

Abstract

Personal and Social Motivation to Respond Without Prejudice: Implications for Implicit and Explicit Attitude and Behavior

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Individuals may choose to report non-prejudiced attitudes because such attitudes are important to them, or because they think such attitudes are important to others. But can good intentions to be non-prejudiced influence implicit prejudice, which is ordinarily thought to operate outside of conscious control? Two studies investigated the relationship between motivation to respond without prejudice and implicit, explicit, and non-verbally expressed prejudice toward gay men. Two independent sources of motivation to be non-prejudiced were assessed: Motivation stemming from *personal* standards (i.e., internalized standards important to the self) and motivation stemming from *social* standards (i.e., external standards important in the environment). Study 1 examined whether motivation is related to implicit and explicit prejudice. Individuals strongly motivated to be non-prejudiced for personal reasons expressed lower prejudice on implicit and explicit measures and exhibited less prejudicial non-verbal responding relative to individuals low in personal motivation. In contrast, social motivation was unrelated to implicit, explicit, and non-verbally expressed prejudice. Study 2 explored the means by which motivation moderates the relationship between implicit and explicit prejudice. Social, but not personal, motivation moderated the relationship between implicit and explicit prejudice. Individuals low in social motivation showed a strong implicit-explicit relationship whereas individuals high in social motivation showed a weak implicit-explicit relationship. Weak relationships between implicit and explicit

prejudice may result from attempts to comply with social standards that can be achieved on explicit, controllable measures, but not on implicit, uncontrollable measures. These results suggest that implicit prejudice levels can be modified by individuals motivated to be non-prejudiced, but only if this motivation stems from personal, internal sources.

Individuals who are relatively unconcerned with social pressures to be egalitarian tend to provide explicit responses that correspond to their underlying implicit attitudes, whereas those who are very concerned with appearing non-prejudiced to others tend to provide explicit responses that diverge from their underlying implicit attitudes.

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A Dissertation
Presented to the Faculty of the Graduate School
in Candidacy for the Degree of
Doctor of Philosophy

by
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December, 2000

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Acknowledgements

The work included in this paper could not have been completed without the help of many people. Thanks are due first and foremost to my mentor and advisor, Mahzarin Banaji, who pushed me (sometimes kicking and screaming) to achieve the best work I could produce, while also providing much-needed personal support and guidance. She was both a wire mother and a cloth mother to me, and it was a combination that enabled me to complete successfully this dissertation and all of my graduate training.

The research included in this paper was also influenced heavily by members of the Banaji lab group, including Siri Carpenter, Wil Cunningham, Stephanie Goodwin, Kristin Lane, and Brian Nosek as well as former lab members who helped these ideas take root, Buju Dasgupta Jack Glaser, Aiden Gregg, and Wendi Walsh. Marianne LaFrance was instrumental in the development of this research, particularly the behavioral measure, and she and members of her lab group provided much additional guidance throughout the project. As a member of the faculty committee for every requirement of my graduate school career, Peter Salovey provided substantial scientific as well as personal support for this project and throughout my graduate career. I am also grateful to the members of my dissertation committee, Paul Bloom and Geoff Cohen, whose insightful comments greatly improved the final draft of this paper. In addition, I am indebted to David Pizarro, James Kaufman, Adam Bristol, David Hecht, Derick Lindquist, and Brian Nosek for helping out as confederates for the behavioral measures and Johanna Zumer for assistance with coding non-verbal behavior.

I believe I would not have survived graduate school without the support of my graduate student cohort at Yale, a.k.a. the “Null Set.” I was privileged to enter Yale with

this group of brilliant, cooperative, and thoroughly entertaining individuals. I am particularly indebted to Siri Carpenter and Tracy Banaszynski, who consulted with me during the planning and execution of this research, read multiple drafts of this paper and, more importantly, provided the emotional support I needed throughout the completion of this dissertation and all of graduate school.

Finally, I wish to acknowledge my family for respecting my choice to remain a student for a ridiculously long time. My mother, June Lemm, and father, Fred Lemm, have provided unfailing support of my efforts, along with my aunts Virginia Luther and Dorothy Levanetz, stepmother Barb Lemm, grandmother Irene Lemm, and grandmother Dorothy Anderson, who sadly passed away shortly before I was able to complete my degree.

In addition to the personal support from those listed above, this research benefited from financial support from a National Science Foundation Graduate Research Fellowship and from Yale University grants (Fund for Lesbian and Gay Studies, Enders Research Grant, and a Dissertation Fellowship) as well as NSF and NIMH grants to Mahzarin R. Banaji.

To everyone listed here, and many more whom I have not mentioned, I offer my heartfelt thanks for making the experience of writing this dissertation a positive one, and for supporting me through all my pursuits.

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Bellingham, Washington
August, 2000

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INTRODUCTION

Decades of research on implicit social cognition have provided convincing evidence for the existence of attitude processes that operate outside of conscious awareness, intention, and control (e.g., Greenwald & Banaji, 1995; Wegner & Bargh, 1999). However, questions concerning individual differences in the strength of implicit attitudes and the relationship between implicit and explicit attitude have not been simple to answer. Whereas many studies have shown little or no relationship between implicit and explicit attitudes, suggesting that individual differences in implicit attitude are not meaningful (see Greenwald & Banaji, 1995, for a review), others have shown substantive relationships (e.g., Lepore & Brown, 1997; Wittenbrink, Judd, & Park, 1997). There are many reasons why implicit attitudes may or may not be related to their explicit counterparts, including characteristics of the attitude object as well as characteristics of the measurement tools. The present research takes as its focus a characteristic of the perceiver, specifically, an individual difference variable, motivation to respond without prejudice, which may be related to both implicit and explicit prejudice as well as to the strength of the implicit-explicit relationship.

Explicit and Implicit Prejudice

Prejudice, defined as negative evaluation or affect directed toward a social group or members thereof, has been a central topic of study in social psychology for decades (see Brewer, 1994; Fiske, 1998, for reviews). In most empirical research on prejudice, the construct has been conceptualized as an explicit process fully available to conscious awareness and control. The assumption has been that individuals could choose to be (or not to be) prejudiced against a given social group, or could choose whether to apply a

negative group attitude to an individual member of that group. A large body of research on prejudice has focused on measuring explicit prejudice toward a variety of social groups, primarily using self-report measures including favorability ratings on interval scales (e.g., Osgood, 1952; Thurstone, 1928a), questions about social distance (Bogardus, 1925, 1933), or feeling thermometers (Miller & Miller, 1977).

Early assessments found that adult Americans' attitudes were largely negative toward groups that differed in nationality, race, ethnicity, gender, religion, and social class (e.g., Bogardus, 1947; Katz & Braly, 1933, 1935; Thurstone, 1928b). However, over the course of the century, laws and social norms in the United States have created increasingly high standards of tolerance; correspondingly, explicit attitudes toward social groups have tended to reflect greater egalitarianism (e.g., Brigham, 1972; Karlins, Coffman, & Walters, 1969; Maykovich, 1971, 1972; Schuman, Steeh, & Bobo, 1985).

Although self-reported attitudes were becoming less prejudiced, however, attitudes assessed with less reactive measures were revealing a quite different pattern. Numerous studies showed that Americans tended to exhibit greater prejudice through their behavior than they revealed on explicit questionnaires (see Crosby, Bromley, & Saxe, 1980 for a review). For example, Gaertner (1975) found that White participants were more likely to help an unseen White victim than a Black victim who was ostensibly being crushed by heavy furniture. Using a particularly subtle index of prejudice in behavior, Weitz (1972) found that White participants exhibited a less friendly tone of voice when conversing over intercom with an ostensibly Black partner than with a White partner. Importantly, these biased tendencies were observed equally often among

participants who reported low levels of explicit prejudice as those who reported high levels of prejudice.

Contradictory evidence from self-report studies and behavioral observation prompted researchers to propose a variety of reconceptualizations of prejudice. “Old fashioned” prejudice assessed with feeling thermometers and social distance questions was replaced by “modern” definitions and measures devised to probe prejudicial attitudes that may be socially masked (e.g., Jones & Sigall, 1971, McConahay, Hardee, & Batts, 1981), may show ambivalence (e.g., Glick & Fiske, 1996; Katz & Hass, 1988), or may reflect intra-individual conflict between negative personal attitudes on the one hand and social pressures to be egalitarian on the other (e.g., Sears & McConahay, 1973; Swim, Aikin, Hall, & Hunter, 1995; Tougas, Brown, Beaton, & Joly, 1995).

Many modern conceptualizations of prejudice have addressed concerns that individuals may hold prejudiced attitudes that they are *unwilling* to express. An alternative conceptualization of prejudice, however, is that individuals may hold prejudiced attitudes that they are *unable* to express (e.g., Greenwald & Banaji, 1995). Adapting measurement techniques previously used to study memory and perception, social psychologists began to investigate attitudes that may occur without awareness, intention, or control, which have been referred to as *automatic*, *unconscious*, or *implicit* interchangeably (e.g., Bargh, Chaiken, Gvender, & Pratto, 1996; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Kunst-Wilson & Zajonc, 1980; see Bargh, 1997; Greenwald & Banaji, 1995, and Wegner & Bargh, 1998, for reviews).

Research on implicit evaluation was also well-suited for investigations of social groups. Negative attitudes (prejudice) against a variety of social groups were assessed

with implicit measures, particularly those that used speeded responding to judgments of social and evaluative targets. For example, Gaertner and McLaughlin (1983), adapting a lexical decision task originally designed to study memory (Meyer & Schvaneveldt, 1971), found that participants were quicker to identify word pairs that included the word WHITE paired with a positive word or BLACK paired with a negative word, relative to when WHITE was paired with negative and BLACK with positive.

Gaertner and McLaughlin interpreted this difference in response facilitation as an indication of greater favorability toward Whites than Blacks, which fit well with the classic definitions of attitude that characterize the construct as "...a mental and neural state of readiness ... exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related" (Allport, 1935) as well as more recent definitions that view attitude as an "...association in memory between a given object and one's evaluation of that object." (Fazio, 1990a, p. 81).

The lack of relationship Gaertner and McLaughlin observed between implicit and explicit prejudice proved to be quite robust. In the following years, researchers adopted variants on the response latency procedure, as well as a host of other techniques, to assess implicit prejudice toward a variety of social groups (see Banaji, Lemm, & Carpenter, in press; and Wegner & Bargh, 1998, for reviews). The vast majority of studies of implicit prejudice have found no relationship between implicit prejudice assessed with response latency or other indirect measures and explicit prejudice assessed with traditional questionnaires, paralleling earlier findings that prejudice assessed with non-verbal measures did not relate to verbal self-reported prejudice.

As such, a consensus developed that implicit prejudice is distinct from explicit prejudice, consistent with well-established findings in memory research demonstrating distinct implicit and explicit memory processes or systems (e.g., Jacoby, Yonelinas, & Jennings, 1997; Schacter, 1994). Models of implicit and explicit prejudice were referred to as “dissociation models” or “dual-process” models to capture the idea that explicit and implicit prejudice are products of distinct affective or attitudinal systems (see Devine & Monteith, 1999, for a review). These models assume that implicit prejudice is rooted in social learning, and is both unavoidable and uncontrollable (e.g., Bargh, 1999; Devine, 1989). Although individual differences in attitudes toward social groups and changes in such attitudes were observed with explicit measures, prejudice assessed with implicit measures appeared to be a characteristic reflection of cultures, not individuals, and was assumed to be independent of conscious or explicit versions of attitude toward the same object (e.g., Greenwald & Banaji, 1995).

Research supporting dissociated implicit and explicit social information processing systems painted a bleak picture for efforts to reduce prejudice and stereotyping. If stereotypes and prejudice are activated and applied to social judgments without conscious control or intention, then individuals will not be able to avoid making biased judgments, even if they have the best of intentions to be non-prejudiced. Bargh (1999) made a particularly strong case that conscious intentions to avoid bias could not override automatic tendencies to use stereotyped beliefs and prejudiced attitudes in making social judgments. Automatic stereotyping effects, he argued, were a “cognitive monster” that could not be defeated through sheer force of will.

Not all researchers were persuaded that biased social judgments were a forgone conclusion, however. For example, Fiske (1989) argued that well-intentioned social perceivers could “make the hard choice” to avoid using stereotypes and prejudice in their social judgments. Consistent with the view that low levels of self-reported prejudice could be associated with low levels of implicit prejudice, studies documenting significant implicit-explicit relationships began appearing in the literature. For example, Lepore and Brown (1997) subliminally primed participants with category labels denoting Black, and found a significant relationship between implicit category priming and explicit prejudice. Similarly, Wittenbrink et al. (1997) found a significant relationship between an implicit priming measure and explicit prejudice.

As additional studies appeared demonstrating significant implicit-explicit relationships using a variety of new techniques to assess implicit belief and attitude (e.g., Augoustinos, Ahrens, & Innes, 1994; Hense, Penner, & Nelson, 1995; Kawakami, Dion, & Dovidio, 1998; Maass, Milesi, Zabbini, & Stahlberg, 1995; Vanman, Paul, Ito, & Miller, 1997), the focus of theory on implicit and explicit prejudice shifted from asking *whether* implicit and explicit can ever be related to *when*, and under what circumstances, they can be expected to be related (e.g., Blair, in press; Brauer, Wasel, & Niedenthal, 2000; Lemm, 1998), which are core questions of the present research.

Motivation to Respond Without Prejudice

Research demonstrating significant implicit-explicit relationships suggested that implicit-explicit relationships could be found under certain conditions, with certain measures. Other researchers have proposed that certain characteristics of individuals may predict when implicit and explicit prejudice will be related. For example, Cunningham,

Nezlek, and Banaji (2000) found that individuals may vary in their underlying propensity to be prejudiced toward a variety of social groups (including gays and lesbians, African Americans, Jews, people from foreign countries, and poor people). Other researchers have proposed that motivation may be an important predictor of individual differences in prejudice. According to several models of social judgment, individuals differ in the extent to which they apply more thoughtful versus more heuristic processes when making social judgments (e.g., Brewer, 1988; Fiske & Neuberg, 1990; Kruglanski & Freund, 1983; Stangor & Ford, 1992; Stangor & Ruble, 1989), and vary in the extent to which they are motivated to make deliberated social judgments that will lead to reduced use of stereotypes (e.g., Gollwitzer, 1990; Hilton & Darley, 1991; Snyder, 1992).

In a similar vein, individuals may vary in the extent to which they are motivated to behave in accordance with non-prejudiced standards. Whereas some individuals may be concerned about their prejudiced judgments and behaviors, others may have little such motivation and feel little compunction about expressing prejudice (e.g., Devine, Monteith, Zuwerink, & Elliot, 1991; Monteith, Devine, & Zuwerink, 1993). The question of whether individual differences in such motivation can be assessed has received empirical attention in recent years from two teams of researchers. These research projects are similar in that they attempt to assess individual differences in the strength of motivation to respond or behave in non-prejudiced ways, but they differ in their focus on the sources of such motivation.

Fazio's motivation to control prejudiced responding scale. The MODE model (Dovidio & Fazio, 1992; Fazio, 1990a) proposes that *Motivation and Opportunity are DEterminants* of expressed attitudes. For example, people are likely to express less

negativity toward a stigmatized social group to the extent that they are motivated to be less negative and have the opportunity to express attitudes in line with this motivation. The model has implications for individual differences in motivation as well as situational differences in the extent to which situations allow for motivated responding. Individuals may exhibit prejudiced responses in a situation either because a) they are not motivated to respond without prejudice, or b) the situation is such that they are not able to respond without prejudice, regardless of their motivation to do so. A defining feature of implicit measures is that they operate largely outside conscious control, and thus represent a class of conditions that motivation may have little scope to influence.

To test the MODE model, Fazio et al. (1995) developed a scale to assess motivation to control prejudiced responding toward African Americans (MCPR). They found that higher motivation to control prejudiced responding was associated with lower explicit prejudice but was not related to implicit prejudice assessed with a semantic priming measure. Supporting predictions of the MODE model, motivated participants showed less prejudice on the controllable, explicit measure but did not show less prejudice on the uncontrollable, implicit measure, consistent with the belief, still overwhelmingly endorsed in 1995, that responses on an explicit, self-report measure (motivation) would not predict responses on an implicit measure.

Additionally, Fazio et al. (1995) found that motivation to control prejudiced responding moderated the relationship between implicit and explicit prejudice. Participants low in motivation showed a strong positive relationship between implicit and explicit prejudice, such that higher prejudice on the implicit measure was associated with higher prejudice on the explicit measure. In contrast, those high in motivation showed a

weak implicit-explicit relationship, such that prejudice shown on the explicit measure was unrelated to prejudice shown on the uncontrollable, implicit measure. Fazio et al. argued that people who were highly motivated tried to mask their prejudice through conscious control, but could do so only on the explicit measure, resulting in a weak implicit-explicit relationship. In contrast, they argued, people low in motivation to control prejudice tended to provide responses on the controllable, explicit measure that were more in line with the prejudice level they displayed on the uncontrollable, implicit measure, resulting in a strong implicit-explicit relationship.

Sources of motivation: personal versus social. In their development of the MCPR scale, Fazio et al. (1995) attempted to generate scale items that would distinguish between sources of motivation that derive from the individuals' personal standards versus from social pressures external to the individual. In a re-analysis of the Fazio et al. (1995) data, however, Dunton and Fazio (1997) found that the MCPR scale does not distinguish between these two sources of motivation.¹ Although their results could suggest that personal and social sources of motivation are not distinct, an alternative explanation is that the MCPR scale was not properly designed to assess these different sources of motivation.

Plant and Devine's motivation to respond without prejudice scale. Plant and Devine (1998) also developed a scale to assess motivation to respond without prejudice. They were concerned that most research reporting increasingly egalitarian social attitudes over time tended to suggest that this prejudice reduction was primarily a function of individuals attempting to appear less prejudiced to conform to social standards (e.g.,

¹ Rather, the items from the MCPR scale loaded on factors they identified as *concern with acting prejudiced* and *restraint to avoid dispute*.

Crosby, et al., 1980; Dovidio & Fazio, 1992; Dovidio & Gaertner, 1991; Jones & Sigall, 1971). They argued that the proposal that prejudice reduction is exclusively due to compliance with external social norms fails to recognize that some people may actually have internalized non-prejudiced standards. They sought to identify people for whom low prejudice is a reflection of personal rather than social standards.

