

Chapter 9

IMPLICIT PRIDE AND PREJUDICE: A HETEROSEXUAL PHENOMENON?

Claire Cullen¹ and Dermot Barnes-Holmes

National University of Ireland, Maynooth

ABSTRACT

Findings from American poll data spanning the last two decades reveal that attitudes toward gay men and lesbian women are becoming more liberal. Despite these trends, however, self-report data may fall victim to a range of confounds including self-presentational biases. Recently, researchers have begun to assess implicit homonegativity (i.e., attitudes toward gay men and lesbian women that are relatively unconscious and beyond volitional control) using a range of implicit measures. This chapter reviews the studies published to date in the area of implicit homonegativity. The findings show that implicit attitudes as measured by the Implicit Association Test, the Sequential Priming Procedure and the Implicit Relational Assessment Procedure differ as a function of group status (i.e., heterosexual versus non-heterosexual). Specifically, implicit in-group “pride” and out-group “prejudice” were repeatedly produced by heterosexual participants. In contrast, non-heterosexuals were relatively egalitarian in their expression of implicit attitudes. Furthermore, in many of the studies, a divergence in performance between implicit and explicit attitudes toward gay men and lesbian women was observed.

INTRODUCTION

Negative attitudes toward gay men and lesbian women have a long history. Prior to the Stonewall riots in Greenwich Village in 1969, psychological research focused mainly on the causes and cures for what was considered the homosexual ‘pathology’ (Foucault, 1967;

¹ Correspondence concerning this chapter should be addressed to Claire Cullen or Professor Dermot Barnes-Holmes, Department of Psychology, National University of Ireland, Maynooth, County Kildare, Ireland. E-mail: claire.cullen@nuim.ie or Dermot.Barnes-Holmes@nuim.ie.

Masters, Johnson, and Kolodny, 1995; Weeks, 1983).² For example, by the 1930s, Nazi medical authorities had accumulated a wealth of literature chronicling the so-called ‘degeneracy’ of gay men and lesbian women (Proctor, 1995; Weeks, 1983). Until the 1950s, gay men and lesbian women were diagnosed as mentally disordered and, as such, were imprisoned, given shock and drug therapies and, in many cases, executed (Terry and Urla, 1995). During the 1960s, however, researchers switched their attention from diagnosis to the study of attitudes toward homosexuality. This new focus on attitudes was paved by Weinberg’s (1972) introduction of the term ‘homophobia,’ which he defined as “the dread of being in close quarters with *homosexuals* – and in the case of *homosexuals* themselves, self-loathing” (p. 4; emphasis added). Recently, Herek (2000) proposed that the term homophobia be replaced by the less emotionally loaded term ‘sexual prejudice’ (i.e., negative attitudes toward an individual because of his or her actual or perceived sexual orientation). Herek (2000) suggested that anti-gay attitudes are more akin to prejudice than phobia. Yet another word in the anti-gay-attitude vernacular is the term ‘homonegativity,’ which has been defined by Morrison and Morrison (2002) as derogatory attitudes toward gay men and lesbian women. Although these terms are based upon slightly different theoretical conceptualizations, they each refer to anti-gay beliefs.

The present chapter begins with an overview of results (spanning the last two decades) from a range of large and representative national surveys undertaken in the USA to assess attitudes toward gay men and lesbian women. This is followed by a discussion of the Modern Homonegativity Scale (MHS; Morrison and Morrison, 2002) which was developed to capture subtle forms of explicit prejudice toward gay men and lesbian women. The problems associated with self-report measures lead us to a discussion of the most popular and most researched measure of implicit attitudes, namely, the Implicit Association Test (IAT; Greenwald, McGhee, and Schwartz, 1998). This discussion is followed by a review of the range of studies that have used the IAT for the assessment of implicit homonegativity. Particular emphasis will be placed upon the roles of a variety of procedural, demographic and psychological variables, focusing on the correspondence between implicit and explicit attitudes. Finally, a range of implicit measures that offer an alternative to the IAT as a measure of implicit homonegativity will be considered.

