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# Implicit and Explicit Measures of Sexual Orientation Attitudes: Ingroup Preferences and Related Behaviors and Beliefs Among Gay and Straight Men

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*The relations among implicit and explicit measures of sexual orientation attitudes and sexual-orientation-related behavior and beliefs among gay men (Study 1) and straight men (Studies 1 and 2) were explored. Study 1 found relations between implicit and explicit measures of sexual orientation attitudes, large differences between gay and straight men on both implicit and explicit measures, and that these measures predicted sexual-orientation-related behaviors among gay men. Also, only straight men exhibited a negative relation between their attitudes toward homosexuality and heterosexuality. Study 2 found that as straight men held more negative attitudes toward homosexuality, they more strongly endorsed the importance of heterosexual identity and of traditional masculine gender roles. These endorsements mediated the negative relation between their attitudes toward heterosexuality and homosexuality. Implications for assessing attitudes toward sexual orientation and their relations for sexual orientation identity are discussed.*

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**Keywords:** *attitudes; sexual orientation; implicit measures; IAT*

Although the value of attitudes has been questioned throughout the years (e.g., Bohner & Schwarz, 2001; Wicker, 1969), its importance in intergroup prejudice remains paramount. Indeed, research has shown that people are more likely to discriminate against group members for whom they have more negative attitudes (e.g., Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997; Fazio, Jackson, Dunton, & Williams, 1995). However, theoretical and measurement issues make establishing links between prejudice and group-relevant behavior complicated. In response to this complexity,

researchers have developed implicit measures of prejudice to complement more traditional, explicit measures of prejudice. The current work explored how implicit and explicit measures of prejudice relate to behaviors and beliefs linked to one's beliefs about social groups by studying attitudes toward sexual orientation among gay and straight men.<sup>1</sup>

When studying prejudiced attitudes, concerns about social desirability or about holding feelings at odds with one's personal standards can reduce the predictive validity of many traditional measures of prejudice (e.g., Dunton & Fazio, 1997; Monteith, 1993). Moreover, it may be the case that some knowledge and experiences that influence group-relevant behavior are simply not available to individuals for self-report (e.g., Nisbett & Wilson, 1977; Wilson, Lindsay, & Schooler, 2000). Thus, many researchers have turned to implicit measures of attitudes to circumvent problems such as social desirability concerns and introspective access.

Implicit measures of attitudes assess automatic evaluations associated with attitude objects that perceivers may not necessarily be aware of, may not realize their influence on overt behavior, or may not be able to control

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(Fazio & Olson, 2003; Greenwald & Banaji, 1995; Greenwald et al., 2002; Greenwald, McGhee, & Schwartz, 1998; Wilson et al., 2000). Although all members of a culture may be aware of stereotypes and prejudices associated with a particular social group (Devine, 1989), their strength of association in memory differs across individuals (Fazio et al., 1995; Lepore & Brown, 1997; McConnell & Leibold, 2001). In the absence of motivation and opportunity to control one's responses, highly accessible attitudes should be especially likely to guide behavior (Dunton & Fazio, 1997; Plant & Devine, 1998), especially behavior that is relatively spontaneous and unplanned (e.g., Dovidio et al., 1997; McConnell & Leibold, 2001).

On the other hand, explicit measures of attitudes are attitude object evaluations that individuals can consciously express. Thus, explicit measures of attitudes assess evaluations that individuals not only are able to control but also are willing to acknowledge to themselves and others. To the extent that explicit attitudes reflect social desirability concerns, they may be more likely to predict behavior under conditions where social norms have a stronger influence (e.g., Dovidio et al., 1997; McConnell & Leibold, 2001; Wilson et al., 2000).

Fazio's (1990; Fazio & Towles-Schwen, 1999) MODE model provides a useful theoretical framework for thinking about the interplay between automatic and more controlled aspects of attitude expression. Fazio argues that attitudes vary in their accessibility and that highly accessible attitudes are automatically activated in the presence of an attitude object, guiding target-relevant behavior unless one has the motivation and opportunity to act differently. Although encountering a group member will activate highly accessible stereotypes and prejudice in memory, motivations such as social desirability concerns and personal values will influence "downstream" expressions of behavior if the perceiver has the motivation and opportunity to apply them (Fazio & Olson, 2003). Thus, implicit measures of prejudice (which assess more automatically activated beliefs) might better predict spontaneous responses, whereas explicit measures (which assess more controlled beliefs) might better predict behaviors that are planned and strategic in nature (Fazio & Olson, 2003). The current work explored these possibilities.

In the current study, we assessed implicit measures of prejudice using the Implicit Association Test (IAT) (Greenwald et al., 1998). The IAT has been shown to assess ingroup favoritism relative to outgroup antipathy (e.g., Greenwald et al., 1998) and to predict discriminatory behavior toward members of social groups (e.g., McConnell & Leibold, 2001). The IAT measures evaluative associations for concept categories by assessing the amount of time it takes for an individual to cate-

gorize stimulus targets using two responses. In prejudice IAT studies, stimulus targets are items associated with social groups (e.g., racially stereotyped names, images of social group members) and stimuli with evaluative connotations (e.g., peace, rotten, wonderful, disgusting). In critical trial blocks, participants categorize stimuli using two keys, each of which has two response options mapped onto it. For example, research has shown that White participants categorize stimuli more quickly when "Black or negative" is mapped onto one key response and "White or positive" is mapped onto the other key response than when the opposite set of key mappings (i.e., "Black or positive" and "White or negative") are used (Greenwald et al., 1998; McConnell & Leibold, 2001). The difference in the mean response latency between these two sets of key mappings is known as the IAT effect. Larger IAT effect scores indicate stronger associations in memory between the concept pairings (i.e., those responses that shared the same response key) that facilitated judgment.

Some studies have demonstrated that the IAT assesses ingroup bias (e.g., Korean Americans and Japanese Americans in Greenwald et al., 1998, Study 2; gender in Rudman, Greenwald, & McGhee, 2001). Germane to the current work, Banse, Seise, and Zerbes (2001) found that heterosexuals and homosexuals displayed differences on the IAT as a function of sexual orientation. In their study, female and male participants responded to an IAT that presented images of both gay and lesbian couples as one social category (i.e., homosexual) and heterosexual couples as the alternative social category. They found that homosexual men and women showed relative positivity toward homosexuality, whereas heterosexual men and women showed relative positivity toward heterosexuality. Although these results support the contention that the IAT reflects an ingroup sexual orientation preference, some limitations to this work exist. First, it is difficult to claim that this IAT assessed ingroup sexual orientation attitudes because the homosexual images were composed of both gay and lesbian targets. Thus, attitudes toward homosexuals in this study were a blend of attitudes toward ingroup and outgroup homosexuality, and among heterosexual men and women, attitudes toward outgroup homosexuality are more positive than attitudes toward ingroup homosexuality (Herek, 1994; Kite & Whitley, 1998). Also, although straight men typically hold relatively more positive attitudes toward lesbians than toward gay men, their attitudes toward lesbians become more negative when lesbians are associated with gay men (Herek, 2000b). Furthermore, the lesbian participants in Banse et al. showed relatively more positive attitudes toward homosexuality on the IAT than did gay men, which may reflect gay men revealing less positive implicit attitudes toward homosexuality on the

IAT, or it may reflect ambivalence based on combining gay men and lesbians in the same response category. Thus, in the current work, we focused on participants of one sex (men) to examine their attitudes about ingroup homosexuality (gay men as one response category) relative to ingroup heterosexuality (mixed-sex couples as the other response category). Also, we used the IAT to examine whether sexual orientation ingroup preferences would be observed and whether implicit and explicit measures of sexual orientation attitudes would relate to behaviors and dispositions associated with one's sexual orientation.

