogeneous)	High perceived variability (heterogeneous)
Implicit Prejudice Indices			
Weapon RTs	-.20	-.49**	.04
Tool RTs	.04	.11	.05
Explicit Measures			
Modern Racism	-.26*	-.30	-.15
Right Wing Authoritarianism	-.02	-.07	.06

Note. Negative correlations indicate consistency between appraisals of the group and appraisals of the target.

* $p < .05$.

** $p < .01$.

the group as homogeneous ($r = -.49$, $p < .01$). In contrast, this relation disappeared (and in fact was slightly reversed) for those who viewed the group as heterogeneous ($r = .04$, ns). This asymmetry was confirmed via regression analyses, in which the Attitude \times Variability interaction (treating group variability as a continuous variable) was reliable in the saturated model, $\beta = .30$, $p < .05$. In contrast, the tool RT index failed to predict reactions to the target, regardless of whether group variability was taken into account or not.

Interestingly—and again replicating Experiment 1—the moderating effects of group variability was stronger for the implicit measure compared to the explicit measures. In particular, MRS was more strongly correlated with the target when the group was perceived as homogeneous than when it was perceived as heterogeneous, but the difference was less pronounced ($r = -.30$ vs. $-.15$) and the corresponding interaction in regression was not reliable, $p > .20$. The RWA scale was not correlated with target impressions in any of these conditions.

General discussion

One recurring question in the social psychological literature is whether relatively general attitudes can predict relatively specific reactions, such as people's reactions toward a single member of the group (e.g., Schuman & Johnson, 1976). In contrast to the wealth of research using explicit attitude measures, less is known about the predictive validity of implicit attitude measures, and virtually nothing is known about the moderators of these relationships. The present research offers at least three contributions to this under-studied domain, as follows:

1. We demonstrated the predictive validity of two different priming-based measures of implicit attitudes, one by Wittenbrink et al. (1997) and the other by Payne

(2001). The fact that we obtain similar results from two different tasks leads to more confidence in our conclusions than if we had only focused on one task. This is, of course, merely a re-statement of the merits of the multi-method approach (Campbell & Fiske, 1959), but this technique is surprisingly underutilized in the implicit attitude literature, in which it is far more common for researchers to continually focus on the same attitude measure across multiple experiments and/or studies.

2. To date, the only known individual difference moderator of implicit attitudes pertains to motivation to engage in effortful processing (Fazio & Olson, 2003). The present research adds to this literature by showing that group variability strongly moderates the predictive validity of implicit attitudes. In particular, this relation is much stronger if the members of the group are perceived in homogeneous terms than if they are not. For example, Experiment 1 showed that a single implicit measure could account for more than 25% of the total variation in target judgments when the group is perceived as homogeneous. This is approximately four times as much variance than is typically accounted for by implicit measures (cf. Blair, 2001). The importance of this moderated relationship looms even larger when one considers the fact that when group variability is *ignored* in the analyses, implicit attitudes failed to reliably predict target impressions altogether in Experiment 2. Doing so would have given the mistaken impression that implicit attitudes are not very good at predicting behavior. On the contrary, they clearly are, but apparently under certain boundary conditions, just as is the case for explicit attitudes (cf. Zanna & Fazio, 1982).
3. Nearly all of the previous studies in this area have focused on the ability of implicit attitude measures to predict relatively subtle, hard-to-control behavior (e.g. non-verbal behavior; see Fazio & Olson, 2003 for a review). Moreover, a popular perspective is that implicit and explicit measures are differently able to predict *different* classes of criterion variables (see especially Dovidio et al., 2002; Kawakami & Dovidio, 2001; for a summary of evidence relevant to this assumption, see Fazio & Olson, 2003). Far fewer have investigated the possibility that explicit and implicit attitudes could be strongly predictive of the *same* criterion variable, even though the measures themselves are not related to each other.

Clarifying the potential roles of group variability in social judgment

Theory and research in the attitude domain has shown that people are less likely to use their attitudes

as a basis for responding if the attitude is relatively weak (Petty & Krosnick, 1995). Attitude strength can be conceptualized in a number of ways, and there are many ways of empirically measuring it in the laboratory, but two important markers are (a) the latency of response to attitudinal query, and (b) verbal reports of confidence about the attitude (e.g., “how sure are you that group X is ___?”). Importantly, these were precisely the variables that were included in a recent study by Lambert et al. (1998), who found that participants were both faster in making attitudinal decisions about a group, and reported being more confident in these decisions, if the group was homogeneous than if it was not. These findings provide an important foundation for the present research, insofar as it suggests that group variability could, like other “attitude strength moderators,” determine the relation between general group attitudes and specific reactions toward a single group member. This is precisely what our data showed across two experiments.