SELF-REPORT MEASURES OF HOMONEGATIVITY

Traditionally, psychologists have relied upon direct self-report methods, such as questionnaires to measure anti-gay attitudes (De Houwer, 2006). One of the earliest American opinion surveys of attitudes toward homosexuality was a 1965 Harris Poll which found that 70% of respondents reported that gay men and lesbian women were harmful to American life (Herek, 2002). In 1970, more than 70% of a representative household nationwide probability sample of 30,018 American adults reported that sexual acts between two persons of the same sex are “always wrong” (Levitt and Klassen, 1974, p.31). This survey also revealed that more

² The American Psychological Association (APA) has recommended the following terms when referring to specific persons or groups. The adjective terms “lesbian” and “gay male” are preferred to “homosexual;” and the noun terms “lesbians” and “gay men” are preferred to “homosexuals (Herek, Kimmel, Amaro, and Melton, 1991).” We follow the recommendations of APA, except when referring to studies (and quoting scale-items) that have employed ambiguous and conceptually unclear terms such as “homosexual(s)” and “homosexuality.”

than 80% reported that they would not associate with “these people” if they could avoid it (p.42). In addition, 65.2% reported that sexual activity or love between persons of the same sex is very much “obscene and vulgar” (p. 34). Furthermore, fear and distrust toward gay men and lesbian women emerged in the survey results. Specifically, 73.5% agreed that gay men and lesbian women are “dangerous as teachers or youth leaders because they try to get sexually involved with children”. In addition, 43.1% strongly agreed that gay men and lesbian women are “a high security risk for government jobs” (p. 34).

Analyses of the polls spanning the last twenty years reveal that, in the West, self-reported negative attitudes toward gay men and lesbian women are fading (see Herek, 2000; Hicks and Lee, 2006; Steffens and Wagner, 2004; Yang, 1997, for reviews). However, the findings are not as clear-cut as one might assume (see Yang, 1997). For example, Loftus’ (2001) analysis of the 1973 to 1998 General Social Survey data (GSS; which employed a large national area probability sample of non-institutionalized adults) revealed that in the USA between the years of 1973 and 1976, attitudes regarding the morality of homosexuality became quite liberal. This liberal trend was interrupted by the expression of more conservative attitudes between 1976 and 1990, after which time a liberal trend resumed.

Altemeyer’s (2001) investigation of the 1984 to 1998 GSS data similarly showed an increase in liberal attitudes toward homosexuality in the U.S., although beginning at an earlier date than that suggested by Loftus. In another analysis of the GSS data, Treas (2002) showed a decrease in liberal attitudes toward same-sex relations over a fifteen year period. Specifically, in 1973, more than 74.3% of respondents reported that sexual relations between two adults of the same sex are ‘always wrong’. This figure increased to 76.8% in 1988, but by 1998 had dropped to 58%. Logistic regression analyses revealed that age, education, frequency of attendance at religious services and survey year were significant sources of the latter decrease (Treas, 2002). Specifically, between 1988 and 1998, those who were younger, less educated, and less religious showed the largest reduction in anti-gay attitudes. Age, however, produced the strongest effects. That is, individuals aged between eighteen and twenty-eight years were 95% less likely than older individuals to express anti-gay attitudes.

A recent joint analysis of the 1970s to 2003 Gallup Polls and the 2000 National Election Study (NES) data, conducted by Hicks and Lee (2006), suggested that U.S. attitudes toward same-sex relations have become more positive. Again, however, the findings were equivocal. In 1977, for example, 43% of respondents said that sexual activity between two persons of the same sex should be legalized. In 2001, 54% agreed with this view and in May 2003 this rose to 60%, but fell to 50% just two months later.

While the trends summarized herein relied upon large random samples, there are limitations to drawing conclusions from such data. In particular, the wording and ordering of questions may have affected the observed trends. In addition, the majority of studies outlined (e.g., Hicks and Lee, 2006; Levitt and Klassen, 1974; Loftus, 2001; Treas, 2002; Yang, 1997) asked questions about sex-unspecified same-sex relations. Previous research (e.g., Kite and Whitley, 1996) has shown that using the generic term ‘*homosexual*’ in place of gay men and lesbian women in survey questions often produces an assumption that the target is male.