#### SEXUAL IDENTITY AND ITS RELATION TO BEHAVIOR

Regardless of sexual orientation, young boys are raised in a predominately heterosexual society in which they learn negative attitudes regarding homosexuality long before they comprehend their own sexuality (Gonsiorek, 1995). Because gay men come to realize their sexual orientation later in life, they may have internalized the negative attitudes toward homosexuality learned from the culture (Malyon, 1982). Thus, before a gay man identifies himself as gay, his negative associations with homosexuality may be similar to the negative associations and beliefs held by many heterosexual individuals. And even after a gay man identifies himself as a homosexual, he will continue to encounter others' negative gay prejudice throughout his life.

However, a crucial element of forging a positive gay identity is overcoming internalized negative attitudes toward homosexuality (Gonsiorek, 1995; Malyon, 1982). In addition, unlike many racial or ethnic groups, gay men and lesbians may need to seek support from outside their family or immediate social environment to dispel these negative attitudes and explore their newly identified sexuality. Exposure to other gay and lesbian individuals allows for the reevaluation of old homophobic attitudes and the acquisition of a positive sense of being gay (Cass, 1979; Minton & McDonald, 1984). Long-standing negative beliefs that may have been incorporated into a gay person's attitudes toward homosexuality are challenged, in turn encouraging greater exposure to the gay community and gay-relevant experiences. Thus, gay men's immersion into gay culture should relate to their having more positive gay attitudes.

Conversely, attitudes toward homosexuality among straight men have been found to relate to traditional gender roles and sexual identity. Indeed, sexual prejudice among straight men is closely linked with attitudes toward masculinity and heterosexuality (Herek, 1986; Kimmel, 1997). For instance, previous research has demonstrated relations between one's endorsement of traditional gender roles, traditional attitudes toward the roles of women, and negative attitudes toward gay men among

straight men (Kurdek, 1988; Thompson, Grisanti, & Pleck, 1985; Whitley, 1987), suggesting that expressions of sexual prejudice may be closely tied to gender and sexual identity development among straight men (Herek, 2000a).

Negative attitudes toward gay men by straight men may exist because homosexuals threaten the differentiation between genders and the social roles associated with them. Expressing negative gay prejudice may be beneficial for straight men attempting to maintain cultural ideals of masculinity and appropriate gender roles for men (Herek, 1986, 2000b; Kimmel, 1997). Because some gay men may be assumed to possess feminine characteristics, gay men may be especially aversive to straight men who adhere strongly to the traditional gender roles for men. By derogating gay men who, at least based on pervasive stereotypes, do not conform to these cultural standards of masculinity, straight men can affirm their own beliefs that these cultural expectations are appropriate. Thus, sexual prejudice toward gay men by straight men should be related to their endorsement of masculine gender roles for men.

Attitudes toward gay men also may be related to sexual identity among straight men. Herek (1986) argued that an increasing openness toward gay men about their sexuality in society means that heterosexuality may not always be assumed in others, which may threaten some straight men. Expressing prejudice against gay men may be beneficial to one's heterosexual identity because being straight can be affirmed by derogating those who are not (Herek, 1986, 2000b). Thus, sexual prejudice among straight men should be related to their level of identification with their own heterosexuality.

In summary, for both gay and straight men, positive attitudes toward ingroup sexual orientation may help maintain a positive identity for the self. In the current work, Study 1 explored whether implicit and explicit measures of attitudes would reliably discriminate participants' sexual orientation. We also explored the relation between implicit and explicit measures of attitudes and their ability to predict orientation-relevant behaviors among gay men. Study 2 explored the relation between implicit and explicit sexual orientation attitude measures and endorsements of sexual identification and gender roles among straight men.

#### STUDY 1

In Study 1, it was hypothesized that implicit and explicit measures of sexual orientation attitudes would differ as a function of participant sexual orientation. Specifically, we predicted that straight men would reveal more positive attitudes toward heterosexuality relative to homosexuality, whereas gay men would reveal more positive attitudes toward homosexuality relative to hetero-

sexuality. In addition, because straight men's attitudes toward homosexuality may be related to their own sexual and gender identities, it was further hypothesized that only straight men's attitudes toward homosexuality would be negatively related to attitudes toward heterosexuality. Finally, we expected that as gay men's attitudes toward homosexuality were more positive, they should show more sexual-orientation-affirming behaviors. Based on the existent literature (e.g., Dovidio et al., 1997; McConnell & Leibold, 2001), we thought that explicit measures may be more likely to predict behaviors that are deliberately executed (e.g., disclosure about one's homosexuality), whereas implicit measures may more strongly predict behaviors associated with immersion in the gay community. However, these predictions were exploratory in nature.

### Method

#### PARTICIPANTS

Data were collected from 79 male participants (36 straight, 43 gay). The straight participants were recruited through undergraduate psychology classes at a large Midwestern university and received course credit for their involvement. Because of the difficulties in obtaining a substantial number of gay participants, the gay men in this study were recruited through flyers and announcements, 20 from around a large Midwestern university and 23 from around the gay community in a large urban area in the Southwestern United States.<sup>2</sup> Gay men received \$10 for their participation. All participants were run in individual sessions.

#### MATERIALS AND PROCEDURES

Each participant was seated in a private workspace where they completed a series of paper-based questionnaires followed by the sexual orientation IAT. Most measures were completed by both gay and straight men (e.g., explicit attitudes toward sexual orientation, a sexual orientation IAT); however, gay men also completed additional measures reporting behaviors associated with being gay.

*Explicit attitudes toward sexual orientation.* All participants completed the Nungesser Homosexual Attitudes Inventory—general subscale (NHAI-general) (Nungesser, 1983) ( $\alpha = .81$ ), a measure consisting of 10 items assessing attitudes toward homosexuality in general (e.g., homosexual lifestyles are not as fulfilling as heterosexual lifestyles).<sup>3</sup> Respondents rated each attitude item on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Responses were reverse coded when applicable and summed such that larger scores reflected more positive attitudes toward homosexuality.