To measure personal, internal non-prejudiced standards as distinct from social, external standards, Plant and Devine (1998) developed a scale they termed the *motivation to respond without prejudice* scale. The scale, developed with reference to anti-Black prejudice, consists of two subscales, the Internal Motivation Scale (IMS) and the External Motivation Scale (EMS). IMS assesses motivation to respond in non-prejudiced ways that derives from *personal* sources internal to the individual (e.g., “I attempt to act in non-prejudiced ways toward Blacks because it is personally important to me”). EMS, in contrast, assesses motivation to respond in non-prejudiced ways in order to comply with *social* motivation external to the individual (e.g., “I try to hide any negative thoughts about Blacks in order to avoid negative reactions from others”). Plant and Devine (1998) used the terms *internal* and *external* to refer to these distinct sources of motivation. To enhance the clarity of the present report, the term *personal* motivation will be used as a substitute for *internal* motivation, and social motivation as a substitute for *external*.²

Plant and Devine (1998) demonstrated the validity of their scale by showing that personal motivation was strongly negatively correlated with several widely-used measures of explicit prejudice. Social motivation, in contrast, was largely unrelated to

² This alternate terminology is used for the purpose of minimizing confusion with regard to discussing *internal* and *external* motivation in the context of *implicit* and *explicit* prejudice. Plant and Devine (1998) did not discuss implicit versus explicit prejudice, thus did not encounter confusion with these similar-appearing words.

prejudice assessed in a private context. Plant and Devine further validated their scales by showing that social, but not personal, motivation was related to fear of being negatively evaluated and anxiousness in social interactions. Also, participants high in personal motivation reported that they would feel guilty and self-critical if they deviated from their personal non-prejudiced standards, whereas participants high in social motivation said they would feel threatened if they deviated from social non-prejudiced standards, presumably because they were concerned with how others would react to their prejudiced behavior.

The Present Research

The present project focused on two core questions regarding the relationship between motivation and prejudice. The first question considered the extent to which self-reported motivation to respond without prejudice is predictive of implicit as well as explicit prejudice. Plant and Devine (1998) showed that motivation can predict explicit prejudice, but they did not test whether motivation can predict implicit prejudice. Although some research has found evidence that explicit and implicit prejudice are related, as yet there is no evidence that explicit motivation can predict implicit prejudice. A significant relationship between self-reported motivation and implicit prejudice would contradict Fazio et al. (1995), who found that their motivation measure predicted explicit but not implicit prejudice. It is possible, however, that distinguishing between personal versus social sources of motivation will provide the appropriate test of whether motivation can predict implicit as well as explicit prejudice.

The second question addressed whether and how motivation to respond without prejudice moderates the relationship between implicit and explicit prejudice. Fazio et al.

(1995) argued that motivation moderates the implicit-explicit relationship because highly motivated individuals attempt to mask prejudice on the explicit measure. However, their claim of social masking by motivated participants was not entirely substantiated, because the MCPR measure confounded personal and social sources of motivation to control prejudice. The present research provided a more definitive test of the source of motivation that moderates the implicit-explicit relationship.

In addition to addressing these new questions regarding the relationship between motivation and prejudice, the present research extended the assessment of motivation into the domain of a different target social group, gay men. The studies incorporated a wide variety of measurement tools, including publicly and privately assessed explicit prejudice, a new measure of implicit prejudice that is particularly sensitive to individual difference, and a third category of measures that tap non-verbal behavior.

Target Attitude Object: Gay Men

The vast majority of research on prejudice has focused on race (particularly against African Americans) and gender (particularly against women). The current research focuses on prejudice toward gay men, who are targets of substantial blatant prejudice in the United States. Although many Americans endorse some egalitarian civil rights for gay people, a substantial percentage, including highly regarded political and religious figures and radio talk-show hosts, openly endorse negative views about homosexuality (e.g., Herek, 1993; Herek & Capitanio, 1996; Kite, 1992; Kite & Deaux, 1986). For example, in a nationwide probability sample collected in 1991-1992, Herek (1994) reported that 59.9% of people agreed somewhat or strongly with the item “I think that male homosexuals are disgusting.”

Gay men are also the targets of prejudice expressed through behavior. Among a sample of male students at a Southern university, 5% reported getting into a “physical fight with someone who I thought was making moves on me”, 34% reported verbally threatening a man whom he believed to have “checked me out,” and 42% reported moving away from a gay man who was perceived to be sitting or standing too close (Patel, Long, McCammon, & Wuensch; 1995). Similarly, individuals wearing clothing identifying them as pro-gay were found to be less likely to be helped by people at a shopping mall when requesting change (Gray, Russell, & Blockley, 1991), and 26.2% of male college student participants declined to interact with a confederate who had identified himself as gay (Kite, 1992).

The target group *gay men* was ideally suited for the goals of the present research, because variability in attitudes toward gay men is particularly high, maximizing the ability to observe relationships among various prejudice measures. The target group for the present research will be gay men specifically, and will not include attitudes toward lesbians or bisexuals. Attitudes toward lesbians are more positive among U.S. college students than are attitudes toward gay men, but are also more ambivalent (e.g., Gentry, 1987; Herek, 1988; Kite, 1984). Because the present studies focused on relationships among different ways of measuring prejudice, it was important to study a target group for whom attitudes are more unambiguously negative.

Hypotheses

Predicting prejudice from motivation. The first set of hypotheses for the present study centered around the relationship of personal and social motivation to respond without prejudice and implicit and explicit prejudice. The first of these predictions,

which is not radical, was that explicit prejudice would be better predicted by personal than social motivation. Consistent with Plant and Devine's (1998) findings, participants high in personal motivation were expected to report lower explicit prejudice than participants low in personal motivation, whereas social motivation was not expected to predict explicit attitude on a measure completed in private, where there is no social pressure to modify responses.

The more radical prediction in the present study was that personal motivation, but not social, was expected to predict implicit prejudice as well as subtle non-verbal behavior. Because implicit prejudice and subtle non-verbal behavior are believed to be largely uncontrollable, some researchers have argued that motivated attempts to suppress these processes are doomed to fail. The present research makes the case that although automatic processes may be uncontrollable, there may nonetheless be individual differences in the strength with which implicit beliefs and attitudes are held. Following Plant and Devine (1998), it was expected that people highly motivated to be non-prejudiced for personal reasons, who have internalized non-prejudiced standards, would exhibit weak implicit associations between *gay* and *bad*, thus evidencing low implicit prejudice. In contrast, participants who wish to appear non-prejudiced only for social reasons may modify their responses on the explicit measure, but were not expected to do so on the implicit measure or the measure of subtle non-verbal behavior.

Predicting implicit-explicit relationship from motivation. The second major hypothesis of the present research, which also represents a substantive departure from previous theory, was that social and personal motivation would differentially influence the relationship between implicit and explicit prejudice. Specifically, social motivation

was expected to be a stronger predictor than personal motivation of the relationship between implicit and explicit prejudice. It was expected that participants low in social motivation would tend to provide responses on the explicit measure that closely reflected the level of prejudice they exhibited on the implicit measure, resulting in a high implicit-explicit correlation. In contrast, participants high in social motivation were expected to provide responses on the explicit measure that reflect their social motives to appear non-prejudiced, whereas they would not be able to modify responses on the implicit, uncontrollable measure, resulting in a low implicit-explicit correlation.

Fazio et al. (1995; Dunton & Fazio, 1997) likewise found that people who scored low on their measure of motivation to control prejudice showed a stronger implicit-explicit relationship than people who scored high on motivation. However, because their measure confounded personal and social sources of motivation to respond without prejudice, it was not clear why motivation exerted this moderating effect on the implicit-explicit relationship. The present research was designed to more carefully probe the underlying reasons why individuals vary in the extent to which their implicit prejudice is similar to their explicit prejudice.

Overview of Research

The present research included two studies. Study 1 focused primarily on the relationship between personal versus social motivation to respond without prejudice, in particular, whether personal motivation can predict implicit prejudice and non-verbal behavior. The study used a variety of measures to assess prejudice against gay men, including a response-latency measure of implicit prejudice, a questionnaire measure of explicit prejudice, and measures of non-verbal behavior that are assumed to be relatively

uncontrollable indicators of prejudice. Study 2 shifted the focus to an examination of the relationship between implicit and explicit prejudice, in particular, whether personal or social motivation moderates the implicit-explicit relationship

STUDY 1

Study 1 stemmed from an interest in exploring the extent to which motivation to be egalitarian can predict prejudice assessed with a variety of measures. Although it was fairly certain that varying levels of self-reported motivation to be non-prejudiced would be reflected in levels of self-reported prejudice, it was much less certain whether conscious motivation to be egalitarian would be associated with low prejudice levels on measures for which attitude is assessed via response latency or subtle, non-verbal behavior. Two sources of motivation were investigated: personal motivation guided by standards from within the individual's self-concept, and social motivation guided by standards external to the individual. These sources were distinguished in an effort to determine the extent to which explicit, implicit, and non-verbally expressed prejudice are influenced by personal standards versus social standards of egalitarianism.

In addition to scales recently developed to assess personal and social motivation to respond without prejudice, Study 1 used three different types of measures of prejudice toward gay men: A well-established questionnaire measure of explicit anti-gay prejudice, a response-latency measure of implicit attitude toward gay versus straight, and a non-verbal behavior measure of comfort with a (presumed) gay interviewer.

Motivation to Respond Without Prejudice

Study 1 sought to explore the differential impact of personal motivation that derives from internalized personal standards, versus social motivation that is generated from social sources external to the individual. To assess both sources of motivation to respond without prejudice, Study 1 adapted measures developed by Plant and Devine (1998), which were designed with respect to anti-Black prejudice. The present study

tested whether the Plant and Devine scales, when appropriately modified, can be generalized to social groups besides African Americans, specifically, to gay men.

Assessment of Prejudice

Explicit prejudice. Explicit attitude toward gay men was assessed with the Attitudes Toward Gay men scale (ATG; Herek, 1984). This scale consists of ten items that assess overall favorability toward gay men (e.g., “I think gay men are disgusting” as well as attitudes toward various civil rights for gay men (e.g., “Gay men should not be allowed to teach school.”) via responses on Likert-type scales. The ATG has been established to be internally reliable and has been validated on a large number of student and community samples (Herek, 1994).

Implicit prejudice. Implicit prejudice was assessed using the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). The IAT provides an index of the relative strength of association between social groups and evaluation by assessing the ease with which items from two different social groups (*gay* or *straight*) can be identified when they are simultaneously paired with judgments of *pleasant* and *unpleasant* items. The critical feature of the IAT is that two sets of categorizations are made with one set of response keys. Responses are paired together in two different ways: (a) gay is paired with pleasant, and straight with unpleasant, or (b) gay is paired with unpleasant, and straight with pleasant. The difference in response facilitation between these two combinations provides an index of the strength of association. Participants who have a stronger association between gay and pleasant will tend to respond more quickly and accurately under pairing (a), whereas participants who have a stronger association between gay and unpleasant will tend to respond more quickly under pairing (b).

The IAT is similar in many ways to other response-latency attitude measures, in particular because all such measures define *strength of association* as *attitude*, following pioneering work beginning in the early 1980s that established that associations between social group categories and valence can be interpreted as reflecting attitudes (Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Fazio, Chen, McDonel, & Sherman, 1982; Fazio et al., 1995; see Banaji, in press, for a review). Since its first publication in 1998, the IAT has been widely adopted in research on implicit prejudice, (see Banaji, in press; Lemm & Banaji, 1999, for reviews).³ The IAT appears to be resistant to conscious control or attempts to intentionally “fake” responses (Kim & Greenwald, 1998),⁴ and is impressive in the magnitude of the bias that can be detected, with implicit effect sizes that often exceed those of explicit measures (see Banaji, in press; Nosek, Banaji, & Greenwald, 2000; Rudman, Greenwald, Mellott, & Schwartz, 1999).

Unobtrusively Observed Behavior as a Measure of Prejudice

Non-verbal behavior as a measure of comfort. As another means of assessing prejudice toward gay men, Study 1 made use of measures of non-verbal behavior in an interaction with a gay or straight confederate. Subtle non-verbal behavior has been shown to be indicative of comfort in a social interaction and favorability toward the interaction partner (e.g., Kleinke, Meeker, & LaFong, 1974; Naiman & Breed, 1974; Thayer & Schiff, 1974; see Mehrabian, 1972; Kleinke (1986), for reviews). To the extent that such favorability in interaction varies according to the social group of the interaction

³ Additional information about the IAT, sample on-line measures, and descriptions of ongoing IAT research are available at www.yale.edu/implicit.

⁴ Kim and Greenwald (1998) found that participants could intentionally slow down their responding under “consistent” pairings to imitate non-prejudiced responding, but they could not simultaneously speed up responding under “inconsistent” pairings, thus they were unable to fully fake non-prejudiced responses.

partner, non-verbal behaviors may be indicative of prejudice (Mehrabian, 1972). Study 1 assessed non-verbal behavior in an interview with one man (a confederate) who was perceived as straight for the first part of the interview and as gay for the second part. (Participants in the control condition perceived the confederate as straight for both parts of the interview.) Non-verbal behavior expressed during the two parts of the interview can then be compared, providing a relative measure of non-verbally expressed attitude toward gay versus straight.

The primary behavioral dependent variable was *facial gaze* during the interview (frequency and duration of gaze), which refers to participants' gaze directed at the facial region of the confederate. There is substantial evidence that individuals can determine with high reliability when another person is gazing at their face (e.g., Exline & Fehr, 1982), and that an outside observer can judge reliably when one person is looking at another's face (e.g., Cook, 1979; Exline, 1963; Rutter & Stephenson, 1972). Research on gaze behavior suggests that the proportion of time that a person spends looking at another person is an effective index of level of comfort toward and liking for the other person (e.g., Breed, 1972; Isaacs & Bearison, 1986; Mehrabian, 1968, 1972; Rubin, 1970; see Kleinke, 1986 for a review). In a classic demonstration of this effect, Exline and Winters (1965) found that in an interaction with two confederates, participants gazed longer at the confederate whom they indicated preferring. In addition to the facial gaze measure, confederates rated participants' overall comfort level and the amount of time they spent looking at the confederate before and after learning that the confederate was gay. The comfort rating was based on confederates' global perception of comfort, as indicated by facial gaze and a variety of other behaviors.

Non-verbal behavior as a measure of spontaneous attitude. The MODE model (Dovidio & Fazio, 1992, Fazio, 1990a) proposes two primary processing modes for behavioral decisions: conscious, controlled processes, and unconscious, spontaneous processes. Subtle, non-verbal behaviors such as facial gaze are performed largely outside of conscious awareness and intention, and tend also to be difficult to control, thus they may be driven, at least in part, by spontaneous processes similar to those that drive implicit prejudice (e.g., Fazio et al., 1995; Mehrabian, 1972).

The MODE model predicts that spontaneous, uncontrolled behaviors such as facial gaze will not be related to controlled, conscious attitudes expressed on direct attitude measures. Rather, subtle, non-verbal behaviors should be predicted by spontaneous, uncontrolled attitudes – implicit attitudes. Fazio et al. (1995) found support for this through their observation of a significant correlation between non-verbal behavior expressed toward a Black experimenter and implicit prejudice assessed with a response latency priming measure. No relationship was observed between prejudice assessed with the priming measure and scores on a measure of explicit racial prejudice, the Modern Racism Scale (MRS; McConahay, 1986).

Dovidio et al. (1997) observed a similar pattern of relationships between implicit and explicit prejudice and non-verbal behavior. They observed that scores on an implicit priming measure of anti-Black prejudice did not correlate with scores on the MRS and the Attitudes Toward Blacks Scale (Brigham, 1993), both measures of global, explicit anti-Black attitudes. However, the implicit measure did correlate with the amount of time participants spent looking at the experimenter during an interview as well as the rate at which participants blinked their eyes during the interview. Participants who showed

more anti-Black attitude on the priming measure tended to make less visual contact and blink more often during an interaction with a Black experimenter.

Hypotheses

Predictions for Study 1 centered around the relationship of personal and social motivation to measures of implicit and explicit prejudice and non-verbal behavior. The original personal and social motivation scales were expected to generalize for use with reference to anti-gay prejudice, providing indices of two distinct (uncorrelated) sources of motivation. Because male participants typically express more negative explicit attitudes toward gay men than do female participants, it was further anticipated that men would endorse weaker personal motivation to respond without prejudice than would women.

Both male and female heterosexual participants were expected to show a preference for straight relative to gay, however, this anti-gay bias was expected to be stronger among men than among women. Predicted effects on the IAT for gay male participants were less certain. Attitudes toward social groups are strongly linked to attitudes toward the self, that is, people tend to show a strong in-group bias (e.g., Carpenter, 2000; Lemm & Banaji, 1998; Tajfel, 1981; Tajfel & Turner, 1986). Thus, it might be expected that gay men would show a preference for gay relative to straight on the IAT. However, it has also been argued that implicit attitudes, more so than explicit attitudes, are derived from cultural norms and social reinforcements. Because gay men represent a small minority in the United States, and because social norms in the U. S. regarding gay attitudes are still quite strongly negative, it is also possible that cultural attitudes will overwhelm in-group favoritism such that gay men will show a preference for straight relative to gay, much as Nosek et al. (2000) observed that African American

participants showed no implicit preference for their in-group whereas White participants showed a strong in-group bias.

The facial gaze measure and comfort ratings were expected to show patterns of responding indicative of anti-gay prejudice, such that participants would gaze less at the confederate and be perceived as being less comfortable after he had been revealed to be gay, relative to when his sexual orientation was unspecified. Because subtle, non-verbal behavior is believed to be relatively unintentional and uncontrollable, it was expected that prejudice on these non-verbal behavior measures would be more similar to implicit prejudice assessed with the IAT than to explicit prejudice assessed with a questionnaire measure.

Although implicit and explicit prejudice are assumed to operate at different levels of cognitive processing, they were expected to be modestly related in the present study. Because social norms in the present population do not entirely prohibit the expression of anti-gay bias on explicit measures, it was anticipated that, to some extent, participants would respond with bias on the explicit measure that reflected the level of bias they showed on the implicit measure.

Finally, and most importantly, personal and social motivation were expected to moderate responses on all of the previously described measures. Social motivation was expected to moderate responding only on the measure that included any social pressure to respond, the verbal responses given to questions during the interview. Participants who strongly endorsed social motivation to respond without prejudice were expected to respond with less bias in the public interview than participants with weak social motivation.

In contrast, personal motivation was expected to influence responding on all explicit measures, such that individuals who strongly endorsed personal reasons to respond without prejudice would tend to evidence less prejudice on both public and private attitude measures. Because these questions are novel, it was less certain whether personal motivation would moderate responding on the IAT or the measures of non-behavior. If implicit prejudice is only a function of social norms and reinforcements, then participants' self-reported motivation to be non-prejudiced should have little effect on their implicit prejudice. However, if personal motivation represents a desire to be non-prejudiced that is truly internalized, then participants who strongly endorse personal reasons would be expected to show less prejudice on the implicit measure and the subtle, non-verbal behavior measure than would participants who are low in personal motivation.

Method

Overview

The primary question addressed in Study 1 was whether personal and social motivation to respond without prejudice are related to implicit and explicit prejudice toward gay men, assessed with a variety of measures. Additional questions of interest were the relationship between implicit and explicit prejudice as well as the relationship between attitudes assessed with categorization/judgment measures and those assessed with behavioral measures.