The study of self-reported attitudes toward gay men and lesbian women has conventionally relied upon measures that assess ‘traditional’ or ‘old-fashioned’ homonegativity, which focuses on religious or moral objections (Morrison, Kenny, and Harrington, 2005). Examples of traditional forms of homonegativity include statements such as “gay men and lesbian women should *not* be allowed to be members of churches or

synagogues”, and “homosexuality is a social corruption that can cause the downfall of a civilisation.” Over the last two to three decades, a non-monotonic liberalization in attitudes toward gay men and lesbian women has been revealed on survey measures that have assessed old-fashioned homonegativity. Recently, however, it has been suggested that the assessment of ‘modern homonegativity’ may reveal a more subtle kind of prejudice toward gay men and lesbian women than that revealed on measures of old-fashioned homonegativity (Morrison et al., 2005). Modern homonegativity is contingent upon the espousal of at least *one or more* of the following beliefs:

... (a) Gay men and lesbian women are making unnecessary demands for social change (e.g., the right to marry); (b) prejudice and discrimination against gay men and lesbian women have become a thing of the past; and (c) gay men and lesbian women place too much emphasis on their sexuality and, in so doing, are culpable for their own marginalization (Morrison et al., 2005, p. 220-221).

The Modern Homonegativity Scale (MHS; Morrison and Morrison, 2002) was developed to measure the construct of “modern homonegativity”. Attitudinal (Morrison et al., 2005) and behavioural (Morrison and Morrison, 2002) evidence in support of the reliability and validity of the measure has been provided. Specifically, a study conducted in the West of Ireland showed that 46% of male respondents endorsed the following statement from the MHS: ‘*Gay men should stop shoving their lifestyle down other people’s throats*’ and 29% agreed with the statement ‘*Lesbian women should stop shoving their lifestyle down other people’s throats*’ (Morrison et al., 2005, p. 243). In a Canadian study, Morrison and Morrison (2002) revealed that participants high in modern homonegativity (as measured by the MHS), avoided sitting beside a confederate wearing a T-shirt with a pro-gay or pro-lesbian slogan in a context in which doing so could be perceived as *non-prejudicial*.

In summary, while the data from the polls over the last twenty years suggest that attitudes toward gay men and lesbian women are becoming more liberal, it appears that subtle forms of homonegativity may have replaced more traditional forms. Further, it should be noted that old-fashioned homonegativity has not evidenced a monotonic decline since the 1970s; rather, it appears to ebb and flow.

PROBLEMS WITH SELF-REPORT MEASURES

In recent times, confounds inherent in self-report methods have been generally noted (e.g., de Jong, 2002; Gamar, Segal, Sagrati, and Kennedy, 2001; Raja and Stokes, 1998; Teachman, Gregg, and Woody, 2001). For example, individuals may be aware that their attitudes are socially undesirable and, therefore, employ strategies to conceal them from researchers (Paulhus, 1984; Rust and Golombok, 1999). Alternatively, individuals may not be aware that they hold a particular attitude and, thus, fail to report it (Dambrun and Guimond, 2004). These problems are further compounded by the fact that the way in which questions are presented or phrased in self-report instruments may influence an individual’s response (Rasinski, 1989). Furthermore, even if a self-report measure of subtle prejudice is used, such as the MHS, it is still relatively easy to self-present an egalitarian view (cf. Fazio, 1995), once a participant is aware of what constitutes subtle prejudice.

IMPLICIT ATTITUDES

In order to circumvent these problems, researchers have devoted increasing attention to studying implicit attitudes. As defined by Greenwald and Banaji (1995), implicit attitudes are “*introspectively unidentified or inaccurately identified traces of past experience that mediate favorable or unfavorable feeling, thought, or action toward social objects*” (p. 8; see also Wilson, Lindsey, and Schooler, 2000). Although debate continues over the adequacy of this definition (see De Houwer, 2006), the core argument is that implicit attitudes are often unconscious and, thus, their influence on subsequent behaviors may go unnoticed. Insofar as implicit attitudes are often unconscious, traditional explicit measures such as questionnaires and open-ended interviews will likely fail to capture these psychological variables. As a result, researchers have attempted to develop reaction-time based methodologies in which implicit attitudes are inferred based on response speed and accuracy (see De Houwer, 2006).

The Implicit Association Test (IAT; Greenwald et al., 1998) is currently the most popular reaction-time based measure of implicit cognition and its basic effect has been replicated many times (Greenwald, Nosek, Banaji, and Klauer, 2005). For example, the IAT has been used to assess implicit cognitions in domains such as sexism (e.g., Rudman and Glick, 2001), racism (e.g., Greenwald et al., 1998), religious stereotyping (e.g., Rudman, Greenwald, Mellott, and Schwartz, 1999) and ageism (Dasgupta and Greenwald, 2001), as well as a variety of political issues (see Nosek, Banaji, and Greenwald, 2002) and self-esteem (e.g., Bosson, Swann, and Pennebaker, 2000). As an indirect measure of implicit attitudes, the IAT rests on the assumption that participants should categorize concepts together that are strongly associated in memory more rapidly than concepts that are weakly associated (Greenwald et al., 1998).