All participants completed semantic differential scales and feeling thermometers to assess attitudes

toward homosexuality and toward heterosexuality separately. Participants rated their own sexual orientation on both the semantic differential scales and feeling thermometer before rating the other sexual orientation. Participants completed 16 semantic differential scales: 8 assessed attitudes toward homosexuality (4 toward people who are homosexual and 4 toward homosexuality in general) and 8 assessed attitudes toward heterosexuality (4 toward people who are heterosexual and 4 toward heterosexuality in general) using good-bad, preferred-nonpreferred, pleasant-unpleasant, and right-wrong. The 8 homosexual and the 8 heterosexual scales were summed separately to produce a gay semantic differential score ( $\alpha = .96$ ) and a straight semantic differential score ( $\alpha = .93$ ), with greater scores reflecting more positive attitudes toward each sexual orientation. On the feeling thermometer, participants described their level of warmth toward homosexuality and toward heterosexuality using a separate scale labeled in 10-degree increments ranging from 0 (*extremely unfavorable*) to 100 (*extremely favorable*).

*Implicit measure of attitudes toward sexual orientation.* A sexual orientation version of the IAT was administered using the computer program and procedures of McConnell and Leibold (2001). In the current study, associations between a sexual orientation dimension (i.e., gay vs. straight) and an evaluative dimension (i.e., positive vs. negative) were assessed. During the IAT task, participants categorized word or image stimuli displayed on a computer monitor. Stimuli used in the current study were 10 adjectives that were positive in valence (e.g., great, wonderful), 10 adjectives that were negative in valence (e.g., rotten, terrible), 10 photographic images of two men engaged in an embrace or romantic pose, and 10 photographic images of a man and a woman engaged in an embrace or romantic pose.

Participants were instructed that they would be making a series of category judgments. On each trial, a target word (24-point black serif text) or an image (5 cm  $\times$  5 cm) was displayed on a gray background in the center of a computer window. Participants categorized each word or image by pressing the "D" or the "K" key on the computer keyboard. During each block, category labels associated with each key were displayed in the upper left and upper right quadrants of the window. Participants were instructed to make their judgments as quickly as possible while avoiding errors. If an incorrect response was given, a red X appeared on the screen, requiring participants to choose the correct option before continuing.

For the IAT, each participant completed a series of seven blocks, each composed of 40 trials. In Blocks 1 and 5, participants judged whether targets were gay or straight couples (key mapping was reversed between blocks), and in Block 2, participants judged whether the

targets were positive or negative adjectives. For half of the participants, Blocks 3 and 4 presented the straight-positive combination trials (i.e., straight or positive vs. gay or negative) and Blocks 6 and 7 presented the gay-positive combination trials (i.e., gay or positive vs. straight or negative). For the remaining participants, Blocks 3 and 4 presented the gay-positive combination trials and Blocks 6 and 7 presented the straight-positive combination trials. Block order and key mapping counterbalancing (e.g., “positive” was associated with the “D” key for half of the participants and with the “K” key for the rest) had no effects on the analyses and thus receives no further discussion. Each of the relevant stimuli was presented twice randomly in Blocks 1, 2, and 5. In each set of combination blocks (i.e., Blocks 3, 4, 6, and 7), words and images were alternated across trials until each word and image had been used twice across the two blocks. Between stimulus trials, a 250-ms gray screen interval was used. Between blocks, participants read instructions for the next block and pressed the space bar when they were ready to begin the next block. After completing the IAT, participants were debriefed and thanked.

*Behavioral questionnaire completed by the gay participants.* Before completing the explicit and implicit attitude measures, the gay men completed other questionnaires as part of a larger battery of measures.<sup>4</sup> These included a modified version of the Environmental Factors Questionnaire (EFQ) (Nungesser, 1983), which assessed a range of behaviors relevant to gay men, including social support and positive reinforcement for being gay, involvement within the gay community, attitudes about being “out,” and self-disclosure regarding one’s homosexuality.

We assessed two different measures of immersion in the gay community. A measure of positive reinforcement experiences was calculated by summing the number of “yes” responses to 20 events that each participant had personally experienced ( $\alpha = .78$ ; e.g., exposed to material that was positive about being gay, received the support of gay friends for being gay). Larger scores reflected more positive reinforcement. Also, participants’ involvement in gay-related activities was assessed by rating the frequency of participating in nine activities on a scale from 1 (*never*) to 7 (*several times a week*), such as reading a local gay publication and attending a gay-affirmative religious fellowship. An overall involvement score was calculated by summing the responses for these items ( $\alpha = .58$ ), with larger scores reflecting more time spent on these activities.

Assessing more self-presentational behaviors, participants completed an item assessing the frequency of time spent trying to pass as straight on a scale from 1 (*always*) to 6 (*never*), which was coded such that larger scores

reflected greater displays of one’s homosexuality in public. Also, the amount of disclosure regarding one’s sexuality was computed by summing the number of endorsements of people who know about each participant’s sexual orientation from a list of 13 groups that included family members, close friends, and others (e.g., coworkers;  $\alpha = .81$ ). Each group was assessed on a scale from 0 (*none of them*) to 4 (*all of them*), and the sum of these items reflected greater disclosure about the participant’s homosexuality.

## Results

### DATA REDUCTION

*IAT.* A log transformation was applied to each response latency. Extreme latencies were recoded such that responses faster than 300 ms were recoded to 300 ms and responses slower than 3,000 ms were recoded to 3,000 ms, ignoring the accuracy of any individual trial. To be included in the final analyses, an overall correct response rate of at least 90% was required on the combination blocks (McConnell & Leibold, 2001). Six (2 straight, 4 gay) participants were removed from the final analyses for an IAT error rate of greater than 10% of the trials (mean accuracy rate for sample = 97%). IAT effect scores were calculated by subtracting the mean response latency for the second gay-positive combination block from the mean response latency for the second straight-positive combination block. Larger positive IAT effect scores reflected relatively more positive attitudes toward gay men.<sup>5</sup>

*Explicit measures.* Because of the strong positive relation between responses on the gay feeling thermometer and gay semantic differential score ( $r = .84, p < .01$ ) and between the straight feeling thermometer and straight semantic differential score ( $r = .69, p < .01$ ), the feeling thermometers and semantic differential scores for each sexual orientation target were standardized and summed to create a Gay Explicit attitude score and a Straight Explicit attitude score. In addition, an Explicit Difference score was calculated by subtracting the Straight Explicit attitude score from the Gay Explicit attitude score such that larger positive scores reflected relatively more positive attitudes toward gay men than toward straight men. This Explicit Difference score measure was computed to provide an explicit, relativistic sexual orientation attitude measure that is comparable to the IAT effect score, which by its nature is also a relativistic attitude measure.

### IMPLICIT AND EXPLICIT MEASURES OF SEXUAL ORIENTATION ATTITUDES

First, we explored whether the attitude measures differed as a function of participants’ sexual orientation. As displayed in Table 1, a series of independent sample

**TABLE 1: Differences on Implicit and Explicit Measures of Sexual Orientation Attitudes as a Function of Participant Sexual Orientation in Study 1**

Measure	Gay (n = 39)		Straight (n = 34)		t(71)
	M	SD	M	SD	
IAT effect	80.19	185.68	-154.83	139.82	-6.60**
NHAI-general subscale	38.74	4.31	29.15	7.54	-6.78**
Gay Explicit	1.24	0.99	-1.42	1.73	-8.21**
Straight Explicit	-0.89	1.85	1.02	1.19	5.17**
Explicit Difference	2.13	2.10	-2.45	2.40	-8.70**

NOTE: Larger positive values on the Implicit Association Test (IAT) (reported in ms) and Explicit Difference measures reflect relatively more positive attitudes toward gay men than straight men. Larger positive values on the Nungesser Homosexual Attitudes Inventory (NHAI)-general and Gay Explicit measures reflect more positive attitudes toward gay men. Larger positive values on the Straight Explicit measure reflect more positive attitudes toward straight men.