To address these questions, participants completed measures of implicit attitude toward gay men (Implicit Association Test; IAT; Greenwald et al, 1998) and explicit attitude toward gay men (Attitudes Toward Gay Men Scale; ATG; Herek, 1984) as well as measures of non-verbal behavior (eye contact and perceived comfort) exhibited in

response to an interview with a perceived gay confederate. To test whether motivation to respond without prejudice predicts attitude and behavior, participants completed personal and social scales of the motivation to respond without prejudice scale (Plant & Devine, 1998). A summary of the tasks completed, including the order in which they were completed, is presented in Table 1.⁵

Table 1: Summary and order of experimental tasks

<i>Measure</i>	<i>Description</i>
1. Non-verbal behavior	Amount of eye contact made with a male interviewer when his sexual orientation is unspecified (control) compared to when known to be gay; confederate ratings of comfort and looking during interview.
2. Implicit attitude (IAT)	Response-latency measure of strength of implicit association between gay (and straight) and pleasant versus unpleasant.
3. Personal/social motivation to respond without prejudice	Questionnaire measure: Agreement with items that specify personal or social motivation to respond without prejudice.
4. Explicit attitude (ATG)	Questionnaire measure: Indicate agreement with items that assess attitudes regarding gay men.

Participants

Thirty-five male and 32 female participants were recruited as they exited undergraduate dining halls,⁶ through signs posted on campus, and through calls to students chosen at random from the undergraduate phone directory. Participants received

⁵ Two additional measures were included that will not be discussed in the present report. The first was an IAT measure of implicit gender identity which replicated previous research by Lemm & Banaji (1998), but did not relate to any other measure in the present study. The second was a measure in which participants were asked to sign up to twenty cards addressed to U.S. Senators to show support for legislation to allow gays to serve openly in the U.S. military. This measure was also unrelated to other measures in the present study.

⁶ Participants who were recruited in the dining halls completed a pre-selection measure that included the personal and social motivation scales, however, participants were not recruited on the basis of their responses to this measure.

\$7 for their participation. An additional sample of 16 male and 19 female participants were recruited from introductory psychology classes. Participants in this sample completed only the implicit attitude (IAT), personal and social motivation, and explicit attitude (ATG) measures; they did not complete any behavioral measures.

Data for the non-verbal behavior measure were unusable for seven participants: three for whom the camera malfunctioned, one who was wearing sunglasses, two for whom the measure was altered subsequent to their participation,⁷ and one who requested that his videotape be deleted. Although these seven participants did not have usable data for the non-verbal behavior measure, their data were usable for the remaining measures, and were retained for subsequent analysis. In addition, data from 6 male and 1 female participant who reported being gay, lesbian, or bisexual were omitted from analysis unless otherwise specified.

Materials

Participants completed two gay-straight attitude IAT measures that paired judgments of gay/straight stimuli with judgments of pleasant/unpleasant stimuli. One gay IAT attitude measure used verbal stimuli, the other used picture stimuli.

Verbal stimuli for gay attitude IAT. A full list of stimuli is shown in Appendix A. The words *gay*, *homosexual* and *straight*, *heterosexual* represented the *gay* and *straight* categories, respectively. Stimuli for the pleasant and unpleasant categories were chosen from words normed by Bellezza, Greenwald, and Banaji (1986) on a 7-point bipolar scale

⁷ These participants had been allowed to hold a card listing the potential responses for the interview questions. It quickly became clear that participants spent a large portion of the interview looking at the response card, rather than the confederate. All subsequent participants were instructed verbally regarding response options and were not given a visual reminder.

(1 = very unpleasant; 7 = very pleasant). The words chosen for the category *pleasant* were rated 6.39; words chosen for the category *unpleasant* were rated 1.48.

Picture stimuli for gay attitude IAT. To generate pictures to represent gay and straight categories, two individuals visited communities outside Yale and recruited men and women to pose as members of male-male or male-female couples.⁸ Most of the participants for stimulus materials were recruited in groups of four (two men, two women) and were photographed in all possible combinations of gender pairings using a Sony DC120 digital camera set at high resolution.⁹ Pairs of participants posed side by side, usually with one participant putting an arm over the shoulder of the other, which did not indicate a high level of intimacy between the two individuals, but suggested that the pair might be a couple. The highest quality male-male and male-female photographs (five of each, selected on the basis of photographic quality as well as apparent comfort of those photographed) were selected for the experiment.

Procedure

Upon arrival at the laboratory, participants read and signed a consent form that specified that they would be videotaped as part of the experiment, then completed the experimental tasks in the order specified in Table 1 in the overview to this section.¹⁰

Facial gaze measure. The purpose of this measure was to compare the amount of time that participants spent gazing at a man whom they believed to be gay compared to the amount of time they spent gazing at the same man when his sexual orientation was

⁸ Female-female couples were also photographed, but were not used in the present experiment.

⁹ The sexual orientation of participants for the stimulus materials was not ascertained.

¹⁰ Due to a computer problem, one participant completed the IAT measures following the motivation and explicit measures.

unknown. The measure involved an interview with a male confederate for whom participants were initially given no information regarding sexual orientation. Halfway through the interview, the confederate was revealed to the participant to be either gay or straight. Although confederates knew that their sexual orientation would be “revealed,” they were unaware of which condition they were in until after the experiment was completed.

While the participant read and signed the consent form, the experimenter went to another room where the interview was to take place, and turned on a Sony CCD-TR21 8-mm video camera. The camera was located behind the head of the confederate such that the back of the confederate’s head appeared in the lower right corner of the recorded image, and the participants face was in full view. This arrangement allowed coders viewing the videotape to determine when the participant was looking at the face of the experimenter (coding of the videotapes will be described in a later section). The camera was disguised behind a small stereo speaker on a shelf with numerous unrelated objects to distract attention from the camera.¹¹ After participants had signed the consent form, the experimenter returned and verbally delivered the following instruction:

“This experiment is about different ways to measure attitudes toward social groups. It starts out with a brief interview, and then there’s a part on the computer, and some questionnaires. My research assistant will be doing the interview. Come with me and I’ll take you over to the room where he is.”

¹¹ Several participants reported noticing the video camera. Interestingly, their gaze behavior was not substantially different from participants who did not notice the camera, thus, their data are included along with the full data set.

The experimenter then led the participant to a 9' x 9' room down the hall in which a male confederate was seated in a chair facing the door to the room. An empty chair was placed facing the confederate's chair, such that the knees of the participant and confederate were about 1.5 feet apart when both people were seated. The experimenter introduced the participant to the interviewer (confederate),¹² who stood up, greeted the participant, and shook the participant's hand. The experimenter instructed the participant to be seated in the unoccupied chair, then left the room and closed the door. No information regarding the confederate's sexual orientation was given at this point.

During the interview, the confederate held a clipboard with a printed page of items for the interview. Confederates were trained to memorize and adhere to the following script, which they used to begin the interview:¹³

“Kristi probably told you that this experiment is about people's attitudes. I'm going to read you a series of statements, and I want you respond whether you agree or disagree with each statement, and then indicate how strongly you agree or disagree: slightly, moderately, or strongly.”

After participants indicated that they understood the task, the confederate began by reading statements about attitudes toward gay men, writing down the participant's response to each item on the printed sheet of questions (see Appendix B for full listing of statements in the order they were read).

¹² A total of eight male graduate students participated as confederates. Confederates were introduced with their actual first names, which were all relatively common American first names (e.g., David, Brian, James) never the same as the participant's name.

¹³ Confederates were trained individually by the experimenter. The experimenter first demonstrated the script for the confederates, then confederates practiced the script with the experimenter posing as a participant. Each confederate practiced the experimental script several times prior to interacting with participants.

When the confederate completed the first page of nine interview statements, he turned to the second page of items, which was stapled to the first page. As part of the experimental manipulation, the second page of items was identical to the first page of items, rather than being the appropriate second page of questions. Confederates were trained to display some surprise upon discovering that they had the wrong second page of items, and proceed with the following memorized script:

“Oh no, I have two of the same page here. There’s supposed to be a second page. Do you mind waiting here for a minute while I go back to the other office and try to find the other page?”

The confederate then left the room and alerted the experimenter that he had completed the first half of the interview.

While the confederate was out of the room, the experimenter entered the interview room to deliver the experimental manipulation of providing explicit information regarding the confederate’s sexual orientation, which to this point had not been explicitly specified. The experimenter spoke to the participant using the following script, allowing the participant to respond as appropriate:

“Hi, it’s me. [Confederate’s name] just came back into the lab. He said he was looking for the second page of questions. Sorry about the mix-up. Other than that, is the interview part going OK? [Wait for participant to respond.¹⁴] Good, I wanted to make sure because this is a new experiment, and it’s the first time where the person doing the interview told me [manipulation], so I just wanted to make sure that everything was going OK.”

¹⁴ Every participant nodded and/or replied that the interview was going fine.

The experimental manipulation was delivered by inserting one of the following phrases into the above script, either “*he is openly gay*” or “*he is straight*.¹⁵” After completing the manipulation script, the experimenter said, “I’ll go see if I can help [confederate] find what he needs” and left the room. After a delay of approximately one minute, the confederate returned to the room with the appropriate second page of statements. At this point, the confederate knew the participant had received information regarding his sexual orientation, but he did not know whether the participant had been told he was gay or straight. The confederate apologized for the mistake, and proceeded to read the remaining nine attitude statements in the same way as the first nine had been asked. After all statements were completed, the confederate told the participant to return to the room where he or she started out to complete the rest of the experiment.

Confederate ratings of participant behavior. While the experimenter delivered the experimental manipulation, the confederate completed a brief questionnaire on which he rated his perceptions of the participant during the first interview segment. The confederate responded to the questions 1) “How comfortable did the subject appear to be” and 2) “How much did the subject look at you during the interview?” by circling a number between 1 (not at all) to 7 (very/very much). Following the second segment of the interview, the confederate responded to the same two questions with reference to the second half of the interview and guessed whether he had been identified as gay or straight during the interview.

¹⁵ Participants were assigned to a condition prior to arrival for the experiment. Because the gay confederate condition is of more interest in the present study, approximately 2/3 of participants were assigned to the gay confederate condition and 1/3 to the straight confederate condition. Confederates were assigned to the gay and straight conditions in roughly equal proportions, and there were no substantive differences in the effects observed across the different confederates.

Implicit attitude measures (IATs). After completing the interview portion of the study, participants returned to the main lab room and were directed to a small room with a PC-compatible computer. Participants were told that full instructions for the computer task would be presented as part of the program, and that they should read the instructions carefully to be sure that they understood the task. They were verbally instructed to use their two index fingers to make responses using two computer keys (the “a” on the keyboard and “5” on the numeric keypad), which were covered with green paper.

The computer-based instructions explained that participants would be making judgments about four different categories of words that varied along two dimensions. They were told that they would make judgments about the four categories using a single set of response keys, so that two different categories would always share one response key. Participants were then instructed about the exact stimuli they would be judging, and were shown lists of the six categories of verbal stimuli (gay, straight, pleasant, unpleasant, self, and other). They were not shown the picture stimuli, but were told that the gay-straight stimuli would be photographs of couples, and they were told to assume that pictures of two men should be categorized as a gay couple and pictures of a man and a woman should be categorized as a straight couple.

Participants completed four critical IAT blocks comprising two gay-straight attitude IAT measures, one with picture stimuli and one with word stimuli. Each IAT was composed of two blocks: 1) Gay paired with pleasant and straight paired with unpleasant (abbreviated as Gay+Pleasant) and 2) Gay paired with unpleasant and straight paired with pleasant (abbreviated as Gay+Unpleasant).¹⁶ Each block consisted of 60

¹⁶ Two blocks of a gender identity IAT were also completed at this time along with the four gay-straight attitude IAT blocks, in random order.

trials, each of which involved a judgment of a single item from one of the four categories of that block. Category labels for the response keys appeared in the upper left and upper right corners of the monitor screen, and target stimuli appeared in the center of the screen. The two dimensions of a given block were shown in contrasting colors (red versus blue) to clarify the dimension to which a given judgment belonged.

Motivation to respond without prejudice measures. The motivation scales, explicit attitude measures, and demographic information sheet were stapled in a packet that was placed face-up on a table in the experiment room. Following verbal instructions for the IAT, but prior to beginning the IAT tasks, participants were instructed that after they completed the computer measure, they should complete this brief questionnaire.

The personal and social motivation to respond without prejudice scales, shown in Appendix C, were adapted from Plant and Devine (1998) scales that had been developed with reference to prejudice toward African Americans. To adapt the scales for use with reference to prejudice toward gay men, the words “gay men” were substituted for the word “Blacks” in each of the scale items. Instructions for the task appeared at the top of the page. Participants were told that the questions were about different reasons that people may have for trying to respond without prejudice toward gay men. They were told that they should indicate their response to each question by circling a number between 1 and 9, corresponding to responses on a scale that appeared on a single row beneath the instructions. As in the original scale, number 1 was labeled *strongly disagree*, number 5 was labeled *neither agree nor disagree*, and number 9 was labeled *strongly agree*; other scale points were not labeled. The personal and social scales were

presented as a single 10-item measure with personal and social items presented in alternating order.

Motivation to control prejudiced responding scale. A subset of participants (the 16 men and 19 women who did not complete the behavioral measure) also completed the motivation to control prejudiced responding scale (MCPR; Fazio et al, 1995; Dunton & Fazio, 1997; see Appendix D for full text of items). Similarly to the personal and social motivation scales, each item of the MCPR was accompanied by a nine-point scale on which participants were to provide their response.

Explicit attitude measure. Following the motivation measures, participants completed the 10-item Attitudes Toward Gay men scale (ATG; Herek, 1984; See Appendix E for full text of scale). Participants indicated the extent to which they agreed or disagreed with each item by circling a number from one (strongly disagree) to six (strongly agree).

The final page of the questionnaire assessed demographic information (i.e., age, year in college, gender, ethnicity, and English language proficiency). Additionally, participants were asked to indicate their own sexual orientation as well as the number of friends they have whom they know to be gay, lesbian, or bisexual, with the instruction that they could choose not to respond to these items if they did not wish to do so.¹⁷

Manipulation check and debriefing. After all measures were completed, participants were fully debriefed. Debriefing always began with the following series of questions as a check on the manipulation of the non-verbal behavior measure: 1) During

¹⁷ Some participants (16 men, 19 women) also completed an explicit measure of gender identity, modeled after the Bem Sex Role Inventory (BSRI; Bem, 1974) which was unrelated to other measures in the present study and will not be discussed further.

the first part of the interview, did you have any thoughts about [confederate]'s sexual orientation? 2) Do you remember what I said when I came into the room? 3) [If necessary] What sexual orientation did I say he was? 4) After I told you that, did it seem plausible that he was gay [straight]?

Participants were then told that the experimenter's comment during the interview was actually part of the experiment, and that they had been randomly assigned to be told that the experimenter was either gay or straight. Participants were reminded that they had been videotaped, and were asked whether they had noticed the camera. Participants were given the option to have their tape erased. One male participant elected to have his tape erased, which was done immediately. Those who agreed to let the experimenter use their tape were asked to sign a consent form that provided written permission to use the video for research purposes. Participants were then fully debriefed about the experimental hypotheses and asked to refrain from discussing the experiment with other students.

Results and Discussion

Overview of findings

The most basic question of the present research was whether anti-gay attitude would be demonstrated with the various explicit, implicit, and behavioral measures. As predicted, relatively little bias was indicated on the explicit measures, whereas greater bias was shown on the implicit and behavioral measures. The second, more important set of questions addressed whether motivation to control prejudiced responding would influence the strength of prejudice expressed on the various measures. As predicted, motivation, particularly personal motivation, was related to the strength of attitude expressed on explicit, implicit, and non-verbal measures. Additional questions regarding

the relationship between attitude and behavior and between implicit and explicit prejudice were also addressed.

Demonstration of Anti-Gay Prejudice

Explicit Attitude

Public responses. The ten items from the Attitudes Toward Gay men scale (ATG; Herek, 1984) were included as part of the larger group of questions asked during the interview. Collapsing across both conditions of confederate sexual orientation (which will be discussed in a later section), the public ATG scale showed acceptable internal consistency, $\alpha = .87$. On a scale from 1 to 6 where 1 = lowest prejudice and 6 = highest prejudice, the mean response across all participants was 1.70, $sd = .77$, which corresponds approximately to the scale point labeled “moderately disagree.” Scores on the ATG were significantly higher for male participants (mean = 1.94, $sd = .86$) than for female participants (mean = 1.47, $sd = .60$). This generally non-prejudiced responding and the observed gender difference are consistent with previous research using the ATG scale (e.g., Herek, 1994; Herek & Capitanio, 1996), as well as most research using other explicit measures (e.g., Kite, 1992; Kite & Deaux, 1986).

Private responses. Responses to the ATG items completed in private were very highly correlated with responses given in public ($r = .94$, $p < .001$), which was expected given that the private measure was completed only about 15 minutes after the interview. The privately administered ATG scale showed very high internal consistency, $\alpha = .92$. The mean response across all participants was almost identical to that given in the public interview, mean = 1.79, $sd = .97$. Scores on the private ATG were slightly but not

significantly higher for male participants (mean = 2.06, *sd.* = 1.06) than for female participants (mean = 1.60, *sd.* = .93).

Implicit Attitude

Implicit prejudice was assessed using the IAT to compare the strength of association between gay and pleasant (and straight and unpleasant) versus gay and unpleasant (and straight and pleasant). It was predicted that participants as a group would show strong preference for gay relative to straight, as indicated by faster responding when gay is paired with unpleasant relative to when gay is paired with pleasant. It was further predicted that male participants would show greater negativity toward gay men than would female participants, consistent with a vast body of research using explicit measures of gay attitude (e.g., Kite & Whitley, 1996, 1998).

Preparing data for analysis. For each IAT trial, response latency in milliseconds and accuracy was recorded. Error trials represented 4.5 % of all critical trials, which is consistent with other research using the IAT (e.g., Greenwald et al., 1998; Lemm & Banaji, 1998). All subsequent analyses were reported only on correct response trials. Two male participants had error rates across all IAT blocks in excess of 15%, and were removed *a priori* from further analysis involving the IAT.¹⁸ As is typical of response-latency measures, the data were skewed, with a small number of extremely slow responses, which are likely to be the result of momentary lapses of attention. Following the convention established by Greenwald et al. (1998), trials longer than 3000 ms were re-coded as 3000 ms, which corresponds approximately to three standard deviations

¹⁸ It was confirmed that these individuals' responses were within the range of normal responding on all of the remaining measures. To conserve power, data from these participants were omitted only from analyses that include the IAT.

above the mean. This Windsorizing procedure substantially reduces the skew of the distribution while avoiding losing potentially meaningful data points (Barnett & Lewis, 1978). To further reduce the skew of the distribution, response latencies were transformed into speeds by dividing each millisecond latency into 1000, equivalent to the reciprocal transformation ($1/rt$) advocated by Fazio (1990b). Each speed score can be interpreted as the average number of items correctly categorized in a one-second period.