In a seminal study, Greenwald et al. (Experiment 1) used the IAT to test responses to four categories of items (e.g., flowers, insects, pleasant words, and unpleasant words). The researchers assumed that the concept *flower* and the attribute *pleasant* are associated in memory as are the concept *insect* and the attribute *unpleasant*. Based on this assumption, Greenwald et al. reasoned that responses should be faster when response key assignment was congruent (e.g., key 1 = “flower” and “pleasant” versus key 2 = “insect” and “unpleasant”) rather than incongruent (e.g., key 1 = “flower” and “unpleasant” versus key 2 = “insect” and “pleasant”). As predicted, mean response latencies were shorter for congruent relative to incongruent tasks.

In a subsequent investigation, Greenwald et al. (1998; Experiment 3) employed the IAT to determine White college students’ implicit attitudes toward Black people. The IAT presented traditional Black names (e.g., “Jamel”) and White names (e.g., “Hank”) together with positive words (e.g., “friend”) and negative words (e.g., “murder”). Greenwald et al. predicted that responses should be faster when response key assignment was congruent (e.g., key 1 = “White names” and “pleasant” versus key 2 = “Black names” and “unpleasant”) rather than incongruent (i.e., White-unpleasant versus Black-pleasant). Results were congruent with their prediction and, thus, a pro-White/anti-Black implicit bias was inferred from participants’ IAT performance. Critically, results for explicit measures diverged from those obtained on the IAT.

In addition to the IAT, a range of so-called implicit measures, such as the Go/No-go Association Task (GNAT; Nosek and Banaji, 2001), Evaluative Priming (Fazio,

Sanbonmatsu, Powell, and Kardes, 1986), the Emotional Stroop (Pratto and John, 1991) and the Extrinsic Affective Simon Task (EAST; De Houwer, 2003) have been offered. With the exception of the EAST, these alternative measures will not be discussed. To our knowledge, the EAST is the only *established* reaction time implicit measure apart from the IAT that has been used to assess implicit homonegativity.

THE IMPLICIT MEASUREMENT OF HOMONEGATIVITY

Initial IAT studies. To date, the Implicit Association Test (IAT) has been the main methodology used for the assessment of implicit homonegativity. The first such study was reported by Banse, Seise, and Zerbes (2001), who conducted two experiments that examined the psychometric properties (Experiment 1) and fakeability (Experiment 2) of their Homosexuality-IAT. All participants were naïve with regard to the functioning of the IAT. In the first experiment, heterosexual males and females and gay men and lesbian women were used (i.e., a known-groups approach was adopted). Exclusively male heterosexuals were recruited for the second experiment. In addition to the Homosexuality-IAT (outlined subsequently), explicit affective and cognitive attitudes (Experiments 1 and 2) and the motivation to control prejudice (Experiment 2) were assessed (details pertaining to all studies summarized in the chapter are presented in Table 1). The Homosexuality-IAT assessed implicit attitudes toward *both* gay and lesbian sexual orientations by testing responses to the following four categories of items: heterosexual (e.g., photographs of opposite-sex couples), gay men and lesbian women (e.g., photographs of same sex couples; specifically, half of the photographs depicted male couples, and half depicted female couples), pleasant words and unpleasant words. Banse et al. assumed that for heterosexual participants, the concepts *heterosexual + pleasant* are likely associated in memory as are *gay men/lesbian women + unpleasant*. The reverse was assumed for the gay and lesbian participants. It was posited that speed and accuracy of responding on the IAT would reflect these associations.

In Experiment 2, four conditions were employed to assess the extent to which the Homosexuality-IAT was resistant to manipulation in comparison to explicit measures (Fazio, 1995). Specifically, participants in a control condition were advised that the aim of the study was “to develop new measures of attitudes toward homosexuality.” In the ‘demand condition’ participants were told that “*Even today people are discriminated against because of their sexual orientation; therefore, attitudes toward homosexuality are an important research topic*” (Banse et al., 2001, p. 155). In the ‘persuasion condition,’ this line was supplemented with the following anti-homonegative information: (a) three texts; (b) a film clip; and (c) details regarding the struggle of various gay organizations. The ‘manipulation condition’ assessed if participants could fake an extremely positive attitude to homosexuality when asked to do so.