\*\**p* < .01.

*t* tests revealed that responses on all attitude measures differed as a function of sexual orientation. On all of the attitude measures, gay and straight participants revealed significant positive attitudes toward their own sexual orientation ingroup and relatively negative attitudes toward the sexual orientation outgroup.<sup>6</sup>

Next, we were interested in the relations between sexual orientation attitude measures. As shown in Table 2, we found strong correlations among the implicit and explicit measures for the entire sample of men. Specifically, as the implicit measure of attitudes toward homosexuality became relatively more positive (i.e., IAT), explicit measures of attitudes toward homosexuality on the NHAI-general subscale, Gay Explicit score, and Explicit Difference score were more positive. Furthermore, as the IAT revealed relatively more positive attitudes toward homosexuality, explicit measures of attitudes toward heterosexuality as measured by the straight explicit score became more negative. In addition, strong correlations were found among all of the explicit measures of attitudes, as one would expect. These data indicated that the sexual orientation IAT was related to explicit measures of sexual orientation attitudes.

If straight men’s negative attitudes toward gay men are based, in part, on maintaining positive attitudes toward their own masculinity and sexual orientation (Herek, 2000b), straight men might reveal negative relations between their attitudes toward homosexuality and toward heterosexuality. This would predict that the relations between gay and straight attitudes would be qualified by one’s sexual orientation. To explore this possibility, separate multiple regressions were conducted for the measures that assessed attitudes toward only one sexual orientation (i.e., NHAI-general subscale, Gay Explicit attitudes, and Straight Explicit attitudes). These measures were centered such that each interaction term was

**TABLE 2: Overall Descriptives and Correlations for Entire Sample of Gay and Straight Participants in Study 1**

Dependent Measure	M	SD	1	2	3	4
1. IAT effect	-29.27	202.71				
2. NHAI-general subscale	34.27	7.69	.39**			
3. Gay Explicit	0.00	1.92	.47**	.84**		
4. Straight Explicit	0.00	1.84	-.40**	-.41**	-.45**	
5. Explicit Difference	0.00	3.20	.51**	.74**	.86**	-.85**

NOTE: *N* = 73. Larger positive values on the Implicit Association Test (IAT) (reported in ms) and Explicit Difference measures reflect relatively more positive attitudes toward gay men than straight men. Larger positive values on the Nungesser Homosexual Attitudes Inventory (NHAI)-general and Gay Explicit measures reflect more positive attitudes toward gay men. Larger positive values on the Straight Explicit measure reflect more positive attitudes toward straight men.

\*\**p* < .01.

orthogonal to its constituent variables (Aiken & West, 1991). In addition, because the IAT does not assess attitudes toward just one target group (i.e., it assesses attitudes toward one target group relative to a second target group), it was not used in these analyses. For each regression, the criterion variable was regressed on each of the other sexual orientation attitude measures, a variable for participant sexual orientation (1 = gay and -1 = straight), and their interaction. If straight participants, relative to gay participants, held more negative gay attitudes as their straight attitudes became more positive (Herek, 2000a), the interaction term in these regressions should be significant in, and only in, cases where straight attitudes predicted gay attitudes (or vice-versa).<sup>7</sup>

As Table 3 reports, the anticipated interaction was found in three of the four cases where these effects were expected (i.e., Straight Explicit predicting NHAI-general, Straight Explicit predicting Gay Explicit, and NHAI-general predicting Straight Explicit, but not in the case of Gay Explicit predicting straight explicit). To further understand these relations, zero-order correlations were conducted separately for the gay and the straight participants. Not surprisingly, both straight men (*r* = .78, *p* < .01) and gay men (*r* = .60, *p* < .01) showed a significant positive correlation between the NHAI-general and Gay Explicit measure, both of which assessed attitudes toward the same target group (i.e., gay men). However, results demonstrated a different pattern of correlations among the Gay and Straight Explicit measures of attitudes for gay and straight participants. Specifically, among straight participants, the Straight Explicit attitude measure was negatively correlated to the NHAI-general subscale (*r* = -.49, *p* < .01) and marginally negatively correlated to the Gay Explicit attitude measure (*r* = -.32, *p* < .07). Gay participants, however, showed no such relation (*ps* > .20). Thus, straight men, but not gay men, showed a negative correspondence between attitudes toward heterosexuality and homosexuality.

**TABLE 3: Multiple Regression Beta Weights Predicting Attitude Measures From the Other Attitude Measures, Participant Sexual Orientation, and Their Interactions in Study 1**

Predictor-Predicting	$\beta_{\text{Predictor}}$	$\beta_{\text{Orientation}}$	$\beta_{\text{Predictor} \times \text{Orientation}}$
Gay Explicit–NHAI-general	.75**	.10	-.07
Straight Explicit–NHAI-general	-.32**	.45**	<b>.36**</b>
NHAI-general–Gay Explicit	.63**	.30**	-.07
Straight Explicit–Gay Explicit	-.23*	.57**	<b>.19*</b>
NHAI-general–Straight Explicit	.01	-.52**	<b>.26*</b>
Gay Explicit–Straight Explicit	-.12	-.43**	<b>.08</b>

NOTE:  $N = 73$ . Interaction terms in bold are predicted to be significant because they correlated gay and straight attitudes. NHAI = Nungesser Homosexual Attitudes Inventory.

\* $p < .05$ . \*\* $p < .01$ .

*GAY MEN'S BEHAVIOR AND ITS  
RELATION TO ATTITUDE MEASURES*

Additional analyses examined gay participants' behaviors associated with their sexuality and their implicit and explicit attitude measures. Because the NHAI-general and the Gay Explicit attitudes measure were strongly correlated for both gay and straight men, the NHAI-general was standardized and combined with the Gay Explicit attitude measure to create a Combined Gay Explicit measure, which was used in the following regression analyses. Significant zero-order correlations, displayed in Table 4 (left panel), showed that as IAT scores revealed relatively more positive attitudes toward homosexuality, gay men reported more positive reinforcement experiences and more involvement in gay-related activities. Thus, as gay men reported greater immersion into gay culture (i.e., more positive reinforcement experiences and greater involvement in gay-related activities), they had relatively more positive attitudes toward homosexuality on the IAT. In addition, more positive explicit gay attitudes, as measured by the Combined Gay Explicit measure, were related to more positive reinforcement experiences, not trying to pass as straight, and greater disclosure of one's sexuality to others.