Following previous research using the IAT (e.g., Lemm & Banaji, 1998) each critical IAT block consisted of 60 trials. However, the present study was different from other IAT research in that the number of stimuli for one of the categories was extremely small. Previous research with the IAT has shown that the IAT is effective with as few as five stimuli for each category (Greenwald et al, 1998). For the gay—straight IAT with word stimuli in the present study, however, it was necessary to use only two stimuli (gay/homosexual and straight/heterosexual) to represent the gay and straight categories. All additional stimuli that could be generated for the gay category were either specific stereotypes of gay men or derogatory terms, leaving only two useable stimulus items per category.

As is typical, the first fifteen trials were omitted from analysis as practice. However, in an analysis that is not typical, trials beyond the 40th were eliminated because of habituation due to the small number of stimulus items.¹⁹ Given the small number of stimuli in each IAT, participants may have become sufficiently practiced at the task very quickly, and they may have become overly practiced by the final few trials, attenuating any meaningful effects.

¹⁹ Analysis on this reduced group of trials did not alter the direction of any of the critical findings, but effect sizes tended to be larger among the earlier trials than among the full set of trials.

Calculation of IAT scores for analysis. An individual difference score was calculated for each IAT measure (gay attitude assessed with picture stimuli and word stimuli) by subtracting each participant's mean response speed on the Gay+Bad block from his or her mean response speed on the Gay+Good block. Thus, a positive score on either of these measures indicates an implicit preference for straight relative to gay. These individual difference IAT scores were used for subsequent analyses unless otherwise specified.

Demonstration of implicit attitude. Average number of responses per second under the critical pairing conditions of the gay—straight attitude IATs are shown in Table 2. The gay—straight attitude IAT with word stimuli revealed a significant main effect of response key pairing, with participants responding significantly faster when gay words were paired with bad than with good, $F(1,91) = 23.21, p < .001, d = .50$. This pattern was also shown on the IAT with picture stimuli, although the size of the effect was considerably smaller, $F(1,89) = 4.51, p < .05, d = .23$. The difference in effect size for the IAT with word stimuli versus picture stimuli is consistent with other IAT research measuring racial attitudes with word labels versus picture stimuli (e.g. Nosek et al., 2000). This suggests that the information carried by pictures is different than that carried by words, in particular, it may be that attitudes toward the stimulus words may be stronger than attitude toward the groups they represent. In addition, in the present study, the people pictured as gay and straight couples were all attractive, smiling people similar in age to the participants. It is possible that the general positivity engendered by the stimulus items attenuated the attitude difference between the gay and straight pairings. Although the picture IAT was less effective than the word IAT, the pattern of responses

was very similar, and the two IAT measures were combined to increase reliability for remaining analyses.

Table 2: Average responses per second on gay attitude IATs

Participant gender	<u>Word Stimuli</u>		<u>Picture Stimuli</u>	
	<u>Gay+Good</u>	<u>Gay+Bad</u>	<u>Gay+Good</u>	<u>Gay+Bad</u>
Male (n = 43)	1.14 (.29)	1.25 (.21)	1.06 (.27)	1.15 (.19)
Female (n = 50)	1.17 (.27)	1.30 (.30)	1.15 (.25)	1.19 (.28)
All participants	1.16 (.27)	1.27 (.26)	1.11 (.26)	1.17 (.24)

Note: Higher numbers indicate greater response facilitation; standard deviations are in parentheses.

Gender differences in implicit attitude. As shown in Table 2, male and female participants showed similar patterns of responding on the gay—straight attitude IAT measures, indicating similar implicit attitudes toward gay relative to straight. The lack of gender difference in implicit gay attitude is inconsistent with most previous research using explicit measures, which indicates that straight men tend to have more negative attitudes toward gay men than do straight women (e.g., Kite & Whitley, 1996, 1998). It is also inconsistent with the explicit prejudice measure in the present study: On the Attitudes Toward Gay Men scale, (Herek, 1984), men’s responses were significantly more biased than women’s (2.25 vs. 1.60 out of 6, $t(81) = 2.98, p < .01$.) It is not clear why the predicted gender difference did not emerge on the IAT. It is possible that completing the non-verbal behavior measure immediately before the IAT influenced responding on the IAT. This question will be addressed again in Study 2, in which the IAT was the first measure completed.

Known groups validation of IAT attitude measures. The validity of the IAT as a measure of prejudice would receive support from the finding that gay male participants

tend to show less negative attitudes toward gay men than do straight participants.

Although the number of male participants reporting gay sexual orientation in the present sample was too small ($n = 6$) to draw statistical inferences relative to straight participants, the pattern of responses suggested that gay men hold more positive attitudes toward gay than toward straight. Gay men averaged 1.24 responses per second when Gay+Good were paired, relative to 1.09 responses per second when Gay+Bad were paired, a near perfect reversal of the pattern shown by straight men (1.10 for Gay+Good and 1.20 for Gay+Bad).²⁰ This pattern of means suggests that straight men show more negative attitudes than do gay men toward the target group *gay men*, supporting known-groups validation of the IAT gay attitude measure and suggesting that groups within the same larger culture may show substantially different implicit attitudes as a function of their group membership.

Non-Verbally Expressed Attitude

Participants were videotaped during a two-part interview with a male confederate. During the first interview segment, participants had been uninformed regarding the confederate's sexual orientation. Prior to the second interview segment, participants were told that the confederate was either openly gay or was straight. It was predicted that, relative to baseline responding, participants would gaze less at the confederate who had been identified as gay than the confederate who had been identified as straight, indicating greater discomfort and unfavorability toward the gay confederate. In addition, it was predicted that participants would be rated by the confederate as being less comfortable and looking less at him after he had been identified as gay.

²⁰ Even within this tiny sample, this difference was marginally statistically significant ($t(5) = 2.07$, $p = .09$), although findings with such small n should be interpreted with caution.

Coding of facial gaze. Two independent coders rated each videotaped interview for the patterns of visual gaze directed at the confederate's face by the participant.²¹ Coders measured the length of each interview segment (pre- and post-experimental manipulation), the amount of time during each segment spent gazing at the confederate's face, and the frequency of gazes (number of separate looks) at the confederate's face. The correlation between ratings of the two independent coders was very high for the two interview segments: .84 / .88 (frequency of gazes), .94 / .95 (time spent gazing), and .99 / .99 (length of interview). This high inter-coder reliability is consistent with other research showing that independent viewers are reliably able to judge whether an individual is looking another person in the face (e.g., von Cranach, 1971; Gibson & Pick, 1963; Mehrabian, 1972). Combined indices of total interview time, time spent gazing at the confederate's face, and the number of times that participants looked at and away from the confederate during the course of the interview (frequency of gazes) were calculated by averaging the measurements made by the two coders.

Demonstration of prejudiced responding. Researchers of visual behavior have documented that people tend to move their gaze around more rapidly in a situation in which they are experiencing discomfort or anxiety (e.g., Argyle & Dean, 1965). This rapid motion results in individual gazes that are of shorter duration, which have been shown to be associated with less liking for the conversation interactant (Fugita, 1974). The average length of individual gazes was calculated by dividing the total time spent gazing by the number of separate times that participants looked at the confederate during

²¹ One coder was completely uninformed regarding the experimental condition to which each participant had been assigned. The other coder (who was the experimenter) was initially aware of the experimental

the course of the interview. Longer average gaze time indicates a tendency to exhibit steady gazing at the confederate rather than quick, fleeting glances. Participants in the gay confederate condition were expected to have shorter average gazes after being told that the confederate was gay, relative to prior to receiving this information. Participants in the straight confederate condition were expected to maintain the same average gaze length prior to and following the experimental manipulation.

The average duration of individual gazes prior to and following the manipulation varied as a function of the confederate's perceived sexual orientation, as indicated by a marginally significant interview segment by condition interaction, $F(1,53) = 3.76, p = .058$, as shown in Table 3. As predicted, this interaction was due primarily to the significant reduction in looking by participants in the gay condition: Relative to when they had no information about the confederate's sexual orientation, participants exhibited gazes of significantly shorter average duration after they had been told that the confederate was gay, $t(37) = 3.38, p < .01$. In contrast, participants exhibited no significant change in gaze duration after being told that the confederate was straight, $t(16) = .2, ns$.²² Based on research assessing the relationship between gaze and overall comfort/favorability, these results may be interpreted to suggest that, relative to their initial comfort level with the confederate, participants felt less comfortable with gay interviewers than with straight interviewers. Rather than looking at the gay interviewer with steady, sustained gaze, they tended to look away more quickly each time they gazed at him. Consistent with the findings on the IAT measure in the present study, there was

condition of each participant, although at the time of coding was often unable to recall what condition a given participant had been in.

²² The difference in baseline gaze length between participants in the gay and straight conditions was not significant, $t(53) = .84, ns$.

no significant difference between male and female participants on the non-verbal behavior measure.

Table 3: Average duration of individual gazes (in seconds)

Condition	Interview Segment		Difference (Post – Pre)
	Pre-manipulation	Post-manipulation	
Gay confederate	2.83 (2.00)	2.28 (1.90)	-0.54
Straight confederate	2.38 (1.38)	2.44 (1.81)	+0.06

Note: Negative post- minus pre- score indicates longer gazing following the manipulation; standard deviations are in parentheses.

Ratings of participant comfort and looking. It was predicted that participants would be perceived by the confederate as being less comfortable and as looking at him less after being told he was gay than after being told he was straight. However, unlike the coded facial gaze measure, confederate ratings of participant comfort and looking did not vary as a function of the confederate sexual orientation manipulation. Participants who were told the confederate was gay were rated on a 1-7 scale as being equally comfortable (mean = 4.77, $sd = 1.36$) as participants who were told that the confederate was straight (mean = 4.27, $sd = 1.39$), $t(44) = 1.18$, *ns*. Participants in the gay confederate condition were rated as spending equal amounts of time looking at the confederate (mean = 3.96, $sd = 1.43$) as participants in the straight confederate condition (mean = 4.07, $sd = 1.53$), $t(44) = .22$, *ns*. The lack of difference between the gay and straight confederate conditions contradicts the effect observed with the measure of coded facial gaze. It is likely that the global ratings of comfort by confederates included many subtle indicators of comfort in addition to facial gaze (e.g., smiling, tone of voice), and even the ratings of time looking may have been influenced by other features of participant behavior. It is possible that the situation overall caused participants to feel

uncomfortable, and this general discomfort may have overwhelmed the effect of the manipulation on the confederate ratings. Even participants who believed the confederate was straight may have felt uncomfortable being asked questions about their attitudes toward gay men, and confederates may have picked up on this discomfort in both conditions that was not manifest in the measure of coded facial gaze.

Motivation to Respond Without Prejudice

Reliability of measures. The internal consistency of the 5-item social and 5-item personal motivation scales, assessed with Cronbach's alpha, was acceptable (personal $\alpha = .84$, social $\alpha = .85$), and comparable to the reliability observed by Plant and Devine (1998). However, the personal motivation scale contained one item that was reverse-scored relative to the other items (Personal Item 5 in Appendix C),²³ which showed a lower correlation with the full scale ($r = .57$) than did the other items (r s ranging from .63 to .73). Removal of this item did not substantially alter the reliability of the scale: With only the remaining four items, reliability of the personal motivation scale was still a respectable $\alpha = .83$. Thus, although Item 5 is not harmful to the integrity of the scale in the present sample, it also does not appear to be particularly helpful. For reasons that will receive fuller explanation in Study 2, this item was omitted from the scale for all subsequent analyses.

Personal and social motivation are distinct. As predicted, personal and social motivation were not significantly correlated, $r = -.13$, *ns*. This small, negative correlation is consistent with correlations observed by Plant and Devine (1998), suggesting that the items on the personal and social motivation scales represent largely independent sources

of motivation to respond without prejudice. As a group, participants endorsed personal motivation items more so than social motivation items: personal mean = 7.19, social mean = 4.36, $t(94) = 10.47$, $p < .001$. This pattern is consistent with that observed by Plant and Devine (1998) on measures of motivation relevant to anti-Black prejudice.²⁴

Gender differences in motivation. Mean endorsement of personal and social motivation for male and female participants separately is shown in Table 4, where higher numbers indicate stronger endorsement. The difference between personal and social motivation was more pronounced among female participants than among male participants, as indicated by an interaction of motivation source and participant gender, $F(1,93) = 9.81$, $p < .01$.

Table 4: Mean endorsement of motivation items

Participant gender	<u>Motivation Scale</u>	
	Personal	Social
Male (n = 45)	6.69 (1.89)	4.71 (1.76)
Female (n = 50)	7.65 (1.29)	4.05 (1.85)

Note: Maximum score = 9.0; standard deviations are in parentheses.

Relationship between different measures of motivation. In addition to the Plant and Devine (1998) personal and social motivation scales, a subset of participants ($n = 35$) completed the Motivation to Control Prejudiced Responding Scale (Fazio et al., 1995; Dunton & Fazio, 1997), also adapted to be relevant to anti-gay prejudice. Consistent

²³ The presence of the single reverse-scored item is carried over from Plant and Devine's (1998) scale. Their initial scale items included additional reverse-scored items that were eventually removed because they did not load sufficiently well with the remaining items.

²⁴ All participants completed the motivation measures following the non-verbal behavior measure and the IAT. A small subset of participants (9 women and 7 men) also completed the motivation separately as a pretest several weeks prior to the main experiment. Among these participants, pretest and experimental motivation scores were significantly correlated and no mean differences were observed.

with Plant and Devine's findings, the MCPR scale was strongly related to social motivation ($r = .42, p < .01$), but showed no relationship to personal motivation, ($r = .00, ns$). This strongly suggests that, despite its creators' original goals, the items on Fazio et al.'s (1995) MCPR scale do not distinguish between personal and social sources of motivation. Because the focus of the present research was on distinct personal versus social sources of motivation to respond without prejudice, the MCPR scale was not included in subsequent data collection for Study 1 or Study 2.

Motivation Moderates Explicit and Implicit Prejudice

Personal motivation. Following Plant and Devine (1998), it was predicted that personal motivation would be a strong predictor of prejudice on the explicit measure (ATG). Participants who say they want to respond without prejudice should have no trouble doing so on the self-report, controllable measure. The relationship between personal motivation and implicit prejudice was less certain *a priori*. If implicit prejudice is uncontrollable and is merely a function of cultural norms, then motivation should not differentiate groups on the IAT. However, if individual differences in personal motivation to respond without prejudice reflect meaningful individual differences in the internalization of non-prejudiced standards, then high- and low-motivation groups should differ significantly in the amount of prejudice they show on implicit measures as well as explicit measures.

As predicted, there was a significant correlation between personal motivation and explicit prejudice on the ATG, $r = -.54, p < .001, n = 83$. The negative sign of this correlation indicates that participants reporting high personal motivation tended to respond with significantly less prejudice on the ATG. A similar relationship with

personal motivation was shown for ATG responses given in the public interview with a presumed gay confederate, $r = -.49$, $p < .01$, $n = 38$. Thus, as expected, the more strongly participants endorsed personal reasons for wanting to respond in non-prejudiced ways, the less prejudice they endorsed on controllable, self-report measures, regardless of whether they were administered in public or in private.

The relationship between personal motivation and implicit prejudice was in the same direction as the relationship between personal motivation and explicit prejudice, although it was not as strong, $r = -.18$, $p < .08$, $n = 93$. To further investigate the marginally significant relationship between personal motivation and implicit prejudice, participants were divided into high- and low-motivation groups by median split.²⁵ Participants who endorsed high personal motivation showed less negativity toward gay (IAT difference score = .046²⁶) than did participants who endorsed low personal motivation (IAT score = .142), $t(91) = 2.17$, $p < .05$. These results provide some support that personal motivation represents meaningful internalization of non-prejudiced standards.

The observed relationship between implicit prejudice and personal motivation, although not strong, is of particular importance. The idea that responses on a self-report measure (motivation) could be significantly related to responses on a measure of implicit prejudice is quite remarkable. Implicit attitudes have been assumed to be uncontrollable (e.g., Bargh, 1994; 1999; Fazio et al, 1995), so there should be no reason to think that

²⁵ Median for personal motivation = 7.75, for social motivation median = 4.3. Participants scoring exactly on the median were put in the high-motivation group, thus the high-motivation group is slightly larger than the low-motivation group.

²⁶ Higher numbers indicate greater preference for straight over gay.

participants could respond with less prejudice on the implicit measure simply because they are motivated to do so, yet they do. This suggests that people who believe themselves to be highly personally motivated to respond without prejudice have internalized a non-prejudiced standard that influences their responses on implicit measures as well as explicit, controllable measures. Although this finding contradicts a broad research base showing that implicit attitudes cannot be controlled (see Greenwald & Banaji, 1995, for a review), it is consistent with some recent studies that have shown that explicit attitudes can be related to implicit attitudes under certain circumstances (e.g., Lepore & Brown, 1997; Wittenbrink et al., 1997).

Social motivation. Greater social motivation was expected to be associated with less prejudiced responding in the public interview, where social pressure to provide non-prejudiced responses is present, but it was not expected to be strongly related to explicit prejudice measured in a private context. Interestingly, participants who reported being highly motivated to be non-prejudiced for social reasons reported significantly *greater* prejudice than participants who reported being low in social motivation, whether the ATG was completed in public, $r = .43, p < .01, n = 38$, or in private $r = .33, p < .01, n = 83$. It is uncertain why social motivation was positively related to explicit prejudice in the present study. It may be that people who are strongly motivated to behave in non-prejudiced ways primarily for social reasons become nervous in the interview context and show a “rebound” effect, responding with greater prejudice than people who are not socially motivated. It may also be that high-prejudiced participants who are socially motivated do not consider the gay-identified confederate to provide sufficient social motivation, that is, they may not be concerned whether a gay man who is a complete

stranger perceives them as being prejudiced. They might respond with lower prejudice in a situation with a greater number of people watching them, or with an audience whose opinion they value more highly.

On the implicit measure, however, it is not possible to modify one's responses, regardless of social pressure to do so. Thus, it was predicted that motivation to respond without prejudice for social reasons would be unrelated to responding on the implicit, uncontrollable measure. Indeed, the relationship between social motivation and implicit prejudice on the IAT was very small and not statistically significant, $r = .12$, ns , $n = 93$. Thus, social motivation to respond without prejudice is not related to implicit prejudice.

Motivation Moderates Non-Verbal Behavior

Facial gaze. Unobtrusively observed non-verbal behavior such as facial gaze is believed to operate at a similar level to implicit attitude (Fazio et al., 1995). That is, non-verbal behaviors are typically performed largely outside conscious awareness, intention, and even control. As such, non-verbal behavior in the present study was expected to show a similar pattern of relationship to personal and social motivation as that shown by the IAT.

As discussed earlier, participants who were told that the confederate was gay tended to have gazes of shorter duration, relative to baseline, than participants who were told that the confederate was straight. For participants in the gay condition, the difference between average gaze duration in the first and second interview segments serves as a measure of gay prejudice, as indexed by discomfort with the confederate when he was known to be gay relative to when his sexual orientation was unknown. This difference in looking in the gay condition was marginally significantly correlated with

personal motivation, $r = -.28, p < .08, n = 40$. The negative sign of this correlation indicates that participants who were more personally motivated tended to have a smaller difference between gay and baseline gaze conditions. That is, people who were more motivated to be non-prejudiced for personal reasons tended to show less prejudiced responding on the non-verbal measure. In contrast, as predicted, social motivation was unrelated to subtle, non-verbal behavior, $r = .07, ns$.