Table 1. Summary of sample details and measurement procedures

Authors	Participants	Sexual Orientation Measure	Implicit Homonegativity Measures	Explicit Homonegativity Measures	Additional Measures
Banse, Seise, and Zerbes (2001) Experiment 1	<p><i>Number of Participants:</i> Total $N = 101$</p> <p><i>Sampling method:</i> Participants were a convenience sample of students. (Note: 70% were undergraduate psychology students) from different faculties at universities in Berlin.</p> <p><i>Gender:</i> $n = 50$ female, and $n = 51$ male</p> <p><i>Age:</i> $M = 26.3$ yrs; $SD =$ no details; <i>Range = 19-39</i> yrs.</p> <p><i>Sexual Orientation:</i> $n = 25$ lesbian women; $n = 25$ heterosexual women; $n = 25$ gay males; and $n = 26$ heterosexual males.</p> <p><i>Ethnicity:</i> no details <i>Religion:</i> no details <i>Education:</i> no details <i>Country:</i> Germany <i>Incentives:</i> Incentives were offered to some for participation.</p> <p><i>Excluded participants:</i> Nine participants were removed from the data set for the following reasons: (1) screened to have an ambiguous sexual orientation; (2) personally knew individuals featured in the stimulus materials; (3) technical problems.</p>	<p>A two-item measure tapping sexual identity/behavior (i.e., “How would you describe yourself concerning your sexual identity/sexual behavior?”). Questions were answered on a five-point scale ranging from 1 = <i>exclusively heterosexual</i> to 5 = <i>exclusively homosexual</i>.</p>	<p>The Homosexuality-IAT assessed implicit attitudes toward <i>both</i> gay and lesbian sexual orientations by testing responses to the following four categories of items: heterosexual (e.g., 10 color photographs of mixed gender couples), gay men and lesbian women (e.g., color photographs of same gender couples; i.e., 5 photographs of male couples, 5 photographs of female couples), 10 pleasant words, and 10 unpleasant words.</p> <p>Note: the couples were pictured standing side-by-side in full frontal view with no ostensible signs pertaining to their sexual orientation. Participants were however, informed that the photographs depicted romantic couples.</p>	<p>A specifically constructed German translation of the Attitudes Toward Lesbian and Gay Men Scale (ATLG; Herek, 1988). The Scale comprised an 18-item cognitive attitudes sub-scale (e.g., “Male homosexuality is a sickness”). Questions on the cognitive sub-scale were answered on a 5-point scale ranging from 1 = <i>totally incorrect</i> to 5 = <i>totally correct</i>. The scale also comprised an 18-item affective attitudes scale (e.g., “I learn that a teacher of my son is gay”). Questions on the affective attitudes sub-scale were answered on a 5-point scale ranging from 1 = <i>I would feel very uncomfortable</i> to 5 = <i>I would feel very comfortable</i>.</p>	<p>A Gender-IAT was administered but it is not discussed here.</p>
Banse, Seise,	<p><i>Number of Participants:</i></p>	Same as Experiment 1	Same as Experiment 1	Same as Experiment 1	A specifically adapted scale to assess