Although these findings suggest that the different measures of sexual orientation attitudes predicted particular types of sexual-orientation-related behaviors, it may not be the case that they have unique predictive validity. To address this question, multiple regression analyses were conducted where the IAT effect score and the Combined Gay Explicit score were simultaneously entered to predict each gay-relevant behavior separately. As displayed in the right panel of Table 4, in each and every case where zero-order correlations were observed, the measures demonstrated unique predictive validity as well. Thus, in all cases except for positive reinforcement (where both implicit and explicit measures showed

**TABLE 4: Descriptive Statistics for Gay-Relevant Behaviors and Zero-Order Correlations (left panel) and Multiple Regression Analyses (right panel) Predicting Relations Between Gay-Relevant Behaviors and Measures of Implicit and Explicit Gay Attitudes in Study 1**

Behavior	M	SD	Zero-Order Correlations		Betas From Multiple Regression	
			Implicit	Explicit	Implicit	Explicit
Positive reinforcement	15.51	3.37	.42**	.33*	.44**	.36*
Gay activity involvement	32.33	7.55	.37*	.06	.38*	.08
Not passing as straight	4.38	1.31	.07	.36*	.09	.36*
Disclosure to others	26.64	9.02	.15	.32*	.17	.33*

NOTE:  $N = 39$ . Implicit measure is the Implicit Association Test (IAT); explicit measure is the Combined Gay Explicit score.

\* $p < .05$ . \*\* $p < .01$ .

unique relations), we saw evidence of differential predictive validity for implicit measures (which more strongly related to gay-related activity involvement, a cultural immersion variable) and for explicit measures (which showed relations to more self-presentational behaviors).

*Discussion*

Study 1 showed several interesting and important findings. First, gay and straight men showed strong ingroup preferences on both implicit and explicit sexual orientation measures. Moreover, implicit and explicit measures of sexual orientation attitudes were related. Although some have found correspondence between implicit and explicit measures in the literature (e.g., McConnell & Leibold, 2001; Wittenbrink, Judd, & Park, 1997), others have not (e.g., Greenwald et al., 1998). For sexual orientation, it may be the case that social desirability is less of a concern; thus, participants may have little motivation to engage in self-presentation when reporting on explicit measures of sexual orientation attitudes (Herek, 2000a). To further examine this possibility, Study 2 assessed straight men's implicit and explicit measures of sexual orientation attitudes as well as measured social desirability concerns.

Another important finding from Study 1 was the differential predictive validity of implicit and explicit attitude measures for predicting sexual orientation behaviors in gay men. In line with many theoretical perspectives (e.g., Dovidio et al., 1997; Fazio & Olson, 2003; Fazio & Towles-Schwen, 1999; Sloman, 1996; Wilson et al., 2000), we found that implicit measures of attitudes predicted immersion in gay culture, whereas explicit measures of attitudes predicted deliberate, self-presentational behaviors toward others. In three out of four cases (the exception being reinforcement experiences), unique predictive validity was observed in line with the existent literature.

The results of Study 1 suggest that the IAT may effectively predict one's own group-relevant behaviors and experiences. However, Karpinski and Hilton (2001) have argued that the IAT assesses "the associations a person has been exposed to in his or her environment, not that individual's level of endorsement regarding the attitude object" (p. 786). The results of Study 1 suggest that the IAT relates to behaviors associated with greater cultural immersion (i.e., more positive reinforcement, greater involvement in the gay community). However, a similar pattern of results is anticipated by frameworks that focus on association-based reasoning (e.g., Sloman, 1996; Smith & DeCoster, 2000). For example, Sloman (1996) proposed that association-based reasoning is a slow-changing system that reflects a large number of target-relevant experiences accrued over time, which is better assessed by implicit measures. It is interesting to note that meaningful variability in the IAT was related to gay men's idiosyncratic experiences (e.g., involvement in gay activities). Thus, although the environment unquestionably contributes to experiences reflected in one's implicit measures of attitudes (e.g., Karpinski & Hilton, 2001), the meaningful variability revealed in our participants suggests that the IAT assessed personal (and not just cultural) attitudes (see also McConnell & Leibold, 2001; Wittenbrink et al., 1997).

A final finding of interest in Study 1 was the negative relation observed among straight, but not gay, men between their attitudes toward homosexuality and heterosexuality. The literature suggests that straight men may endorse negative attitudes toward homosexuality to affirm cultural norms of masculinity and heterosexuality (Herek, 1986, 2000b; Kimmel, 1997), and Study 2 explored this explanation in greater detail.

#### STUDY 2

In Study 2, we hypothesized that negative attitudes toward gay men should be more prevalent among straight men who more strongly endorse traditional gender role norms for men and who identify more strongly with heterosexuality. Furthermore, we expected correspondence between implicit and explicit measures of attitudes toward homosexuality because general social desirability should not strongly influence most men's reports of sexual orientation attitudes (Herek, 2000a). However, we expected those who have strong personal standards to not exhibit prejudice toward gay men would reveal less prejudice on explicit attitude measures (Dunton & Fazio, 1997; Fazio & Olson, 2003; Fazio & Towles-Schwen, 1999). Finally and most important, if the predicted negative relation between attitudes toward heterosexuality and homosexuality observed in Study 1 result from endorsing cultural norms of masculinity and identifying with heterosexuality, then endorsements of

these two constructs should mediate the observed negative relation between straight and gay attitudes.

#### Method

##### PARTICIPANTS

At a large Midwestern university, 87 heterosexual men were recruited through undergraduate psychology courses and received course credit for their participation. They completed paper-based questionnaires and the IAT on a computer at individual workstations.

##### PROCEDURE AND MATERIALS

Participants completed two packets of questionnaires and the sexual orientation IAT. All participants completed Packet 1 first. After returning this packet to the experimenter, half of the participants completed Packet 2 followed by the sexual orientation IAT, whereas the remaining half of the participants completed the IAT before Packet 2. This order counterbalancing had no effect on the findings and thus it will not be discussed further. Each packet contained additional questionnaires to mask the purpose of the measures.

*Packet 1.* Packet 1 included questionnaires assessing demographic information, social desirability, and motivation to control prejudice. Participants initially completed a demographic questionnaire, which included participants' sexual orientation. Measures of social desirability and motivation to control prejudice were included to assess whether responses on measures of attitudes toward homosexuality were related to general self-presentation or to personal standards against expressing prejudice against gays.

Social desirability was assessed using the 33-item Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) ( $\alpha = .79$ ). It assessed the extent to which participants feel the need to respond in a culturally acceptable manner (e.g., "I'm always willing to admit it when I make a mistake"). Participants indicated whether they felt that each statement was true or false. Responses were summed such that greater values reflected greater social desirability.

Motivation to control prejudice was assessed using the 17-item Motivation to Control Prejudice Reactions Scale (Dunton & Fazio, 1997) ( $\alpha = .85$ ), which measured how strongly participants were personally motivated to control their expressions of prejudice (e.g., "I get angry with myself when I have a thought or feeling that might be considered prejudiced"). Although most items refer to prejudice in general, those that referred to specific social groups (i.e., African Americans) were reworded to refer to gay men. Participants responded to each item on a scale ranging from  $-3$  (*strongly disagree*) to  $+3$  (*strongly agree*). Items were reverse scored when appropriate and



scored such that greater positive values reflected more motivation to control prejudice.

*Packet 2.* The second packet included items that assessed participants' degree of heterosexual identity, endorsement of male gender role norms, and attitudes toward homosexuality and toward heterosexuality.