Rated comfort and looking. Confederate ratings of participant comfort and amount of gaze were also related to motivation. For participants in the gay confederate condition, confederate ratings of participant comfort during the first interview segment (baseline) were strongly positively correlated with personal motivation, $r = .56, p < .001$, and strongly negatively correlated with social motivation, $r = -.45, p < .05$. A similar pattern of relationships was shown for confederate ratings of the degree to which participants looked at the confederates during the baseline interview segment, $r = .58, p < .001$ for personal motivation and $r = -.60, p < .001$ for social motivation. These relationships suggest that participants strongly motivated to be non-prejudiced for personal reasons tend to be more comfortable than people not personally motivated in a situation in which they are being asked questions regarding their attitudes toward gay men. In contrast, participants strongly motivated for social reasons tend to be less comfortable when publicly being asked questions about their gay attitudes than those who are not socially motivated.

The pattern of relationships was similar for confederate ratings of the second interview segment, when the confederate was identified as gay, however, the relationships tend to be smaller. Personal motivation was positively related to

confederate ratings of participant comfort $r = .37, p < .05$, and amount of gaze $r = .32, p < .08$. Social motivation was weakly negatively related to confederate ratings of participant comfort $r = -.26, ns$, and amount of gaze $r = -.33, p < .08$. Thus, both personal and social motivation are more weakly related to comfort level and degree of gaze at the confederate when the confederate is known to be gay relative to when his sexual orientation is unknown.

The pattern of relationships between motivation and non-verbal behavior is similar to the relationship between motivation and implicit attitude assessed with the IAT. This suggests that the subtle, non-verbal behaviors displayed during the interview with the presumed gay confederate may be driven in part by similar cognitive and affective processes as those that drive responding on implicit measures such as the IAT.

Attitude-Behavior Relationships

Following the MODE model (Fazio, 1990a), and given that non-verbal behavior and the IAT show similar patterns of relationship with motivation, it was predicted that prejudice assessed with gaze behavior would be related to implicit prejudice assessed with the IAT, because both measures are assumed to tap constructs of attitude that are relatively uncontrollable. Replicating Fazio et al. (1995), the prediction of an implicit attitude—non-verbal behavior relationship was tested using ratings of participants' non-verbal behavior provided by the confederate interviewers. Following each segment of the interview, confederates rated how comfortable they perceived participants to have been during the interview segment as well as how much they perceived participants to have been looking at them during each segment. Confederates' ratings of participant comfort and gaze behavior were generally strongly related to measured proportion of time spent

gazing (r s ranging from .35 to .58). This suggests that people in an interaction are good at determining the amount of time another person spends looking at them during the interaction, supporting previous research (e.g., Gibson and Pick, 1963; Mehrabian, 1972).

For each participant, a difference score was calculated by subtracting rated comfort level in segment 1 from rated comfort level in segment 2. For participants in the gay condition, a negative difference score indicates that the participant appeared less comfortable after the confederate had been identified as gay, relative to when he had not been so identified. Replicating Fazio et al. (1995) and supporting predictions of the MODE model, this difference score was significantly correlated with gay attitude assessed with the IAT, $r = -.38$, $p < .05$, $n = 33$, but it was not correlated with explicit gay attitude, assessed with the ATG administered in private ($r = .17$, ns , $n = 33$), or in public ($r = .15$, ns , $n = 33$). These results suggest that non-verbal behavior expressed toward a gay interviewer is more similar to implicit than to explicit attitude processes.²⁷

The implicit attitude-behavior relationship was not replicated when the measure of gaze behavior was average gaze duration as coded from the videotaped interactions, however. Specifically, the difference between baseline gaze (interview segment 1) and gaze at the gay confederate (interview segment 2) was not significantly correlated with IAT gay attitude ($r = -.04$, ns). It is worth noting that although confederate ratings of participant comfort were correlated with participants' IAT responses, confederate ratings of the extent to which participants looked at them during the interview were not related to the IAT. This may explain why independent measurements of the duration of time

²⁷ Although confederate ratings of comfort were related to motivation and to implicit prejudice, they did not significantly differ as a function of the experimental manipulation. Participants low in personal motivation and/or high in implicit prejudice were uncomfortable being asked about their attitudes toward gay men in the interview situation regardless of whether the interviewer had been identified as gay.

participants gazed at the confederate did not relate to prejudice assessed with the IAT. It is possible that the coded behavioral measure used in the present study (duration of gaze) does not fully capture the discomfort or unfavorability that participants were feeling toward the gay confederate. Many behaviors have been shown to be indicative of discomfort in social situations, including facial touching (e.g., Edelman & Hampson, 1979), smiling (e.g., LaFrance, 1983), eye rolling (e.g., Rosenberg & Ekman, 1995), and a variety of facial expressions (e.g., Ekman, Friesen, & Anacoli, 1980). More generally, the *immediacy hypothesis* (Mehrabian, 1967) suggests that several non-verbal behaviors, including physical proximity, touching, eye contact, forward lean, and orientation of torso, constitute a single construct of *immediacy*, which is associated with evaluation and comfort. Behaviors that contribute to greater immediacy are indicative of positive evaluation and comfort, whereas decreased immediacy is associated with negative evaluation and discomfort. In the present study, confederates were not instructed to consider any particular behavior(s) when rating the comfort level of the participants. Confederates may have considered a combination of non-verbal behaviors when rating participants' comfort level, and this composite rating may have thus been a better indicator of discomfort and unfavorability toward the gay confederate than the measured behavior of facial gaze on its own.

Relationship Between Implicit and Explicit Prejudice

Across all participants, the relationship between implicit and explicit prejudice was relatively small, but statistically significant, $r = .23$, $p < .05$, $n = 87$. This finding supports recent research demonstrating significant implicit-explicit relationships (e.g., Lepore & Brown, 1997; Wittenbrink, et al., 1997), particularly research using the Implicit

Association Test as a measure of implicit prejudice (e.g., Lemm & Banaji, 1998, Nosek et al., 2000). The IAT appears to be more sensitive to individual differences in implicit attitude than many other measures that have been used in the past, which may allow it to uncover implicit-explicit relationships that were once lost in measurement noise (see Cunningham, Preacher, & Banaji, in press).

Summary

Evidence of anti-gay bias was revealed on several different measures. Although relatively positive attitudes toward gay men were expressed on an explicit measure, substantial prejudice was shown on a measure of implicit attitude and on a measure of facial gaze directed at a perceived gay confederate. All of these measures revealed individual variability, and these individual differences were related to individual differences in reported motivation to respond without prejudice. In particular, personal motivation to respond without prejudice was strongly related to explicit prejudice, and moderately related to implicit and behaviorally expressed prejudice. Social motivation was generally unrelated to prejudice assessed in various ways.

The relationships among implicit and explicit prejudice and motivation raise the question of whether personal and social motivation may moderate the implicit-explicit relationship. Indeed, Fazio et al. (1995) found that participants low on their measure of motivation to control prejudiced responding (MCPR) tended to show a stronger implicit-explicit relationship than highly motivated participants. But because the MCPR did not distinguish between social versus personal motivation to respond without prejudice, Fazio et al. (1995) were limited in the conclusions they could draw about the reasons why motivation moderated the implicit-explicit relationship.

Unfortunately, the sample in the current study is not sufficiently large to test implicit-explicit relationships as a function of the 2 x 2 matrix of personal and social motivation (there are only approximately 25 participants per cell in the present sample, which is sufficient for comparing means, but not for comparing correlations). To address the question of the moderating effects of personal and social motivation on the implicit-explicit relationship as well as to replicate motivation-prejudice relationships observed in Study 1, Study 2 was designed specifically to address questions regarding the moderating effect of motivation on the implicit-explicit relationship, using a much larger sample that permits statistical inference across different groups of high and low personal and social motivation.

STUDY 2

Study 1 established that motivation to respond without prejudice, particularly motivation that stems from personal, internal sources, can predict individual differences in implicit as well as explicit prejudice. However, Study 1 was not able to address an important question regarding the relationship between implicit and explicit prejudice, specifically, whether motivation moderates the strength of the implicit-explicit relationship such that less motivated individuals show stronger implicit-explicit relationships than those who are more motivated. Study 2 was designed with the particular aim of exploring the differential effects of personal and social motivation on the relationship between implicit and explicit prejudice.

Relationship Between Implicit and Explicit Attitude

Most research exploring implicit stereotyping and prejudice has found no relationship between implicit and explicit measurements of these constructs (e.g., Banaji & Greenwald, 1995; Banaji & Hardin, 1996; Gaertner & McLaughlin, 1983). In a now-classic demonstration, Devine (1989) found that participants rated an ambiguous target as being more hostile after being exposed to subliminal primes that were stereotypically associated with Blacks. Importantly, this effect was observed with equal strength among participants who reported being low in prejudice against Blacks as well as those who reported being high. This lack of empirical relationship between implicit and explicit measures was interpreted as supporting theories of implicit social information processing, which suggested that implicit and explicit belief and attitude should be distinct, much as implicit and explicit memory systems were established to be (e.g., Jacoby, Yonelinas, & Jennings, 1997; see Greenwald & Banaji, 1995, for a review).

Research using increasingly sensitive measurement instruments and analytic techniques, however, has begun to observe relationships between implicit and explicit prejudice with greater frequency. For example, in a conceptual replication of Devine (1989), Lepore and Brown (1997) found that when category labels (words that denote Black; e.g., *Negro*) were primed instead of stereotype words (words that connote the Black stereotype; e.g., *lazy*) as in Devine's original study, a significant relationship between implicit stereotype priming and explicit prejudice emerged. In a similar vein, Wittenbrink et al. (1997) observed an association between implicit prejudice assessed with a subliminal priming procedure and explicit prejudice assessed traditional questionnaire measures. They argued that their study found a significant implicit-explicit relationship where others had not because their implicit and explicit measures both assessed pure attitude (prejudice), whereas others (including Devine, 1989) used measures that combined stereotyping and prejudice. Cunningham et al. (in press) argued that implicit-explicit relationships may be even stronger than what is reported in the literature. Using statistical methods to control for random and systematic measurement error (which limit the size of observable correlations), they demonstrated particularly strong correlations between the MRS and several different measures of implicit prejudice, including the IAT.

Individual Differences in Implicit-Explicit Relationships

Some researchers, most notably Fazio and his colleagues, have proposed that there may be individual differences that moderate the strength of the implicit-explicit relationship. Whereas Lepore and Brown (1997) and Wittenbrink et al. (1997) argued that significant implicit-explicit relationships can be found with certain types of

measures, Fazio and colleagues (Dunton & Fazio, 1997; Fazio et al, 1995) argued that implicit-explicit relationships may also be found if the right group of individuals are selected as participants. Fazio et al. (1995) discovered that individuals who scored low on their measure of Motivation to Control Prejudiced Responding tended to show a strong implicit-explicit relationship. They argued that individuals high in motivation tend to mask their prejudice on the explicit questionnaire, leading to a lower correlation with the implicit prejudice measure, which cannot be controlled. In contrast, participants low in motivation do not try to mask their explicit responses, and exhibit explicit prejudice that is related to their level of prejudice on the implicit priming measure.

Sources of Motivation: Personal versus Social

The Motivation to Control Prejudiced Responding (MCPR) scale seemed to hold promise as a measure of individual differences in the degree to which implicit-explicit relations may or may not hold. However, as the scale's creators noted, the MCPR was not able to distinguish between different sources of motivation to be non-prejudiced (Dunton & Fazio, 1997). Using a scale that distinguishes these sources of motivation, Plant and Devine (1998) showed that personal and social motivation are both related to explicit prejudice; however, they did not specifically address questions of the relationship between these two sources of motivation and implicit prejudice, nor whether the implicit-explicit relationship would vary as a function of participants' personal and social motivation.

The Present Research

The present research sought to combine and extend the findings of Fazio et al. (1995; Dunton & Fazio, 1997) and Plant and Devine (1998) by exploring whether

personal and social motivation differentially influence the relationship between implicit and explicit prejudice. The study was also developed to replicate findings of Study 1 showing that personal and social motivation differentially predict implicit versus explicit prejudice.

Self-Report Measures: Motivation and Explicit Prejudice

Two measures in Study 2 were identical to those used in Study 1. Because Study 2 was designed to determine whether personal versus social motivation to respond without prejudice moderate the relationship between implicit and explicit prejudice, Study 2 used the Plant and Devine (1998) motivation to respond without prejudice scale, which includes scales to assess personal and social motivation. Study 2 also used the same explicit measure of anti-gay prejudice, the Attitudes Toward Gay Men scale (ATG; Herek, 1984).

Measurement of Implicit Prejudice

Study 2 used a measure of implicit prejudice that is conceptually similar to the IAT used in Study 1. Both IAT measures use the speed with which stimuli can be categorized under different category pairings as the primary dependent variable. However, the IAT used in Study 2 was designed to be administered in paper (i.e., written) response format, rather than on a computer, which will be described in detail in the Method section. Although the paper IAT is not able to measure response latency with the same degree of accuracy as traditional computer IAT measures, it appears to be a useful measure of individual and group differences in implicit belief and attitude (e.g., Lane, Mitchell, & Banaji, 2000). The major advantage of the paper IAT over computer-based administration is that the measure can be completed by large groups of participants in a

short period of time, which made it possible to collect the large sample necessary for Study 2.

Hypotheses

The overarching question addressed in Study 2 was whether personal and social motivation to respond without prejudice moderate the relationship between implicit and explicit prejudice. Following Fazio et al. (1995) and Dunton and Fazio (1997), it was predicted that social motivation would moderate the implicit-explicit relationship. Specifically, the implicit-explicit relationship was predicted to be weaker among people with higher levels of social motivation, under the assumption that highly socially motivated participants would try to modify prejudice on the controllable, explicit measure, but would not be able to do so on the uncontrollable, implicit measure, leading to a low correlation. In contrast, people with a low level of social motivation were expected to show a stronger implicit-explicit relationship, providing responses on the explicit measure that were more in line with their implicit attitudes.

Predictions regarding the effect of personal motivation on the implicit-explicit relationship were less certain. It was possible that highly personally motivated participants would show a strong implicit-explicit relationship, because they would tend to evidence low prejudice on implicit as well as explicit measures, due to their internalized non-prejudiced standards. Alternatively, this relationship could be low, if highly personally motivated participants respond with such low prejudice that they produce a floor effect, thus reducing the within-group variability and severely attenuating the implicit-explicit correlation.

Method

Overview

The primary question addressed by Study 2 was whether personal and social motivation to respond without prejudice moderate the relationship between implicit and explicit prejudice toward gay men. Participants completed a packet of questionnaires that included a measure of motivation to respond without prejudice (Plant & Devine, 1998), two measures of implicit prejudice toward gay men (Implicit Association Tests; IAT; Greenwald et al., 1998) and a measure of explicit prejudice toward gay men (the Attitudes Toward Gay men scale; ATG; Herek, 1984).^{28,29}

Participants

Participants were recruited through announcements in undergraduate classes (including psychology and non-psychology classes). Participants were recruited to complete the measures following class and received a candy bar for their participation in the 12-minute study. 104 male and 97 female undergraduate students completed the experimental measures. Analyses are reported only on 89 male and 87 female participants who reported being fluent in English and having a straight sexual orientation.

Materials

Stimuli for the good-bad category of all IATs were chosen from words normed by Bellezza et al. (1986) on 7-point bipolar scale (1=very bad; 7=very good). The words chosen for the category *good* (enjoyment, excellent, terrific) were rated 6.47; words

²⁸ Nine additional questions that had been used in Study 1 to lengthen the interview were also administered in Study 2, but were not central to the hypotheses of Study 2 and will not be discussed further.

²⁹ The questionnaire packet also included an IAT measure of implicit attitude toward African Americans and an IAT measure of implicit attitude toward Yale University which are not relevant to the primary experimental hypotheses, and will be mentioned only briefly in the results.

chosen for the category *bad* (disaster, tragedy, terrible) were rated 1.27. For the gay-straight IATs, the words *gay*, *homosexual* and *straight*, *heterosexual* were chosen to represent the *gay* and *straight* categories.

Procedure

Participants completed the measures in groups of 2-18.³⁰ After signing a consent form, participants were given a packet containing all of the measures. The IAT measures were timed, thus all participants in a group were required to complete them simultaneously. Participants were not constrained in the time to complete the motivation and explicit attitude measures. 153 participants completed the timed IAT measures first, followed by the untimed motivation scales and explicit measures. 22 participants completed the motivation and explicit measures first. For this group of participants, because the untimed measures were completed prior to the timed, group-administered IATs, participants who completed the motivation and explicit measures more quickly were required to wait until all participants were ready to continue with the timed IAT measures.³¹

Implicit Association Test. Participants completed ten IAT questionnaire pages, each of which represented one block of a two-block IAT measure. A total of five two-block IAT measures were administered in the study. The first two pages completed were consecutive blocks of an IAT practice task assessing attitudes toward flowers relative to insects, with the critical blocks representing Flower+Good/ Insect+Bad and

³⁰ Two participants completed the measures alone.

³¹ Because of substantial variability in the time needed to complete the motivation and explicit measures, it was difficult to administer the measures in the motivation-explicit-implicit order. As a result, the number of participants who completed the measures in this order was very small.

Flower+Bad/Insect+Good pairings. The remaining eight pages were blocks of the two critical gay attitude IAT tasks plus two additional IAT tasks (college attitude and race attitude), completed in counterbalanced order such that no two blocks of a single IAT measure were ever completed consecutively. The critical blocks of the gay attitude IAT pages included the pairings Gay+Good/Straight+Bad and Gay+Bad/Straight+Good.

Each page consisted of a list of 48 stimulus words divided into two columns (see Appendix F for sample pages). A small open circle was printed on the right and left side of each word, approximately 0.5 inches to the left and right the word, resulting in a column of circles on the right and left side of each of the two columns of words. Category headers were shown in capital letters at the top of each column of circles, with the stimulus words belonging to each category in lowercase below each header.

IAT practice task. A practice IAT assessing flower—insect attitude was administered first for all participants. Category labels on the first page were oriented such that flower and good were on the left side of the stimulus word column and insect and bad were on the right side. Participants were verbally instructed to categorize each stimulus word as a flower or insect word or a good or bad word by marking an “X” or check mark in the appropriate circle to the left (for flower or good) or the right (for insect or bad). Participants were told to begin with the top word in the left column, go down the entire left column, then continue downward starting at the top of the right column. Participants were given 20 seconds to make as many categorizations as possible. They were told to avoid making mistakes, but if they did make a mistake to simply keep going. Once all participants indicated that they understood the instructions, the experimenter said “Ready, set, go” and on “go” pushed the plunger of a hand-held digital stopwatch.