and Zerbes (2001) Experiment 2	<p>Total $N = 79$ <i>Sampling method:</i> Participants were a convenience sample of psychology students from various universities in Berlin. (Note: almost all were students. The exact figure was not provided). <i>Gender:</i> $n = 79$ males <i>Age:</i> $M = 25.4$ yrs; SD not provided; <i>Range = 20-39</i> yrs <i>Sexual Orientation:</i> $n = 79$ heterosexual males <i>Ethnicity:</i> no details <i>Religion:</i> no details <i>Education:</i> no details <i>Country:</i> Germany <i>Incentives:</i> Incentives were offered for participation. <i>Excluded participants:</i> Two participants were removed from the data set for the following reasons: (a) screened to have an ambiguous sexual orientation; and (b) personally knew individuals featured in the stimulus materials.</p>	<p>the motivation to control prejudiced behavior (cf. Dunton and Fazio, 1997) was created. This scale had 18 items (e.g., “one should never use discriminative labels for minorities”). Items deemed not to refer directly to racial prejudice were adapted and several novel items were generated.</p>			
Steffens and Buchner (2003) Experiment 1	<p><i>Number of Participants:</i> Total $N = 103$ first session; Total $N = 84$ second session. <i>Sampling method:</i> Participants were a convenience sample of students from a large University (<i>University of Trier</i>) based in a small German town.</p>	<p>A one-item Kinsey Scale tapping sexual identity. Sexual orientation was rated on a 7-point scale ranging from 1 = <i>exclusively heterosexual</i> to 5 = <i>exclusively homosexual</i>.</p>	<p>The IATs assessed implicit attitudes <i>only</i> to gay male and male and female heterosexuality by testing responses to the following four categories of items: heterosexual (names of mixed gender couples: e.g., ‘<i>Michael + Sarah</i>’), gay men (names of male same gender couples e.g., ‘<i>Thomas + Philip</i>’), pleasant words and unpleasant words.</p>	<p>A 28-item ad-hoc explicit measure was specifically constructed. Ten items pertained to gay men (e.g., “<i>gay men should be allowed to adopt children</i>”). These items were randomly interspersed among items designed to assess attitudes toward gay men, conservatism, authoritarianism and gender stereotypes.</p>	<p>No additional measures.</p>

	<p><i>Gender:</i> First session: male and female (<i>figures not provided</i>); and Second session: $n = 65$ female; $n = 19$ male <i>Age:</i> $M = 23$ yrs; $SD = 3.6$ <i>Sexual Orientation:</i> $n = 82$ heterosexual, $n = 21$ non-heterosexual <i>Ethnicity:</i> no details <i>Religion:</i> no details <i>Education:</i> no details <i>Country:</i> no details <i>Incentives:</i> Incentives were offered for participation.</p>				
<p>Steffens and Buchner (2003) Experiment 2</p>	<p><i>Number of Participants:</i> Total $N = 107$ <i>Sampling method:</i> Participants were a convenience sample of students from a large University (<i>University of Trier</i>) based in a small German town. <i>Gender:</i> $n = 80$ female, and $n = 27$ male <i>Age:</i> $M = 23$ yrs; $SD = 3.4$ <i>Sexual Orientation:</i> $n = 85$ heterosexual, $n = 22$ non-heterosexual <i>Ethnicity:</i> no details <i>Religion:</i> no details <i>Education:</i> no details <i>Country:</i> no details <i>Incentives:</i> Incentives were offered for participation.</p>	<p>Same as Experiment 1</p>	<p>Same IAT had been used in Experiment 1, except that the stimuli were altered to reflect items more stereotypically associated with the target categories. The IATs tested responses to the following four categories of items: heterosexual (e.g., 'Casanova', 'Prostitution', 'church', 'children', 'divorce'), homosexual (e.g., <i>George Michael</i>, 'male prostitution', 'outing', 'artist', 'drag queen'), pleasant words and unpleasant words.</p>	<p>A translation of the ten-item Attitudes Toward Gay Men Scale (ATG; Herek, 1994). No further information supplied.</p>	<p>Between administrations of the IAT, half of the participants read newspaper articles pertaining to sexuality while the other half read articles that were unrelated to sexuality. Half of the participants exposed to sexuality-related articles read about a likable gay man, while the remaining half read articles depicting a dislikable heterosexual man. Steffens et al. claimed that the articles had <i>no effect</i> on implicit or explicit attitude measures.</p>
<p>Jellison, McConnell, and Gabriel (2004) Experiment 1</p>	<p><i>Number of Participants:</i> Total $N = 79$ <i>Sampling method:</i> Participants were a convenience sample of heterosexual male</p>	<p>Participants rated their own sexual orientation on the semantic differential scale and feeling thermometer scale prior to rating the 'other' sexual orientation.</p>	<p>The Sexual Orientation-IAT assessed implicit attitudes toward heterosexual and gay men <i>only</i>. Specifically, responses to the following four categories of items were assessed: heterosexual (i.e., photographs of</p>	<p>The Nungesser Homosexual Attitudes Inventory-general subscale (NHAIG-general; Nungesser, 1983) was used to assess attitudes toward homosexuality in general (e.g., "<i>homosexual lifestyles are not as fulfilling as</i></p>	<p>Gay men completed a range of behavioral questionnaires. A modified version of the Environmental Factors Questionnaire (EFQ; Nungesser, 1983) was used to assess social support and positive reinforcement for</p>