Degree of heterosexual identity was primarily assessed by a five-item measure ( $\alpha = .73$ ) developed from a larger pool of items pretested on a separate sample of 35 heterosexual male college students. These items were as follows: "It is important to me that when I meet someone for the first time that they know I am heterosexual"; "Being heterosexual is important to who I am as a person"; "People know that I am straight because of the way I act"; "I will often use the term heterosexual to describe myself"; and "I feel that being heterosexual is important to my sense of identity." Participants rated each item on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Furthermore, two additional well-established identity scales were adapted to assess the convergent validity for this new heterosexual identity measure. The eight-item Racial Centrality subscale of the Multidimensional Inventory of Black Identity (MIBI) (Sellers, Smith, Shelton, Rowley, & Chavous, 1998) ( $\alpha = .76$ ) and the four-item Importance to Identity subscale of the Collective Self-Esteem Scale (CSES) (Luhtanen & Crocker, 1992) ( $\alpha = .73$ ) were adapted to reflect the importance of heterosexuality to one's identity (e.g., Being heterosexual is an important reflection of who I am). Participants rated each item on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). For all three Heterosexual Identity Scales, responses were summed such that larger scores reflected greater importance of one's heterosexual identity.

Endorsement of male gender role norms was assessed using the 26-item Male Role Norm Scale (Thompson & Pleck, 1986). It assessed the participant's endorsement that men need to achieve status and other's respect (11 items;  $\alpha = .81$ ; e.g., "Success in his work has to be man's central goal in this life"), expectations that men should be tough (8 items;  $\alpha = .81$ ; e.g., "Fists are sometimes the only way to get out of a bad situation"), and beliefs that men should avoid stereotypically feminine activities and occupations (7 items;  $\alpha = .77$ ; e.g., "If I heard about a man who was a hairdresser and a gourmet cook, I might wonder how masculine he was"). Participants responded to each item on a scale ranging from 1 (*very strongly disagree*) to 7 (*very strongly agree*). Because the three subscales were strongly related ( $r_s = .47-.52$ ,  $p_s < .01$ ) and the entire scale demonstrated strong internal consistency ( $\alpha = .89$ ), items were reverse scored when appropriate and all items were summed such that greater values reflected greater endorsement of traditional gender role norms for men.

Participants completed several explicit measures of attitudes toward gay men. The 20-item Heterosexuals Attitudes Towards Homosexuality scale (HATH) (Larson, Reed, & Hoffman, 1980) ( $\alpha = .94$ ) was reworded to reflect attitudes toward gay men specifically (e.g., Gay men should be accepted completely into our society). Participants responded to each item on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). They also completed the 10-item Attitudes Toward Gay Men subscale of the Attitudes Toward Lesbians and Gay Men Scale (ATG) (Herek, 1994) ( $\alpha = .94$ ; e.g., "Homosexual behavior between two men is just plain wrong"), responding to each item on a scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). The remaining explicit measures were identical to those used in Study 1; that is, participants completed the same NHAI-general subscale ( $\alpha = .84$ ), gay and straight semantic differential items ( $\alpha_s > .92$ ), and gay and straight feeling thermometers. For all of the explicit measures of sexual orientation attitudes, items were scored such that greater values reflected more positive attitudes toward the relevant sexual orientation.

*IAT.* The sexual orientation IAT used in Study 2 was identical to the one used in Study 1 except eight different photographic images (five of straight couples and three of gay couples) were substituted for those used in Study 1.<sup>8</sup>

## Results

### DATA REDUCTION

*IAT.* IAT scores were computed following the same procedures used in Study 1, with greater IAT scores reflecting relatively more positive attitudes toward gay men. Data from seven participants were omitted because their IAT error rate exceeded 10% (mean accuracy for the sample was 96%).

*Explicit Gay attitude measures.* Zero-order correlations demonstrated that the three self-report measures of gay attitudes (i.e., HATH, NHAI-general, and ATG) were all strongly related ( $r_s = .78-.89$ ,  $p < .01$ ). In addition, when the to-be-presented analyses were conducted on each scale separately, similar results were obtained. Thus, the HATH, NHAI-general, and ATG were standardized and summed to create a Gay Attitude Scales measure such that larger positive scores reflected greater positive attitudes toward gay men.

*Explicit sexual orientation measures.* Because of the strong positive relation between responses on the gay feeling thermometer and gay semantic differential score ( $r = .80$ ,  $p < .01$ ) and between the straight feeling thermometer and straight semantic differential score ( $r = .86$ ,  $p < .01$ ), the feeling thermometers and semantic differential scores for each sexual orientation were

**TABLE 5: Descriptive Statistics and Zero-Order Correlations Between Implicit and Explicit Measures of Gay Attitudes and Gender-Role Relevant Identity in Study 2**

Measure	M	SD	1	2	3	4	5	6	7	8
1. IAT effect	-167.37	167.58								
2. Gay Attitude Scales	0.00	2.84	.36**							
3. Gay Explicit	-0.00	1.90	.31**	.78**						
4. Straight Explicit	-0.02	1.93	-.17	-.52**	-.30**					
5. Explicit Difference	0.02	3.09	.29**	.80**	.80**	-.81**				
6. Heterosexual identity	17.66	4.08	-.31*	-.56**	-.43**	.63**	-.66**			
7. MRNS–Role Norms	106.13	21.50	-.25*	-.58**	-.43**	.42**	-.53**	.52**		
8. SDS–Social Desirability	14.00	5.38	-.14	.13	.10	.10	.00	.04	-.07	
9. MCPR–Control Prejudice	0.18	15.89	.09	.29**	.25*	-.11	.22†	-.10	-.23*	.32**

NOTE:  $N = 80$ . Larger positive values on the Implicit Association Test (IAT) (reported in ms) and Explicit Difference measures reflect relatively more positive attitudes toward gay men than straight men. Larger positive values on all remaining scales reflect stronger, positive endorsements of those constructs. MRNS = Male Role Norm Scale; SDS = Marlowe-Crowne Social Desirability Scale; MCPR = Motivation to Control Prejudice Reactions Scale.

† $p < .06$ . \* $p < .05$ . \*\* $p < .01$ .

standardized and summed to create a Gay Explicit attitude score, a Straight Explicit attitude score, and an Explicit Difference score, as in Study 1.

#### HETEROSEXUAL IDENTITY SCALE VALIDITY

Analyses were conducted to assess the validity of the heterosexual identity measure. Results revealed strong convergent validity for the Heterosexual Identity Scale with both the Centrality subscale of the MIBI ( $r = .64$ ,  $p < .01$ ) and the Importance to Identity subscale of the CSES ( $r = .64$ ,  $p < .01$ ), suggesting that the five-item Heterosexual Identity Scale developed for the current study provided a valid measure of the importance of heterosexual identity.