When the stopwatch reached 20 seconds, the experimenter said “stop” and stopped the timer, at which time all participants discontinued the task.

After completing the flower+good/insect+bad page, participants were verbally instructed to turn to the second page of the questionnaire packet. This page was identical to the previous page, except that the location of the category headers good and bad had been switched such that flower and bad were paired together on the left column of response circles and insect and good were paired together on the right response column.³² Participants were told to examine the category labels above the response columns, and to note that the location of *good* and *bad* responses had been switched relative to the previous page. They were instructed that their task for this page would be identical to that for the previous page, except that good responses should be made by marking the circle to the right of the word, and bad responses should be made by marking the circle to the left of the word. Participants were further instructed that they should continue to use the same style of marks (e.g., “X” or check mark) for this and all of the remaining pages.³³ Once all participants indicated that they understood the instructions, the experimenter repeated the 20-second timing procedure.

Critical IAT measures. Following completion of the first two IAT pages, participants were instructed that the pages they had just completed were for practice, and that there would be eight similar pages that would constitute the actual experiment. Participants were told that the task instructions for the remaining pages were the same as

³² The order of the stimulus words on all pages was randomized and no two pages of a given packet were identical.

³³ This instruction was found to be necessary as a result of a previous experiment using the paper-pencil IAT in which some participants tended to use simpler marks (e.g. slashes instead of X marks) on successive pages (Gregg, 1999, personal communication).

for the practice pages they had just completed, and that after completing each page, they should turn to the next page and take a few minutes to familiarize themselves with the stimuli and category labels for that page. Participants were also told that they might not agree with the way words would be paired together on some of the pages, but that the purpose of the task would be made clear at the end of the experiment. They were further instructed that the order of the remaining pages was randomized across participants, and that they should not be concerned if other participants appeared to be responding more quickly or slowly than they were.

Once all participants indicated that they understood the remaining instructions, and all questions were answered, participants were told to turn to the third page of the questionnaire packet, and familiarize themselves with the category labels at the top of the page. After approximately 30 seconds, the experimenter repeated the 20-second timing procedure. The remaining pages were completed in the same manner, with participants given approximately 30 seconds to become familiar with the stimuli and response label locations for each page prior to beginning the timing procedure. The order of the eight critical pages was randomized across participants with the constraint that no two pages from the same IAT were ever completed consecutively.

Personal and Social Motivation to Respond Without Prejudice. The motivation to respond without prejudice scales were identical to those used in Study 1, and were presented on a single page with personal and social items in alternating order. Participants indicated their agreement with personal and social motivation items by circling their response on a 1-9 scale, where 1 = *strongly disagree*, 5 = *neither agree nor disagree*, and 9 = *strongly agree*.

Explicit Attitudes Toward Gay Men. The Attitudes Toward Gay Men scale (ATG; Herek, 1984) was administered on a single page, always following the motivation measures. This measure was identical to the ATG measure used in Study 1. Participants indicated their agreement with items on a scale from 1 to 6 with scale points labeled *strongly disagree, moderately disagree, slightly disagree, slightly agree, moderately agree, and strongly agree.*

Demographic information. The final page of the questionnaire for all participants collected the same demographic information collected in Study 1 (i.e., age, year in college, gender, ethnicity, English language proficiency). As in Study 1, this page also asked participants to indicate their sexual orientation and the number of their friends who are gay, lesbian, or bisexual, with additional instruction that responses to these questions were not required.

Results and Discussion

Overview

As in Study 1, the primary hypotheses of Study 2 concerned the relationships among personal and social motivation and implicit and explicit prejudice against gay men. Study 2 replicated the basic prejudice findings of Study 1, demonstrating relatively favorable explicit attitudes toward gay men, but strong implicit anti-gay bias. Central questions regarding the relationship between motivation and prejudice also replicated Study 1, with personal motivation showing a stronger relationship than social with both explicit and implicit prejudice. In addition, social, but not personal, motivation was shown to moderate the relationship between implicit and explicit prejudice, with stronger

implicit-explicit relationships observed among individuals low in social motivation than among those high in social motivation.

Demonstration of Anti-Gay Prejudice

Explicit Attitude

The ten-item Attitudes Toward Gay Men scale (ATG; Herek, 1984) was internally consistent, $\alpha = .94$. Participants responded with a mean of 2.40, $sd = 1.27$, on the 1 – 6 scale, with higher numbers indicating greater prejudice. Thus, overall, participants were below the scale midpoint, indicating relatively favorable attitudes. Male participants endorsed significantly more negative attitudes (mean = 2.86, $sd = 1.43$) than female participants (mean = 1.98, $sd = .93$), $t(173) = 4.82$, $p < .001$, consistent with most research using the ATG and other explicit measures (e.g., Herek, 1994; Herek & Capitanio, 1996; Kite, 1992; Kite & Deaux, 1986).

Implicit Attitude

Preparing data for analysis. The paper-based method of administering the IAT used in the present study is a new technique, and the most appropriate means of analysis for these data are still the topic of some debate. The present analysis follows guidelines suggested by Nosek and Lane (1999), derived through a comprehensive comparison of several different statistical tools for analysis.

Errors and outliers. One male participant with an error rate across all IAT blocks in excess of 20% was removed *a priori* from further analysis. Among participants with overall error rates less than 20%, individual blocks for which the error rate exceeded 20% were removed from further analysis, resulting in slight variability in the overall N for analyses involving different IAT measures. In addition, blocks were removed if the

number of correct responses was equal to or fewer than seven, which is equivalent to an average response speed of 2.86 seconds per item. Responses requiring roughly three seconds or longer per item are regarded to be unlikely to tap meaningful implicit cognitive processes.

Calculation of IAT scores for analysis. Participants completed two IAT gay attitude measures which differed only in the location of the category labels: For Version 1, *gay* was on the left and *straight* on the right; for Version 2, *straight* was on the left and *gay* on the right. For each IAT measure, a difference score was calculated by subtracting each participant's number of correct responses from the block when *gay* was paired with unpleasant (and *straight* with pleasant) from his or her number of correct responses when *gay* was paired with pleasant (and *straight* with unpleasant), thus, positive difference scores on the gay attitude IATs indicated preference for straight over gay.

To lessen the impact of the skewness typical in response latency data, IAT difference scores were recalculated using an algorithm that takes into account the ratio of the two critical blocks as well as the difference between the critical blocks (see Appendix G for a description of this transformation). For all remaining analyses, "IAT difference score" will refer to the modified difference score calculated in this manner.

Demonstration of implicit prejudice. Mean modified difference scores on the gay attitude IAT measures are shown in Table 5. For each IAT measure, a difference score of zero indicates no greater facilitation for one pairing relative to the other and a positive score indicates preference for straight relative to gay. Across all participants, there was significantly greater facilitation for gay+bad relative to gay+good (Gay Attitude 1), and for straight+good relative to straight+bad (Gay Attitude 2).

Table 5: IAT Scores Across all Participants

Test	mean difference score	standard deviation	<i>n</i>	<i>t</i>	<i>p</i>
Gay Attitude 1	1.83	3.55	167	6.65	.001
Gay Attitude 2	1.93	3.33	166	7.49	.001

Note: $t = t$ to test difference of mean from zero.

Effects of procedural variables. Two procedural variables were manipulated in the present study: Location of category headers (over right or left response column) and order of task completion (implicit measures before or after explicit measures). Although not of primary theoretical interest for the present research, these variables are important to measure because they may influence the effects of the critical independent variables. All participants completed two versions of the gay attitude IAT, one with the header *straight* located over the left response column and *gay* was over the right column, and one with *gay* located above the left response column and *straight* over the right column. The two versions of the gay attitude IAT were sufficiently similar ($r = .47$, $p < .001$) to justify using a composite IAT score for all remaining analyses.

Effect of order of task completion. The vast majority of participants ($N=153$) completed the IAT measures prior to the motivation and explicit attitude measures. In order to test whether the IAT effects would be influenced by completing the motivation and explicit attitude measures first, a smaller group of participants ($N = 22$) completed the IAT measures after completing the motivation and explicit attitude measures.³⁴

The order of task completion may be important regarding the gay attitude IAT measures if motivation and explicit attitude measures prime responding on a subsequent

gay attitude IAT. The present study suggested that order is a somewhat important concern. The IAT effect was somewhat larger when the IAT was completed prior to the motivation and explicit attitude measures (mean difference score = 2.19) than when it was completed following those measures (mean difference score = 0.93), $F(173) = 3.17$, $p < .08$; this difference was consistent across male and female participants. Because this order effect is not of primary interest to the present study, and because the distribution of motivation scores and explicit attitude scores did not vary as a function of task order, responses for the remaining analyses were collapsed across the two different task completion orders.

Known groups validation of IAT attitude measures. Only two male participants self-identified as gay in the present study, precluding a replication of the known-groups validation of Study 1. Interestingly, however, non-straight men as a group (2 gay and 7 bisexual men) showed a mean IAT difference score of only .78, compared to 2.66 among straight men. Although the difference between these two groups was not statistically significant, $t(92) = 1.60$, $p = .11$, the pattern of means suggests that straight men show more negative attitudes than do non-straight men toward the target group *gay men*, providing modest support for a known-groups validation of the IAT gay attitude measure, that is, the group that was expected to show more negative gay attitudes (straight men) did tend to do so.

Gender differences in implicit gay attitude. On the IAT gay attitude measure, both men and women indicated a preference for straight relative to gay, but the straight-gay

³⁴ As described in the method section of this paper, the number of participants who completed the motivation and explicit attitude measures prior to the IAT measures was very small due to substantial variability in the time needed to complete the motivation and explicit measures.

difference was significantly larger for male participants (mean difference = 2.66, sd = 3.47) than for female participants (mean difference = 1.44, sd 2.67). This is consistent with research using explicit measures of attitude toward gay men, which suggests that heterosexual women are generally more favorable toward gay men than are heterosexual men (see Kite and Whitley, 1996, 1998 for reviews).

Recall that this gender difference in implicit prejudice was not observed in Study 1. It is possible that the behavioral measure that preceded the IAT in Study 1 changed the way that participants responded on the IAT, perhaps attenuating gender differences that might otherwise have been observed. This is supported in Study 2 by the finding of a weaker IAT gay attitude effect among participants who completed the motivation and explicit measures prior to the IAT. Other research has suggested that implicit beliefs and attitudes may be somewhat malleable, if assessment of implicit stereotype or attitude is preceded by stimuli that prime the relevant construct (e.g., Blair & Ma, 1999; Carpenter, 2000; Dasgupta & Greenwald, 2000). Thus, it is important for researchers to consider task order effects when administering implicit measures, ideally counterbalancing task order to control for these potentially influential effects.

Motivation to Respond Without Prejudice

Factor structure and reliability of personal and social motivation scales with reference to anti-gay prejudice. As in Study 1, Study 2 made use of the Plant and Devine (1998) personal and social motivation scales, modified to be relevant for anti-gay prejudice. Because of the large sample in the present study, it was possible to test more systematically whether the modified scale has the same psychometric properties as the original. To confirm that the factor structure of the gay-relevant motivation scales

resembled the two-factor structure of the Black-relevant scales, the ten scale items were submitted to confirmatory factor analytic procedures using LISREL 8.30 (Jöreskog & Sörbom, 1999). Items were fitted to the model derived by Plant and Devine (1998), with the five personal items and five social motivation items loading on separate latent factors that were fixed to be uncorrelated.

To indicate whether a proposed model is a satisfactory fit for the data, Jöreskog and Sörbom (1993) recommended a criterion of .85 or greater on their Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI). The Non-Normed Fit Index (NNFI), another measure of model fit, should ideally be greater than .90 (Bentler & Bonett, 1980). As shown in Table 6, the fit for the proposed two-factor model with five items loading on each factor (Model 1) was below criterion on two of these three indices.

Table 6: Goodness of fit of Confirmatory Factor Analyses

Fit Index	Model 1	Model 2
GFI	.87	.92
AGFI	.80	.87
NNFI	.84	.92

Closer inspection of the data revealed that one personal motivation item had a much weaker loading on its latent factor than did the other four items (a standardized loading of .36 versus .66-.88 for the remaining items) as well as a much higher residual (error) variance (.87 versus .23-.56). The item that loaded poorly (personal item five in Appendix C) was the only item of the full ten-item scale that was reverse-scored.³⁵ Some participants may have failed to notice the reverse nature of this question compared to the

³⁵ As in Study 1, the presence of the sole reverse-scored item is carried over from the Plant and Devine (1998) scale from which the present scale was developed. In their development of the scale, this reverse scored item loaded sufficiently highly with other items to remain on the scale.

other nine positively worded items. Perusal of the raw data supports this possibility: Several participants who indicated high agreement with personal item 3 (“Because of my personal values, I believe that using stereotypes about gay men is wrong”) also indicated agreement with the comparable reverse-scored item, personal item 5 (“According to my personal values, using stereotypes about gay men is OK”).

A second confirmatory factor analysis was performed omitting the reverse-scored personal motivation item. This model specified four items loading on the latent personal factor and five items on the latent social factor, with the latent personal and social factors uncorrelated. As shown in Table 6, this model (Model 2) was a much better fit to the data than Model 1, exceeding the GFI, AGFI, and NNFI fit criteria. Because Model 2 is fully nested within Model 1, the difference between χ^2 residual values for the two models provides a test of whether Model 2 is a significantly better fit than Model 1. The difference between Model 1 and Model 2 χ^2 values was $130.03 - 67.77 = 62.26$, distributed on $35 - 27 = 8$ degrees of freedom, which is significant at $p < .001$.

The internal consistency of the five-item social motivation scale was $\alpha = .87$. The internal consistency of the four-item personal motivation scale was $\alpha = .84$ (compared to $\alpha = .82$ for the five-item personal motivation scale). Taken together, evidence from confirmatory factor analyses and internal consistency analyses supported adopting a four-item personal motivation scale rather than using the full five-item scale originally tested. All remaining analyses were conducted using only the four positively coded items from

the personal motivation scale along with the five items (all positively coded) from the social motivation scale.³⁶

Personal and social motivation are distinct. The previously tested models assumed zero correlation between personal and social motivation, as specified by theory. In order to empirically test whether this correlation is zero, an additional model was fit that estimated the correlation between personal and social motivation, rather than fixing it to be zero. The latent variable correlation estimated by this model was -.06, which is consistent with the zero-order correlations observed by Plant and Devine (1998) and in Study 1 of the present report. Because the model with an estimated correlation between personal and social is fully nested within the model in which this correlation is fixed, comparison of the χ^2 residual for the two models provides a test of the significance of the personal-social correlation. The χ^2 for the difference between the two models was $67.77 - 67.48 = 0.29$, $df = 1$, which is not significant. Thus, the data support the independence of personal and social motivation.

Gender differences in motivation. Replicating Study 1, participants as a group endorsed personal motivation items more so than social motivation items (personal mean = 6.79, social mean = 4.61), $t(174) = 11.15$, $p < .001$. In addition, motivation interacted with participant gender such that the difference between personal and social motivation was more pronounced among female participants (personal = 7.39, social = 4.52) than among male participants (personal = 6.15, social = 4.71), $F(1,173) = 14.31$, $p < .001$.

³⁶ Analyses using the five-item IMS were very similar to analyses with the four-item IMS, except that the power of the tests was increased by removing the substantially larger error variance contributed by the reverse-coded item in the IMS measure.

Motivation Predicts Implicit and Explicit Prejudice

Personal motivation. Replicating Study 1, as predicted, personal motivation was very strongly negatively related to explicit prejudice, as indicated by a significant zero-order correlation between personal motivation and the ATG, $r = -.76, p < .001$. People who more strongly endorsed personal reasons for responding without prejudice on the self-report motivation measure tended to report less prejudice on the self-report ATG scale. Also replicating Study 1, personal motivation was a significant predictor of implicit prejudice, although the relationship between personal motivation and implicit prejudice was weaker than the relationship between personal motivation and explicit prejudice, $r = -.29, p < .001$. People who more strongly endorsed personal, internal reasons for responding without prejudice on the self-report IMS scale tended to indicate less prejudice on the implicit IAT measure. Although causality cannot be inferred from these correlations, they are consistent with the explanation that personal motivation represents internalized standards of low prejudice, because participants high in personal motivation to respond without prejudice tended to respond with less prejudice on a measure that is assumed to be uncontrollable. The question of how non-prejudiced standards may become internalized will receive further discussion shortly.

Social motivation. In contrast to personal motivation, social motivation was not related to implicit prejudice, $r = -.03, ns$. This is consistent with the findings of Study 1 as well as predictions derived from theory: Participants who are motivated to respond without prejudice for social reasons had neither social pressure to respond without prejudice nor opportunity to do so on the uncontrollable, implicit measure. Social motivation was also unrelated to explicit prejudice, $r = .11, ns$. This finding fails to

replicate Study 1 and research by Plant and Devine (1998), both of which indicated a small but significant positive relationship between social motivation and explicit prejudice. In Study 2, the direction of the relationship between social motivation and explicit prejudice is as expected, but the correlation was very small and not statistically significant. People who strongly endorsed motivation to respond without prejudice for social, external reasons were no less likely than people who did not endorse this motivation to provide responses indicative of prejudice on the implicit or explicit measures.

Internalization of non-prejudiced standards. If implicit belief and attitude are uncontrollable, as has been argued (e.g., Bargh, 1999), then scores on IAT measures should be independent of self-reported motivation to respond without prejudice, as people should not be able to modify their pattern of responses merely because they wish to do so. Thus, although the $-.29$ correlation between personal motivation and implicit prejudice is small, it is noteworthy that it exists at all. The observed relationship is consistent with the explanation that participants who endorse non-prejudiced standards for personal reasons may have developed a more positive pattern of implicit associations with the target group *gay men* than participants who do not endorse such standards. How can personally motivated individuals acquire positive associations with a socially stigmatized group? One possibility is that they place themselves in situations that allow for the development of non-prejudiced implicit attitudes, such as having close relationships with members of a targeted social group. Of course, causality cannot be inferred from the correlation between personal motivation and implicit prejudice. It is

equally likely that people may develop non-prejudiced personal standards as a result of having non-prejudiced attitudes and spending time with stigmatized group members.