	<p>undergraduate psychology students from a large Midwestern University. Additionally, a purposive sample of gay men was recruited. These participants responded to a call for participation through the university and in a large urban area in the Southwestern United States.</p> <p><i>Gender:</i> $n = 79$ males <i>Age:</i> $M =$ no details, $SD =$ no details <i>Sexual Orientation:</i> $n = 35$ heterosexual males, $n = 43$ gay males <i>Ethnicity:</i> no details <i>Religion:</i> no details <i>Education:</i> no details <i>Country:</i> United States. <i>Incentives:</i> Incentives were offered for participation.</p>		<p>mixed- gender couples embracing [10], gay men (i.e., photographs of male same-gender couples embracing [10; 5 male, 5 female]), pleasant adjectives (10; e.g., 'great,' 'wonderful'), and unpleasant adjectives (10; e.g., 'rotten,' 'terrible').</p>	<p>heterosexual lifestyles"). This measure comprised 10-items and questions were answered on a 5-point scale ranging from 1 = <i>strongly disagree</i> to 5 = <i>strongly agree</i>. Sixteen separate semantic differential scales were administered to independently assess attitudes toward homosexuality and heterosexuality. Separate feeling thermometer scales were administered to independently assess attitudes toward homosexuality and heterosexuality. On this measure, participants indicated the degree of warmth they felt toward homosexuality and heterosexuality. The scale was labeled in ten degree increments ranging from 0 = <i>extremely unfavorable</i> to 100 = <i>extremely favorable</i>.</p>	<p>being gay, involvement within the gay community, and attitudes concerning self-disclosure regarding one's own sexual orientation. Two measures were specifically constructed to assess immersion in gay culture. The first included 20 events that were or were not personally experienced by the participant. This measure assessed positive reinforcement experiences and was answered by indicating 'yes' or 'no' to having experienced the events. The second measure assessed involvement in gay-related activities. Participants were required to rate the frequency with which they participated in nine activities (e.g., reading a local gay publication and attending a gay-affirmative religious fellowship). The scale ranged from 1 = <i>never</i> to 7 = <i>several times a week</i>. A single item was constructed to assess the frequency of time spent attempting to pass as straight. This was measured on a scale that ranged from 1 = <i>always</i> to 6 = <i>never</i>. A measure of sexual orientation disclosure was assessed to determine levels of disclosure of own sexual orientation. Specifically, participants were presented with a list of groups that included family members and work colleagues. They rated their level of disclosure on a scale that ranged from 0 = <i>none of them</i> to 4 = <i>all of them</i>. Participants completed a demographic questionnaire, a 33-item Marlowe-Crowne Social Desirability Scale (Crowne and Marlowe, 1960), and a modified version of the Motivation to Control Prejudice Reactions Scale (Dunton and Fazio, 1997). This 17-item scale was reworded to refer to</p>
<p>Jellison, McConnell, and Gabriel, (2004) Experiment 2</p>	<p><i>Number of Participants:</i> Total $N = 87$ <i>Sampling method:</i> Participants were a convenience sample of undergraduate students from a large Midwestern University.</p>	<p>No details.</p>	<p>The Sexual Orientation-IAT assessed implicit attitudes toward heterosexual and gay men <i>only</i>. It was identical to the one from Experiment 1, with the exception that eight pictures deemed too ambiguous were substituted (e.g., two men with their arms around each other may have been interpreted as</p>	<p>An adapted version of the 20-item Heterosexuals Attitudes Toward Homosexuality scale (HATH; Larson, Reed, and Hoffman, 1980) that was reworded to reflect attitudes toward gay men in particular (e.g., "<i>Gay men should be accepted completely into our society</i>"). Questions on the scale</p>	