Group variability can also exert different types of moderator effects distinct from those shown here. In some of our most recent work (Lambert, Chasteen, Payne, & Shaffer, in press), we have shown that group can also have an influence on the precise role of perceived typicality (i.e., goodness of fit) of single group members during the impression formation process. When the group is perceived as homogeneous, perceived typicality plays its well-known “gatekeeper” role described by Fiske and Neuberg (1990), such that perceivers apply their attitudes toward individuals judged to be typical, but not atypical, of the group as a whole. When the group is perceived as heterogeneous, however, perceivers apply their group attitudes to individual targets, regardless of whether they are perceived as typical or atypical. (For more details regarding these effects, see Lambert et al., in press).

It is important to note that in the present research (as well as in the two studies reported by Lambert et al., in press), group variability exerted its effect as a moderator. That is, it affected the relation between other variables (e.g., group attitudes and target judgments). These kinds of effects are quite different from cases in which group variability directly predicts various kinds of reactions toward single group members, such as the confidence people have in their overall impressions of single group members (e.g., Ryan et al., 1996).

Directions for future research

Over the years, researchers have discovered that a rather large number of factors moderate the ability of general, explicit attitudes to predict specific reactions. These include individual difference variables (self-monitoring, private self-consciousness, need for cognition), vested interest/involvement, situational variables, and

the context in which the attitudes were formed in the first place. (See Ajzen, 1988, for a review). A key goal for future researchers is to accurately classify moderators into three categories, those that moderate (a) both explicit and implicit attitudes, (b) explicit, but not implicit, attitudes, and (c) implicit, but not explicit, attitudes. The present research provided some evidence that group variability may, in some cases, exert a stronger moderating effect on implicit compared to explicit measures of group attitudes. The specific reason for this is as yet unclear, although it is possible that it could stem, in part, from the greater sensitivity of implicit measures to the accessibility of different kinds of category exemplars. However, future research is obviously needed to explore this and other possibilities.

Future research might also investigate the extent to which the predictive validity of implicit (vs. explicit) attitudes are “context sensitive.” For example, instead of measuring implicit attitudes and impressions of the target in the same context, researchers could manipulate whether the implicit measures were administered in a relatively “pro-Black” vs. “anti-Black” context and, then (in a different session) similarly manipulate the context in which participants form their impressions of the target person. A different type of contextual manipulation is to vary the opportunity for cognitive control at both the attitude assessment, and the target impression, stage. One possibility is that implicit attitudes might best predict target impressions when cognitive resources are limited at both the attitude assessment and target impressions stage (cf. Gilbert & Hixon, 1991). Finally, although there several reasons why it is important to understand Whites’ sentiments towards Blacks, it is obviously desirable for future research to consider these issues as they pertain to other kinds of social groups and subject populations beyond those studied in this article.

Conclusion

Social psychologists have been concerned with the construct and predictive validity of attitude measures for well over 50 years (LaPiere, 1934; Thurstone, 1928). These issues are, if anything, even more important now due to changes in social norms as to the acceptability of openly expressing negative stereotypic attitudes (Gaertner & Dovidio, 1986). The two measures of implicit attitudes used here represent two important, but certainly not the only, techniques that psychologists have at their disposal to potentially tease apart self-presentational biases from other aspects of the attitude construct (cf. Payne, Jacoby, & Lambert, in press). As the literature on implicit measures grows and matures, it will become important to assess the relative utility of these measures compared to other techniques in terms of their ability to explain and predict social behavior.

Appendix A

Items stereotypic of blacks	Non-stereotypic items	Items stereotypic of whites
<i>Positive</i>		
CHARMING	APPEALING	AMBITIOUS
RELIGIOUS	DELIGHTFUL	INTELLIGENT
CHEERFUL	FAVORABLE	SUCCESSFUL
ATHLETIC	DESIRABLE	EDUCATED
EXPRESSIVE	LIKEABLE	RESPONSIBLE
MUSICAL	PLEASANT	WEALTHY
<i>Negative</i>		
POOR	DISTURBING	EXPLOITATIVE
DISHONEST	HORRIBLE	MATERIALISTIC
VIOLENT	IRRITATING	STUFFY
STUPID	OFFENSIVE	UPTIGHT
LAZY	REPULSIVE	GREEDY
THREATENING	UPSETTING	SELFISH

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