#### IMPLICIT AND EXPLICIT MEASURES OF SEXUAL ORIENTATION ATTITUDES

As Table 5 reports, the straight men in Study 2 showed significantly negative sexual orientation IAT scores, reflecting relatively more negative attitudes toward homosexuality than heterosexuality,  $t(79) = -10.98$ ,  $p < .01$ , Cohen's  $d = 1.23$ , replicating Study 1. Further replicating and extending Study 1, zero-order correlations revealed that the sexual orientation IAT was positively related to the Gay Attitude Scales, Gay Explicit, and Explicit Difference measures and negatively related to the heterosexual identity and to the male role norms scales. Specifically, as participants showed relatively more negative attitudes toward gay men on the IAT, they showed more negative attitudes toward gay men on the Explicit Gay attitude measures (i.e., Gay Attitude Scales, Gay Explicit), relatively more negative attitudes toward homosexuals compared to heterosexuals on the Explicit Difference measure (the explicit measure equivalent of the IAT), and stronger endorsements of heterosexual identity and of male role norms. Furthermore, as responses on the explicit gay attitude measures became

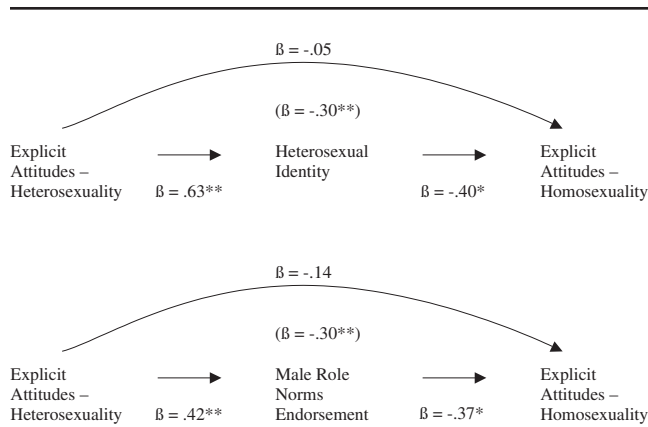
more negative, endorsements of heterosexual identity and of male role norms increased. Thus, not only were the implicit and explicit measures of attitudes toward gay men related to each other, they both were significantly related to both endorsements of heterosexual identity and to endorsements of male role norms. Finally, in line with Study 1, zero-order correlations demonstrated that as attitudes toward heterosexuals on the Straight Explicit measure became more positive, attitudes toward homosexuals in general (i.e., Gay Explicit measure) and gay men in particular (i.e., Gay Attitudes Scales) became more negative.

#### MOTIVATION TO CONTROL PREJUDICE, SOCIAL DESIRABILITY, AND ATTITUDES TOWARD GAY MEN

Correlations assessed whether sexual orientation attitude measures were related to social desirability more generally or to personal motivations to control gay prejudice in particular. As expected, general social desirability was unrelated to any measure of sexual orientation attitudes. However, greater motivation to control prejudice toward gays was related to more positive explicit measures of attitudes toward gay men and homosexuality (i.e., Gay Attitude Scales, Gay Explicit, Explicit Difference), but it was unrelated to implicit measures of attitudes toward sexual orientation (i.e., the IAT), attitudes toward heterosexuality (i.e., straight explicit), or heterosexual identity. These results suggest that personal standards for controlling gay prejudice related to explicit (but not implicit) measures of attitudes toward gay men by straight men, whereas general social desirability concerns did not relate to either.

#### MEDIATION BY HETEROSEXUAL IDENTITY AND ENDORSEMENT OF MALE ROLE NORMS

The current results replicated Study 1 by finding that straight men holding more positive attitudes toward het-



**Figure 1** The mediational role of heterosexual identity (top panel) and endorsement of male role norms (bottom panel) on the relation between attitudes toward heterosexuality and attitudes toward homosexuality among straight men in Study 2.

NOTE: Path coefficients are standardized regression weights following the inclusion of the mediator (Beta weights in parentheses indicate direct relation without the mediator).

\* $p < .05$ . \*\* $p < .01$ .

erosexuality had more negative attitudes toward homosexuality. However, can heterosexual identity and male role norm endorsements account for this relation? Mediation analyses (Baron & Kenny, 1986; Judd & Kenny, 1981) were conducted using attitudes toward heterosexuality (i.e., Straight Explicit score) as the antecedent variable, attitudes toward homosexuality (i.e., Gay Explicit score) as the outcome variable, and heterosexual identity and endorsement of male role norms, separately, as mediators. As predicted and displayed in the top panel of Figure 1, once heterosexual identity was included in the regression equation, the relation between attitudes toward heterosexuality and homosexuality was no longer statistically significant,  $t(79) = -4.0$ ,  $ns$ , and a Sobel test indicated significant mediation,  $z = -2.75$ ,  $p < .01$ . Similar results were found for the endorsement of male role norms. As predicted and displayed in the bottom panel of Figure 1, multiple regression analyses demonstrated that once endorsement of male role norms was included in the regression equation, the relation between attitudes toward heterosexuality and homosexuality was no longer statistically significant,  $t(79) = -1.25$ ,  $ns$ , and a Sobel test confirmed that the reduction was significant,  $z = -2.54$ ,  $p < .05$ .

### Discussion

Study 2 replicated Study 1 by finding that straight men held more negative attitudes toward homosexuality as their attitudes toward heterosexuality were more positive. Moreover, it observed that straight men who showed this negative relation more strongly also reported that

being heterosexual and adhering to traditional male gender roles were more important to them. Furthermore, the negative relation between attitudes toward heterosexuality and homosexuality among straight men was mediated by the importance of heterosexuality and by endorsements of male gender roles. These results are consistent with theory suggesting that negative attitudes toward homosexuality serve to develop and maintain gender and sexual identity among heterosexual men (Herek, 1986, 2000b; Kimmel, 1997).

### GENERAL DISCUSSION

These results have important implications for understanding sexual orientation attitudes, their functions, and their measurement. First, we observed strong differences between gay and straight men's sexual orientation attitudes, revealing relatively positive attitudes toward their sexual orientation ingroups. Moreover, Study 1 found that gay men with relatively more positive sexual orientation ingroup attitudes reported more cultural immersion and disclosure about their own sexuality. In Study 2, straight men holding relatively more positive sexual orientation ingroup attitudes reported greater identification with heterosexual identity and with male role norms. Indeed, to the extent that these two factors reflect how strongly straight men are immersed in "straight male culture," the findings of Studies 1 and 2 parallel each other nicely.<sup>9</sup>

In addition to understanding the relations between sexual orientation attitudes and culture better, the current work has important implications for understanding the use of implicit and explicit attitude measures in general and for research on sexual orientation attitudes in particular. First, these results add to the growing literature demonstrating that the IAT assesses individual differences in personalized attitudes (e.g., Greenwald et al. 1998; McConnell & Leibold, 2001). Indeed, gay and straight men revealed sexual orientation ingroup preferences on explicit and implicit measures. These results are consistent with Banse et al. (2001), but the current work found that an IAT task focusing participants on sex-based ingroup homosexuals revealed sexual orientation ingroup preferences. Furthermore, these results are in line with previous research (McConnell & Leibold, 2001) indicating that implicit measures of attitudes predict attitude-relevant behavior.