As part of the demographic information collected at the end of the study, participants were asked to indicate the number of their friends whom they knew to be gay, lesbian, or bisexual. The number reported ranged from zero to 50, with a mean of 5.86. The reported number of gay friends was modestly but significantly negatively correlated with implicit gay attitude (IAT; $r = -.21, p < .01$) as well as with explicit gay attitude (ATG; $r = -.30, p < .001$). The negative direction of these correlations indicates that participants who reported having more gay friends tended to indicate more positive attitudes toward gay men on the implicit and explicit measures. Personal motivation to respond without prejudice was positively correlated with reported number of gay friends ($r = .24, p < .01$), suggesting that participants who aspired to non-prejudiced standards for internal, personal reasons tended also to report having more friends who were gay. Social motivation to respond without prejudice was not correlated with number of gay friends ($r = -.07, ns$), suggesting that the extent to which participants endorse social reasons to respond without prejudice bears no relationship to their reported number of gay friends.³⁷

This pattern of relationships suggests that individuals motivated to be non-prejudiced toward gay men for personal, internal reasons tend to have a larger circle of homosexual friends than individuals motivated to be non-prejudiced for social, external

³⁷ An additional analysis was conducted to examine whether the observed relationships were overly influenced by a small number of exceptionally large values. To reduce the impact of the outlying data points, the responses 40 and 50 were recoded as 20, a procedure that reduces skew without sacrificing meaningful data points by simply dropping them. With this modification, the pattern of results was identical and the correlations were slightly stronger, suggesting that these two outlying data points are not inflating the observed effects.

reasons. The difference in reported number of gay friends is most noticeable when comparing participants high on only one source of motivation. A planned contrast revealed that high-personal/low-social participants reported significantly more gay friends (mean = 6.49) than low-personal/high-social participants (mean = 3.46), $F(1,157) = 10.55, p < .001$.

The question of the development of internalized non-prejudiced standards is an important one, but it was not a focus of the present study as it was originally conceived. As such, the measure of gay friends was not chosen with the express purpose of understanding the relationship between intergroup contact and prejudice. However, the findings offer preliminary support that intergroup contact plays a role in the internalization of non-prejudiced standards. To explore this question in detail, future research should include measures of contact with gay people that assess not only numbers of gay friends, but also variables that elucidate the nature of participants' relationships and contact with the target group being studied (e.g., origin, intensity and duration of relationships).

Motivation Moderates Implicit-Explicit Relationships

The previous analyses indicated that personal motivation to respond without prejudice is associated with both implicit and explicit prejudice, whereas social motivation is not related to implicit or explicit prejudice. However, although social motivation was not a predictor of implicit or explicit prejudice, social motivation may be a moderator of the relationship between implicit and explicit prejudice. To the extent that people are socially motivated to respond without prejudice, they may attempt to mask prejudice on the implicit and explicit measures. However, because only the explicit

measure is controllable through conscious choice, such participants may modify their responses on the explicit measure in a way that suggests their prejudice is very different from what they indicate on the uncontrollable, implicit measure, resulting in a low implicit-explicit correlation. Participants low in social motivation, in contrast, will not attempt to modify their responses on either measure, and will tend to respond with similar levels of prejudice on the implicit and explicit measures, resulting in a high implicit-explicit correlation.

Predictions were less clear regarding personal motivation. It was expected that, if highly personally motivated participants have truly internalized non-prejudiced standards, then they would show a high implicit-explicit correlation, tending to respond with relatively low prejudice on both measures. However, this internalization of non-prejudiced standards could also lead to an artifactually low implicit-explicit relationship, if highly personally motivated participants respond with such low prejudice that there is not sufficient variability to obtain a correlation.

Across all participants, the relationship between implicit and explicit prejudice was moderate and statistically significant, $r = .38, p < .001$. In general, stronger endorsement of prejudice on the explicit ATG measure was associated with greater preference for straight over gay on the implicit IAT measure. This moderate correlation suggests that implicit and explicit prejudice are related, but not redundant.

To test whether personal and social motivation to respond without prejudice moderates the implicit-explicit relationship, participants were divided along the median into groups high versus low in personal motivation and high versus low in social

motivation.³⁸ As predicted, social motivation moderated the relationship between implicit and explicit prejudice. Collapsing across levels of personal motivation, participants who scored high on social motivation ($n = 94$) showed a weaker implicit-explicit relationship ($r = .18$, ns) than participants who scored low on social motivation ($n = 81$; $r = .52$, $p < .001$). The difference between these two correlations, tested using Fisher's r -to- z transformation (Fisher, 1921), was statistically significant, $z = 2.53$, $p < .05$.³⁹

In contrast, personal motivation on its own did not produce a significant effect on the implicit-explicit relationship. Collapsing across levels of social motivation, participants high in personal motivation ($n = 95$) did not differ significantly from participants low in personal motivation ($n = 80$) in the implicit-explicit relationship they showed ($r = .38$, $p < .001$ vs. $r = .30$, $p < .01$). Thus, the main effect of social motivation to respond without prejudice appears to be a more substantive predictor of the implicit-explicit relationship than the main effect of personal motivation.

Examination of the interaction of personal and social motivation suggests that both variables contribute to the observed pattern of implicit-explicit relationships. Zero-order correlations between implicit and explicit anti-gay prejudice for the four combinations of low- and high-IMS and low- and high-EMS are shown in Table 7.

³⁸ Median personal motivation = 7.0, median social motivation = 4.6. Participants who scored exactly on the median were categorized as high-personal or high-social, resulting in slightly larger number of participants in the high- than low-personal and social groups.

³⁹ A analysis using covariance structural modeling to control for measurement error further supported this conclusion. The implicit-explicit correlations estimated with this technique were .25 for participants high in social motivation and .68 for participants low in social motivation.

*Table 7: Implicit-Explicit Relationship
as a function of motivation to respond without prejudice*

Personal Motivation	Social Motivation	
	Low	High
Low	.49** (38) A	-.004 (42) B
High	.44** (43) C	.29* (52) D

Note: *** = $p < .001$, ** = $p < .01$, * = $p < .05$. Numbers in parentheses specify n for that cell. Cell B differs significantly ($p < .05$) from cells A and C; no other comparison is significant.

These results suggest that the effect of social motivation is stronger among participants who are low in personal motivation than among those who are high in personal motivation. At both levels of personal motivation, participants high in social motivation showed a weaker implicit-explicit relationship than participants low in social motivation, however, this difference was much bigger among participants low in personal motivation than among participants high in personal motivation. As predicted, participants low in personal motivation and high in social motivation (cell B) showed the weakest implicit-explicit correlation. Participants low in both personal and social motivation (cell A) showed the strongest implicit-explicit relationship. Participants low in both personal and social motivation are assumed to be unconcerned about the level of prejudice they display on implicit or explicit measures. Because they have no motivation to modify their responses, it is reasonable that their implicit and explicit responses would be relatively similar.

Motivation as continuous measures. Analyses in the previous section made use of median splits to dichotomize the motivation variables. Dividing participants into categories of high versus low personal and social motivation provides a clear and straightforward means to describe the way that the implicit-explicit relationship varies as a function of personal and social motivation to respond without prejudice. However, because the motivation scales are continuous, not dichotomous scales, multiple regression analysis provides a more appropriate test of the relationships among personal and social motivation and implicit and explicit prejudice.

Hierarchical multiple regression analysis was used to predict implicit attitude scores (IAT) from explicit attitude scores (ATG), personal motivation, social motivation, and their interactions.^{40,41} Summary results of the regression analyses are shown in Table 8. Explicit prejudice (ATG) was entered alone in the first step and was a significant predictor of implicit prejudice (IAT). Main effects of personal and social motivation were entered as a group in the second step. Neither personal nor social motivation predicted variance in IAT scores beyond that predicted by ATG scores.

The primary hypothesis of the present study, whether motivation moderates the relationship between implicit and explicit prejudice, was tested by including the interactions of personal and social motivation with explicit prejudice. A significant interaction of motivation by explicit prejudice would indicate that the relationship between implicit and explicit prejudice is different at different levels of motivation.

⁴⁰ The direction of prediction used in the regression is not intended to imply a causal relationship between implicit and explicit prejudice. Similar regressions with implicit and explicit measures switched as independent and dependent variables yielded mostly similar patterns of results.

⁴¹ To reduce collinearity among the independent variables, all variables were centered prior to calculating interaction terms and computing regression parameter estimates (see Kleinbaum, Kupper, Muller, & Nizam, 1998).

Interactions of social and personal motivation with explicit prejudice were entered together in the third step of the hierarchical regression. Social motivation was a significant predictor of the implicit-explicit relationship, as indicated by a significant social motivation by ATG interaction. Personal motivation did not significantly predict the implicit-explicit relationship.

In the final step of the regression, the three-way interaction of social motivation by personal motivation by explicit prejudice was entered. This three-way interaction did not add significantly to the model, indicating that the interaction of social and personal motivation was not a significant predictor of the implicit-explicit relationship. Thus, the personal by social interaction suggested by the median-split analysis above was not supported by the regression analysis. This is due in part to the strength of the social motivation by explicit prejudice interaction, which accounted for a relatively large part of the variance in the overall model. It is likely that social motivation was such a strong predictor of the implicit-explicit relationship that it dwarfed any effect of personal motivation that may have been present.

Table 8: Summary of Hierarchical Regression Analysis Predicting Implicit Anti-Gay Prejudice (IAT) from Explicit Prejudice and Social and Personal Motivation

Variable	B	SE B	β	<i>t</i>	<i>p</i>	R ²
<i>Step 1</i>						.14
Explicit Attitude (ATG)	.93	.17	.38	5.35	.001	
<i>Step 2</i>						.15
Explicit Attitude (ATG)	.98	.27	.40	3.59	.001	
Personal Motivation	.03	.18	.02	.17	ns	
Social Motivation	-.12	.12	-.07	-.99	ns	
<i>Step 3</i>						.18
Explicit Attitude (ATG)	.88	.29	.36	3.07	.01	
Personal Motivation	.00	.18	.00	.01	ns	
Social Motivation	-.08	.12	-.05	-.64	ns	
Personal*ATG	-.01	.08	-.01	-.15	ns	
Social*ATG	-.18	.07	-.19	2.67	.01	
<i>Step 4</i>						.18
Explicit Attitude (ATG)	.88	.29	.36	3.05	.01	
Personal Motivation	.00	.18	.00	.01	ns	
Social Motivation	-.07	.14	-.04	-.49	ns	
Personal*ATG	-.01	.08	-.01	-.15	ns	
Social*ATG	-.19	.12	-.19	-1.69	.09	
Personal*Socia*ATG	.00	.03	.00	.03	ns	

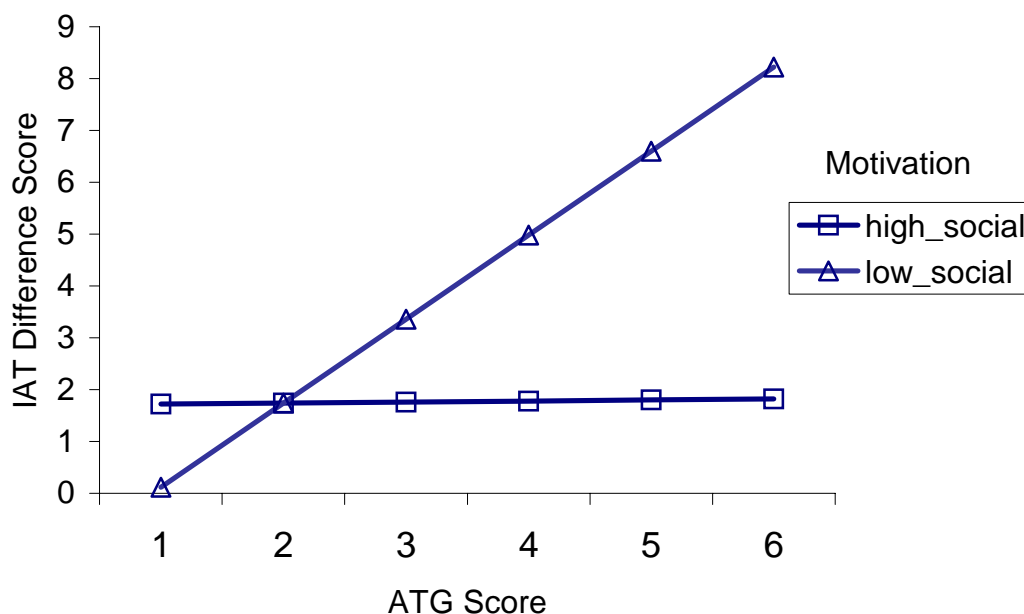
Note: The intercept for each step is approximately zero, due to the use of centered variables.

Overall, the regression analysis suggests that social motivation does not predict implicit prejudice, but is a significant predictor of the implicit-explicit relationship. The moderating effect of social motivation on the implicit-explicit relationship can be easily discerned from Figure 1,⁴² which displays the regression lines predicting implicit anti-gay prejudice (IAT) from explicit anti-gay prejudice (ATG) for social motivation scores of 1 and 9, the endpoints of the scale. Participants who endorsed a high level of social motivation showed essentially no relationship between implicit and explicit prejudice. In contrast, participants who endorsed a low level of social motivation showed a strong

⁴² The regression equation plotted in this figure was derived from Step 3 of the hierarchical regression analysis, when the three-way interaction is not present in the model.

relationship between implicit and explicit prejudice, responding with increasingly high levels of implicit prejudice as they endorsed increasingly high levels of explicit prejudice.

Figure 1: Regression Lines Predicting Implicit Attitude from Explicit Attitude and Social Motivation



This result supports predictions of the present study as well as findings by Fazio et al. (1995) and Dunton and Fazio (1997). Social motivation was a significant moderator of the implicit-explicit relationship, such that highly socially motivated individuals tended to show a weaker implicit-explicit relationship than people who were not motivated for social reasons. Fazio et al. (1995) demonstrated a similar effect, which they interpreted as an effect of social masking, whereby motivated people attempt to suppress prejudice on both implicit and explicit measures, but are only able to do so on the explicit, controllable measure. An alternative explanation, however, is that the interaction is the result of a rebound effect, whereby some highly socially motivated participants respond with more prejudice on the explicit measure than they show on the

implicit measure. The second interpretation received modest support in the present study, because participants high in social motivation responded with greater explicit prejudice than participants low in social motivation (mean for high motivation = 2.54, for low motivation = 2.24, $F(1, 171) = 4.06$, $p < .05$). Because the explicit measure was completed in a relatively private situation (participants were told that their responses were anonymous), highly socially motivated participants may have felt that there was no social pressure to respond without prejudice, and overcompensated by providing explicit responses that suggested greater prejudice than their level of implicit prejudice would predict.

Summary

Study 2 replicated basic findings of Study 1 that showed that participants (particularly men, in Study 2) tended to show greater implicit negativity toward gay than toward straight, and explicit attitudes across all participants were generally more positive than implicit attitudes. Across all participants, this implicit prejudice effect was moderately correlated with explicit prejudice. However, the pattern of implicit-explicit relationships was moderated by social motivation to respond without prejudice. Participants who reported high social motivation showed a much weaker implicit-explicit relationship than participants who reported lower social motivation. Because socially motivated participants tended to evidence greater prejudice on the explicit measure, this finding suggests that participants who are motivated to be non-prejudiced for social reasons may show a rebound effect on the explicit measures, responding with *greater* prejudice than participants who reported low social motivation.

GENERAL DISCUSSION

The question of whether implicit belief and attitude can be influenced by conscious motivation has become an important question for social psychologists, particularly as techniques for assessment of these constructs have improved to allow for the measurement of meaningful individual differences. The present research had two primary goals, first, to determine whether personal and social motivation to respond without prejudice influence prejudice measured with implicit, explicit, and behavioral measures, and second, to determine whether personal and social motivation moderate the relationship between implicit and explicit prejudice. Results from two studies supported the hypothesis that personal motivation predicts prejudice assessed with explicit, implicit, and non-verbal behavior measures. Social motivation, in contrast, was not a strong predictor of implicit, explicit, or behaviorally expressed prejudice. However, social motivation was a strong predictor of the relationship between implicit and explicit prejudice.

Personal versus Social Motivation to Respond Without Prejudice

The present research provided strong evidence that personal and social motivation can be assessed as distinct, uncorrelated constructs. Two studies, including an analysis correcting for measurement error, observed near-zero correlations between personal and social motivation, replicating research by Plant and Devine (1998) and demonstrating that the personal and social motivation scales can be modified for use with respect to other social groups. Gender differences in motivation observed in the present studies paralleled gender differences in explicit gay attitude that have been observed for years (e.g., Herek, 1994, Kite & Whitley, 1996, 1998), with straight male participants reporting

significantly less personal motivation than straight women did to be non-prejudiced toward gay men.

Predicting Prejudice from Motivation

Explicit prejudice. The two studies in the present paper replicated results from the original scale development (Plant & Devine, 1998) showing that personal motivation is a strong predictor of explicit prejudice. The finding that personal motivation was strongly related to explicit prejudice provides an important validation of the motivation measure used in the present research. The personal motivation scale is designed to assess participants' interest in responding without prejudice, thus, to demonstrate that the scale is valid, it is essential to show that participants high in personal motivation do respond with less prejudice on explicit measures.

Implicit prejudice and behavior. Although a significant relationship between personal motivation and explicit prejudice was anticipated with confidence, the question of whether personal motivation would be related to implicit prejudice or non-verbal behavior was much more difficult to predict. Whether implicit attitude can be predicted by any self-report measure has been a much-debated topic. In the same year that Devine (1989) demonstrated that stereotypes about African Americans were activated in all participants regardless of their self-reported prejudice levels, Fiske (1989) proposed that application of automatically activated stereotypes and prejudice could be avoided, if individuals were willing to "make the hard choice" to be egalitarian. A decade of research and theoretical debate has not resolved the question of whether automatic social judgment processes can be moderated by conscious intent. Bargh (1999) made a strong case that automatic stereotyping and prejudice are unavoidable and uncontrollable, even

with the best of intentions. In the same volume, however, Monteith and Devine (1999) argued that many researchers have misinterpreted findings of “automatic” stereotyping and prejudice, falsely concluding that stereotype activation that occurs outside of awareness or intention is necessarily also uncontrollable.

The present research suggests that Fiske’s model of controlled choice in stereotyping and prejudice is a goal that may be realized by some individuals who are very motivated to live up to non-prejudiced standards. However, thinking and behaving in accordance with non-prejudiced standards may not be as simple as making a choice to be non-prejudiced. The present research suggests that prejudice reduction is successful only among individuals motivated to be non-prejudiced for personal standards. Those who are primarily motivated by social standards of political correctness do not respond with less prejudice on explicit or implicit measures.

The correlational results in the present research do not allow for definitive interpretation of causality in these relationships. It is theoretically expected that motivation to be non-prejudiced precedes non-prejudiced responses and behaviors, that is, people modify their prejudice to be consistent with their motivation. But in the present studies, most participants (all in Study 1, some in Study 2) completed the motivation measures following the assessment of implicit prejudice and behavior. Thus, it is possible that participants modified their responses on the motivation measure to be consistent with the implicit prejudice they just expressed. This alternative explanation for the motivation-prejudice relationship is not supported by the data, however. Participants who completed the motivation measures prior to the prejudice measures

showed nearly identical patterns of prejudice-motivation relationships to participants who completed the motivation measures following the prejudice measures.⁴³

An additional concern regarding the motivation measures is whether the construct they assess is actually *motivation*. The personal and social motivation measures used in the present research were validated (with reference to anti-Black prejudice) against a number of related measures, including Dunton and Fazio's (1997) measure of Motivation to Control Prejudiced Responding. However, it is possible that the construct assessed by these scales is not actually motivation. In particular, the personal motivation scale is highly correlated with explicit prejudice (-.54 to -.76 across two studies). This suggests that the personal motivation scale may represent an alternate form of explicit prejudice, rather than a distinct construct of motivation. The exact nature of the construct assessed by the motivation scales is an important question for future research.