It also was found that implicit and explicit measures of attitudes were related in both studies in the current work. Although correspondence between implicit and explicit measures has been questioned by some researchers (e.g., Greenwald et al., 1998), we propose that in domains where social desirability concerns are low (such as the current study), correspondence is more likely (Fazio & Towles-Schwen, 1999). That is not to say

that personal standards to avoid being prejudiced are irrelevant (e.g., Dunton & Fazio, 1997). Although Study 2 found no correspondence between sexual orientation attitudes and general social desirability, a correlation was found between motivation to control prejudice against gays and explicit (but not implicit) measures of sexual orientation attitudes. We conclude from these data that although personal motivation to control prejudiced responses toward gays exists for some straight men, there is not a pervasive cultural norm of social desirability that leads most people to modify or even overcorrect their explicit reports of gay attitudes, such as those observed by Dunton and Fazio (1997) with racial attitudes. If pervasive social desirability concerns affected explicit reports of gay attitudes, we should not have observed the significant relations found between implicit and explicit measures in Studies 1 and 2 and we should have seen correlations between general social desirability and explicit attitude reports in Study 2.

It is also interesting to note that gay men demonstrated less of an ingroup bias than did straight men on the IAT. Although caution should be exercised in the interpretation of an IAT effect score of zero, the weaker ingroup positive implicit attitudes revealed by gay men in this study may reflect that implicit attitudes are slower to change than more explicit attitudes (Sloman, 1996; Smith & DeCoster, 2000). Because gay men may initially hold negative attitudes toward homosexuality long before their sexual identity is established (Malyon, 1982) and continue to encounter negative gay attitudes in society through their lives, it may take considerable time for new positive associations to shift one's overall attitude toward homosexuality. Thus, this pattern may speak to how gay men come to acquire positive feelings about their own sexuality (e.g., Jellison & McConnell, 2003). Repeated associations between positive outcomes and expressions of one's sexuality produce more positive and more accessible attitudes toward homosexuality. Study 1 supported this contention.

Furthermore, straight men who held more negative attitudes toward homosexuality reported more positive attitudes toward heterosexuality, and these relations were mediated by the importance of heterosexuality and by endorsement of male gender roles. Although maintaining a positive social identity may be fundamental for most individuals (Tajfel & Turner, 1986), for some, this may entail derogating outgroup members and maintaining ingroup boundaries (Brewer, 1999). Understanding the functions that maintaining sexual and gender boundaries serve may help to explain why even though most Americans feel that gay men and lesbians should not be discriminated against in housing or employment, many believe that they should not be allowed to marry or to adopt children (Herek, 2000a). Indeed, those who

may be the most threatened by men who challenge sexual identity and gender roles had the most prejudice against gay men.

Although these data suggest interesting implications for sexual orientation attitudes and their functions, because these data are correlational, causal assertions are limited. However, these results clearly demonstrate that implicit and explicit measures of attitudes predict behavior and beliefs relevant to sexual orientation. It is also important to note that the relation between attitudes and behavior is most likely reciprocal; that is, exposure to positive gay reinforcement for gay men alters their attitudes regarding their own sexuality, which in turn encourages greater involvement in the gay community that promotes more positive gay attitudes (Gonsiorek, 1995).

Also, we acknowledge that using convenience samples may limit the generalizability of these results. Data collected from gay men in Study 1 may have been restricted to those who are more comfortable with their sexuality. Although this may suggest that the variability in IAT and explicit attitude scores among gay men would most likely be less gay positive if the sample of gay men in this study had been more representative of gay men in the general population (e.g., include more gay men who are not out), it also suggests that the current findings for gay men might be more striking if the sample includes gay men with more variability in their attitudes and experiences.

In sum, the current research suggests that personal attitudes toward sexual orientation, for gay and straight men alike, can function to reinforce positive aspects of their sexuality and gender identity. Although assessing these attitudes with traditional explicit measures may be beneficial in understanding the benefits that espousing these attitudes may serve, we would argue that implicit measures provide another tool that is less susceptible to self-presentational concerns and introspective blindspots. Future research should continue to explore individuals' group prejudices and examine the motivations that sustain them. By continuing to explore the relation between sexual orientation attitudes and the functions they serve, we can better understand both processes and consequences involved in the acquisition and maintenance of one's sexual orientation identity.

#### NOTES

1. The American Psychological Association recommended the terms *gay* and *heterosexual* when referring to sexual orientation (Committee on Lesbian and Gay Concerns, 1991). Because using these terms in comparing the sample groups in this study is awkward, the authors chose the term *straight* to refer to heterosexual men.

2. Analyses indicated that gay participant sample location did not qualify any of the results to be presented. Thus, the data from the college and urban samples were combined.

3. Gay and straight participants also completed different, additional measures of attitudes toward homosexuality. Gay participants completed 24 additional items from the Nungesser Homosexual Attitudes Inventory (NHAI) (10-item NHAI-self subscale,  $\alpha = .70$ ; and 14-item NHAI-disclosure subscale,  $\alpha = .88$ ). For gay men, the NHAI-general subscale was related to the NHAI-self subscale,  $r = .60, p < .01$ , and the NHAI-disclosure subscale,  $r = .37, p < .05$ . Straight participants completed the 20-item Heterosexual Attitudes Towards Homosexuality scale (HATH) (Larson, Reed, & Hoffman, 1980) ( $\alpha = .96$ ; e.g., "Homosexuals should be accepted completely into our society"). For straight men, the HATH demonstrated strong convergent validity with the NHAI-general subscale,  $r = .83, p < .01$ . Thus, our analyses focused on the NHAI-general subscale to have an explicit measure regarding homosexuality that was identical across both sexual orientation groups and that was strongly related to other widely used measures of gay-relevant attitudes.

4. Gay male participants also completed a measure of self-esteem and of attachment style after completing the Environmental Factors Questionnaire (EFQ) but before completing the explicit measures and the Implicit Association Test (IAT). In the current analyses, these measures will receive no further attention.

5. A variety of alternative IAT scoring approaches (e.g., omitting incorrect trials, using Blocks 3 and 4 and Blocks 6 and 7 for the computation of the IAT effect scores) produced similar results.

6. *t* tests conducted for the gay and straight subsamples separately demonstrated that gay men revealed sexual orientation attitudes on the IAT that were significantly more gay positive,  $t(38) = 2.74, p < .01$ , Cohen's  $d = .48$ , whereas straight men revealed IAT scores that were significantly more straight positive,  $t(33) = -7.02, p < .001$ , Cohen's  $d = 1.07$ . The straight-positive bias exhibited by straight men on the IAT was larger in magnitude (based on absolute value from zero) than was the gay-positive bias exhibited by gay men,  $t(33) = 3.91, p < .01$ .

7. Interaction regressions were conducted to examine whether sexual orientation qualified any of the correlations between attitude measures for a particular sexual orientation group. In no single case (except those to be reported) did these correlations differ between gay and straight men.

8. Some images used for the IAT in Study 2 were changed to be less ambiguous (e.g., two men with their arms around each other could be two straight men hanging out). The authors express their gratitude to Moreno and Bodenhausen (2000) for the use of five images used in Study 2.

9. We thank an anonymous reviewer for pointing this out.

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