To better determine the influence of motivation on prejudice, additional research may seek to manipulate motivational states rather than measure them. For example, Sinclair and Kunda (1999) manipulated participants' motivation to form positive or negative impressions and found that when participants were motivated to form a positive impression of a member of a stereotyped group, they activated positive stereotypes of that group and inhibited negative stereotypes. This suggests that stereotype activation can be influenced by motivation, even if the stereotyping processes operate outside conscious awareness and intention.

⁴³ The correlation between implicit prejudice and personal motivation was -.24 for participants who completed the motivation measure first, and -.32 for participants who completed the IAT first. The correlation between explicit prejudice and personal motivation was -.70 for participants who completed the motivation measure first and -.76 for participants who completed the attitude measure first.

An important related finding is that implicit and explicit prejudice were related to participants' reported number of gay friends, and that personal, but not social, motivation to respond without prejudice was related to number of gay friends. The latter finding supports a vast body of literature suggesting that positive intergroup contact may be related to prejudice reduction (e.g., Allport, 1954; Rothbart & John, 1985), including research directly relevant to anti-gay prejudice (Herek & Capitanio, 1996). Whether intergroup contact mediates the relationship between personal motivation and implicit prejudice is a question that deserves greater attention than the present studies could provide, because the measure of contact in the present study was not sensitive enough to explore this issue in detail. To understand better the mechanism by which personal motivation can lead to prejudice reduction, future studies should use measures of intergroup contact that assess not only numbers of friends but also intensity and duration of relationships.

Is automatic prejudice controllable? The present research did not directly address the question of whether prejudice or stereotypes will be automatically activated upon exposure to a member of a particular social group. Moskowitz, Wasel, Gollwitzer, and Schaal (1999) found that participants with chronic goals to be egalitarian (*chronics*) were less likely to have stereotypes activated automatically than participants who did not share this chronic goal (*nonchronics*). Moskowitz et al. argued that this difference was not due to chronics' possessing weaker links between the social group and the stereotype, rather, they argued that chronics were able to suppress stereotype activation through habitual pairing of the non-prejudiced goal with the given social group.

Whereas Moskowitz et al. (1999) argued that their observed effects were not due to differences among participants in the strength of associations between social groups and stereotypes, the present research supports the existence of individual differences in the cognitive representation of attitude toward gay men. The IAT provides a continuous measure of the strength of association between social groups and evaluation, thus greater prejudice on the IAT is indicative of stronger associations in memory (Greenwald et al., 1998). Across two studies, individuals who reported being personally motivated to be non-prejudiced toward gay men showed evidence of weaker links in memory between *gay* and *bad*, relative to individuals who did not endorse personal motivation.

Attitude-Behavior Relationship

The present research included a measure of non-verbal behavior in an interaction with a confederate who was presumed to be gay. Whereas most research examining relationships between attitude and subtle, non-verbal behavior has found no relationship (e.g., Crosby et al., 1980), the present study provided evidence that subtle behavior can be related to attitude, if attitude is measured in the right way. The MODE model (Dunton & Fazio, 1992; Fazio, 1990) predicts that spontaneous, uncontrolled behaviors (e.g., facial gaze) will not be related to controlled, conscious attitudes expressed on direct attitude measures, but should be predicted by spontaneous, uncontrolled attitudes – implicit attitudes. Supporting this model, Study 1 showed that confederate ratings of non-verbal behavior in an interaction with a (presumed) gay man were related to implicit prejudice assessed with the IAT but were not related to explicit prejudice.

Limitations of the behavioral measure. The measures of non-verbal behavior used in Study 1 were unique among research of this type in that the manipulation of

confederate sexual orientation was administered as a repeated measure, and confederates were unaware of the condition to which they had been assigned. This design allows for a comparison of participant responses to a confederate who is identified as gay and the same confederate who is not so identified. Because the confederate was unaware whether he had been identified as gay or straight, his expectancies could not influence participant responding. This design included several limitations, however. First, because confederate sexual orientation was not specified in the baseline interview segment, there was substantial variability in participants' baseline assumptions about the confederates' sexual orientation. During debriefing, many participants indicated that they thought the confederate was straight at first, others were uncertain, and other assumed that he was gay. Unfortunately, there may be no perfect solution to this problem. It would not be credible to have the same confederate be explicitly identified as straight for one interview segment and as gay for another. An alternative design would be to include two different confederates, one identified as gay and one as straight, but having different confederates play each role would reduce internal validity of the manipulation.

Another limitation of the non-verbal measures was the way that information about the confederates' sexual orientation was delivered. In order to prevent confederates from learning this information, confederates exited the interview room. The experimenter then entered the room and, in the course of otherwise innocuous comments, mentioned the sexual orientation of the confederate. During debriefing, many participants, particularly those who had taken psychology courses or had participated in experiments previously, mentioned that this exchange seemed like a "set up." Interestingly, the pattern of responses on the non-verbal measures was the same regardless of whether or not

participants indicated having believed the manipulation, so this problem may not be severe. Nonetheless, in future research with this type of deception, it will be advantageous to recruit participants who have not been in other psychology experiments or courses.

An additional concern regarding the delivery of the manipulation is that confederates in the gay condition were identified specifically as being “openly gay.” This term was used in the present research in order that participants not believe that the confederate’s sexual orientation was being revealed without his consent. However, because openly gay individuals represent a subgroup of the larger population of gay people, it should be noted that effects of the behavioral manipulation may generalize only to the subgroup of openly gay men, and not to all gay men. Future research of this type may benefit from having the manipulation delivered so as to avoid targeting a subtype of gay men.

The control condition was designed to be parallel to the experimental condition in every way except that the confederates were identified as being straight rather than gay. Thus, in the control condition, although the confederate was identified as straight, all of the interview questions were about attitudes toward gay men. It is likely that some participants may have felt uncomfortable when responding to these questions regardless of the purported sexual orientation of the interviewer. The effectiveness of the manipulation of confederate sexual orientation might be better tested in an interview in which the questions concern a more neutral topic that is less reactive.

Another reason participants may have felt uncomfortable in the interview situation is that they may have believed that the interviewer was stereotyping *them*.

Vorauer, Main, and O'Connell (1998) found that all people recognize the existence of out-group stereotyping, but that individuals high in prejudice, more so than those low in prejudice, generated meta-stereotypes: Beliefs that they themselves were being stereotyped by out-group members with whom they interacted. In the present research, high-prejudiced participants may have been particularly uncomfortable with the gay interviewer if they believed that he was judging them unfavorably, discomfort that would be manifest in their non-verbal behavior expressed toward the interviewer.

Relationship Between Implicit and Explicit Prejudice

Both studies in the present paper found moderate but significant relationships between implicit and explicit prejudice, across all participants. Although this is inconsistent with a long tradition of theory and research positing that implicit and explicit attitudes are dissociated, it is consistent with a growing body of research demonstrating that implicit and explicit attitudes are modestly correlated. More importantly, the present research demonstrated that individuals varied in the strength of the implicit-explicit relationship they showed. Similarly to research by Fazio and colleagues (Dunton & Fazio, 1997; Fazio et al, 1995), Study 2 found that individuals who were strongly motivated to respond without prejudice showed a weak implicit-explicit relationship, whereas individuals who were not motivated to respond without prejudice showed a strong implicit- explicit relationship. In a departure from Fazio et al.'s findings, however, Study 2 demonstrated that only social motivation, not personal motivation, moderates the implicit-explicit relationship.

Although Fazio et al. (1995; Dunton & Fazio, 1997) suggested that the low implicit-explicit correlation observed among highly motivated participants may be due to

social masking on the explicit, controllable measure, the finding in Study 2 suggests that this explanation does not fully capture the process whereby implicit and explicit prejudice are related. First, it is clear from Study 1 and Study 2 that some people are motivated to be non-prejudiced for reasons that have nothing to do with social pressures to be egalitarian. Non-prejudiced responses provided by these participants are unlikely to be driven by efforts to mask prejudice to comply with social standards. Second, the present research found that socially motivated participants actually indicated *greater* prejudice on the explicit, controllable measure than participants who did not endorse social motivation. This is, of course, the opposite of what a social masking explanation would predict.

Examination of the zero-order implicit-explicit correlations as a function of both personal and social motivation hinted that personal and social motivation might interact in moderating the implicit-explicit relationship. However, an analysis treating the motivation scales as continuous variables suggested that any effect involving personal motivation is extremely small, and that only social motivation is a significant predictor of the implicit-explicit relationship.

Although the present findings suggest that social motivation is a more important factor than personal motivation in predicting the implicit-explicit relationship, they do not support the theory that the implicit-explicit relationship is attenuated by efforts to mask prejudice due to social pressure. Because the explicit measure in Study 2 was completed in a generally private context, participants motivated primarily for social reasons should have had no reason to try to appear less prejudiced. The data suggest that they did not – participants high in social motivation responded with no less prejudice on the explicit

measure than those low in social motivation, in fact, in Study 1 they responded with *greater* explicit prejudice. It may be the case that participants high in social motivation are actually higher in prejudice than those low in social motivation, and this comes through on the explicit measure completed in private. However, in the explicit attitude questions asked in a public interview, highly socially motivated participants were equally prejudiced as those low in motivation. If highly socially motivated participants' underlying prejudice level is actually higher, this may represent a reduction in prejudice on the public measure.

In addition, although the present research directly addressed motivation, a characteristic of perceivers, as a moderator of the implicit-explicit relationship, there may be other variables that influence the strength of this link. Characteristics of the attitude may influence implicit-explicit relationships. For example, very strong attitudes developed through repeated experience over a long period of time may show stronger implicit-explicit links, to the extent that well-developed attitudes may be more available to conscious awareness. The social sensitivity of the attitude is also an important factor. Attitudes that are particularly socially sensitive, such as attitudes toward gay men, are likely to show weaker implicit-explicit links than attitudes that are less sensitive, such as attitudes toward political candidates or benign attitudes such as attitudes toward flowers and insects.

Another variable that may be important for maximizing implicit-explicit relationships is the specificity of the measurement. Many implicit attitude measures, including the IAT, measure attitudes toward one object with reference to another, contrasting object (e.g., gay versus straight). However, most explicit measures, including

the ATG used in the present research, measure attitudes toward a single group without reference to another group. It is quite likely that the relationship between implicit and explicit attitude could be improved overall by using an implicit measure that assesses attitude toward gay men independent of attitude toward straight people; or by using an explicit measure that assesses attitude toward gay men specifically with reference to straight people.

Is the IAT a measure of attitude?

As a relatively new measure of attitude, the IAT has been the subject of considerable methodological and theoretical scrutiny. Many researchers (although certainly not all) have demanded demonstrations of prediction from the IAT (e.g., Karpinski & Hilton, in press; see Banaji, in press, for a review of additional criticisms). In the present research, findings across two studies provide compelling evidence for the IAT as a measure of implicit attitude. Responses on the IAT were related to 1) consciously reported motivation to be non-prejudiced, 2) explicit attitude on well-established measure, and 3) non-verbal behavior. The demonstration in Study 1 of a significant relationship between the IAT and behavior provides the strongest argument: The non-verbal measure was predicted better by the IAT than by a well accepted measure of explicit gay attitude.

Conclusions

The results of the present studies contribute to our theoretical understanding of implicit attitudes, particularly prejudice. Although implicit prejudice had long been assumed to be independent of explicit prejudice, the present research suggests that implicit and explicit prejudice may be overlapping constructs, but that individuals may

differ in the extent to which their explicit and implicit prejudice are aligned. Importantly, these differences are related to explicit motivation to be egalitarian. Good intentions to be non-prejudiced are associated with less prejudice at explicit, implicit, and non-verbal levels, provided that those intentions stem from personal standards rather than social pressure.

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Appendix A: List of IAT Stimuli (Study 1)

<u>Pleasant</u>	<u>Unpleasant</u>
Paradise	Pain
Happy	Death
Smile	Poison
Joy	Greif
Warmth	Agony
Pleasure	Tragedy
<u>Gay</u>	<u>Straight</u>
Gay	Straight
Homosexual	Heterosexual

Appendix B: Interview Questions (Study 1)

Participants were asked to indicate their response to each item by indicating whether they agreed or disagreed slightly, moderately, or strongly.

Segment 1:

1. I think it is good that television shows are starting to include gay characters.
2. The idea of gay male marriages seems ridiculous to me.
3. Gay people are getting too demanding in their push for equal rights.
4. Gay men should not be allowed to teach school.
5. Children who spend time with gay people are more likely to become gay themselves.
6. Just as in other species, male homosexuality is a natural expression of sexuality in human men.
7. If a man has homosexual feelings, he should do everything he can to overcome them.
8. It is easy to understand the anger of gay people in America.
9. Gay couples should be allowed to adopt children the same as heterosexual couples.

Segment 2:

10. Male homosexuality is merely a different kind of lifestyle that should not be condemned.
11. Gay people can become straight if they make an effort to do so.
12. Male homosexuality is a perversion.
13. It is wrong for gay people to expect businesses to provide benefits to their same-sex domestic partners.
14. I would not be too upset if I learned that my son were gay.
15. Discrimination against gay people is no longer a problem in the United States.
16. Homosexual behavior between two men is just plain wrong.
17. Over the past few years, the government and media have shown more respect to gay people than they deserve.
18. I think gay men are disgusting.

Appendix C: Personal and Social Motivation Scales

Derived from scales developed by Plant and Devine (1998). Participants indicated agreement with each item on a nine-point scale with higher numbers indicating greater agreement. Items were presented with social and personal items in alternating order.

Social Motivation:

1. Because of today's PC (politically correct) standards, I try to appear nonprejudiced toward gay men.
2. I try to hide any negative thoughts about gay men in order to avoid negative reactions from others.
3. I attempt to appear nonprejudiced toward gay men in order to avoid disapproval from others.
4. If I acted prejudiced toward gay men, I would be concerned that others would be angry with me.
5. I try to act nonprejudiced toward gay men because of pressure from others.

Personal Motivation:

1. I attempt to act in nonprejudiced ways toward gay men because it is personally important to me.
2. Being nonprejudiced toward gay men is important to my self-concept.
3. Because of my personal values, I believe that using stereotypes about gay men is wrong.
4. I am personally motivated by my beliefs to be nonprejudiced toward gay men.
5. According to my personal values, using stereotypes about gay men is OK. (*reverse coded*)

Appendix D: Motivation to Control Prejudiced Responding Scale

Derived from scale developed by Fazio et al. (1995). Participants indicated agreement with each item on a nine-point scale with higher numbers indicating greater agreement. Items marked with (R) are reverse-scored.

1. In today's society, it is important that one not be perceived as prejudiced against gay men in any manner.
2. I always express my thoughts and feelings, regardless of how controversial they might be. (R)
3. I get angry with myself when I have a thought or feeling that might be considered prejudiced.
4. If I were participating in a class discussion and a gay man expressed an opinion with which I disagreed, I would be hesitant to express my own viewpoint.
5. Going through life worrying about whether you might offend someone is just more trouble than it's worth. (R)
6. It's important to me that other people not think I'm prejudiced.
7. I feel it's important to behave according to society's standards.
8. I'm careful not to offend my friends, but I don't worry about offending people I don't know or don't like. (R)
9. I think that it's important to speak one's mind rather than to worry about offending someone. (R)
10. It's never acceptable to express one's prejudices.
11. I feel guilty when I have a negative thought or feeling about gay men.
12. When speaking to a gay man, it's important to me that he not think I'm prejudiced.
13. It bothers me a great deal when I think I've offended someone, so I'm always careful to consider other people's feelings.
14. If I have a prejudiced thought or feeling, I keep it to myself.
15. I would never tell jokes that might offend others.
16. I'm not afraid to tell others what I think, even when I know they might disagree with me. (R)
17. If someone who made me uncomfortable sat next to me on a bus, I would not hesitate to move to another seat. (R)

Appendix E: Attitudes Toward Gay Men Scale

Participants indicated agreement with each item on a six-point scale with higher numbers indicating greater agreement.

1. Male homosexual couples should be allowed to adopt children the same as heterosexual couples.
2. I think male homosexuals are disgusting.
3. Male homosexuals should not be allowed to teach school.
4. Male homosexuality is a perversion.
5. Just as in other species, male homosexuality is a natural expression of sexuality in human men.
6. If a man has homosexual feelings, he should do everything he can to overcome them.
7. I would not be too upset if I learned that my son were a homosexual.
8. Homosexual behavior between two men is just plain wrong.
9. The idea of male homosexual marriages seems ridiculous to me.
10. Male homosexuality is merely a different kind of lifestyle that should not be condemned.

Appendix F: Sample Page of IAT gay prejudice measure
(Straight+Good/Gay+Bad condition)

STRAIGHT Straight Heterosexual			GAY Gay Homosexual		
GOOD enjoyment excellent terrific			BAD disaster tragedy terrible		
Straight good			Gay bad		
<input type="radio"/>	heterosexual	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	enjoyment	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	gay	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	terrible	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	homosexual	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	terrific	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	straight	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	disaster	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	gay	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	tragedy	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	straight	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	excellent	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	heterosexual	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	disaster	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	homosexual	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	enjoyment	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	gay	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	excellent	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	straight	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	terrible	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	homosexual	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	terrific	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	heterosexual	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	tragedy	<input type="radio"/>	<input type="radio"/>		
Straight good			Gay bad		
<input type="radio"/>	disaster	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	gay	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	tragedy	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	straight	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	terrific	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	homosexual	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	straight	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	gay	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	enjoyment	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	heterosexual	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	excellent	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	terrible	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	enjoyment	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	heterosexual	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	disaster	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	homosexual	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	terrific	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	straight	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	tragedy	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	heterosexual	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	terrible	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	gay	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	excellent	<input type="radio"/>	<input type="radio"/>		
<input type="radio"/>	homosexual	<input type="radio"/>	<input type="radio"/>		

Appendix G: Transformation Procedure for Paper IAT Data

Following Nosek & Lane (1999), modified difference scores were computed using the following algorithm:

$$\frac{+/- \text{ maximum score}}{\text{minimum score}} \sqrt{|(A - B)|}$$

where A and B are the number of correct responses on two IAT blocks being used in a given calculation (e.g., A = flower+good and B = insect+good). To lessen the impact of extreme scores on this difference, the square root of the absolute value of the difference score is multiplied by the ratio of the larger to the smaller blocks. Taking the absolute value of the difference score (necessary for the calculation of square roots) eliminates the meaningful sign of the difference scores (i.e., a negative score on the flower—insect IAT indicates preference for insects, whereas a positive score indicates preference for flowers). To restore this meaningful sign, scores for which block B is the larger block are multiplied by -1 , while scores for which Block A is the larger block remain positive. As established by Nosek & Lane (1999), this algorithm for calculating IAT scores reduces the skew of the difference score distributions while maintaining the sign and rank order of differences scores.