	<p><i>Gender:</i> n = 87 males <i>Age:</i> M= no details, SD = no details <i>Sexual Orientation:</i> n = 87 heterosexual males <i>Ethnicity:</i> no details <i>Religion:</i> no details <i>Education:</i> no details <i>Country:</i> United States. <i>Incentives:</i> Incentives were offered for participation.</p>	<p>heterosexual camaraderie for some participants). The new pictures depicted people in romantic poses.</p>	<p>were answered on a 5-point scale ranging from 1 = <i>strongly disagree</i> to 5 = <i>strongly agree</i>. The 10-item Attitudes Toward Gay Men subscale of the Attitudes Toward Lesbians and Gay Men Scale (ATG; Herek, 1994). It contained items such as “<i>Homosexual behavior between two men is just plain wrong.</i>” Questions on the scale were answered on a 9-point scale ranging from 1 = <i>strongly disagree</i> to 9 = <i>strongly agree</i>. In addition, participants undertook the same NHA1-general subscale, gay and straight semantic differential scales, and feeling thermometers that had been administered in Experiment 1.</p>	<p>gay men. Questions were answered on a scale that ranged from -3 = <i>strongly disagree</i> to +3 = <i>strongly agree</i>. Male gender role norms were assessed using the Male Role Norm Scale (Thompson and Pleck, 1986). Heterosexual identity was explored using the Racial Centrality Subscale of the Multidimensional Inventory of Black Identity (MIBI; Sellers, Smith, Shelton, Rowley, and Chavous, 1998), the Importance to Identity subscale of the Collective Self-Esteem Scale (CSES; Luhtanen and Crocker, 1992), and via a specially constructed five-item measure.</p>	
<p>Jost, Banaji and Nosek (2004)</p>	<p><i>Number of Participants:</i> Total N = 27, 220 <i>Sampling method:</i> Participants were a self selected sample recruited via a public demonstration website at http://tolerance.org between March 18th 2002 and October 29th 2002. <i>Gender:</i> no details <i>Age:</i> no details <i>Sexual Orientation:</i> no details <i>Ethnicity:</i> no details <i>Religion:</i> no details <i>Education:</i> no details <i>Country:</i> no details <i>Incentives:</i> no details</p>	<p>A demographic questionnaire included items concerning sexual orientation. No further information was provided</p>	<p>The IAT tested responses to the following four categories of items: Straight people (e.g., black and white symbols of different/opposite sex couples and the terms “Straight.” and “Heterosexual”), Gay people (e.g., black and white symbols of same sex couples, and the terms “Gay,” and “Homosexual”), pleasant words, and unpleasant words.</p>	<p>An 11-point feeling thermometer assessed attitudes toward ‘gay’ and ‘straight’ target groups (a difference score was computed for analysis). A Social Group Attitudes Scale with the target concepts ‘Straight People’ and ‘Gay People’ asked: “<i>Which statement best describes you?</i>” Questions were answered on scale ranging from -2 = <i>strongly prefer straight people to gay people</i> to 2 = <i>strongly prefer gay people to straight people</i>.</p>	<p>A demographic questionnaire included items pertaining to political orientation. Items were answered on a 7-point scale that ranged from -3 = ‘<i>extremely liberal</i>’ to + 3 = ‘<i>extremely conservative</i>.’ Additional questions concerned age, sex, sexual orientation, political conservatism and group conservatism.</p>
<p>Nosek, Greenwald and Banaji (2005)</p>	<p><i>Number of Participants:</i> Total N = 27, 220 <i>Sampling method:</i> Participants were a self selected sample recruited via a public</p>	<p>A demographic questionnaire included items concerning sexual orientation. No further information was provided</p>	<p>The two IATs which employed a total of 24 stimulus items were almost identical, with the exception that the emphasis of <i>two items</i> representing the category ‘<i>Gay</i>’ were shifted to emphasize sex (i.e., lesbian women or</p>	<p>An 11-point feeling thermometer assessed attitudes toward ‘gay’ and ‘straight’ target groups (a difference score was computed for analysis). A Social Group Attitudes Scale with the target concepts ‘Straight People’ and</p>	<p>A demographic questionnaire included items pertaining to political orientation. Items were answered on a 7-point scale that ranged from -3 = ‘<i>extremely liberal</i>’ to + 3 = ‘<i>extremely conservative</i>.’ Additional questions</p>

	<p>demonstration website at http://tolerance.org</p> <p><i>Gender:</i> no details</p> <p><i>Age:</i> no details</p> <p><i>Sexual Orientation:</i> no details</p> <p><i>Ethnicity:</i> no details</p> <p><i>Religion:</i> no details</p> <p><i>Education:</i> no details</p> <p><i>Political Identity:</i> no details</p> <p><i>Country:</i> no details</p> <p><i>Incentives:</i> no details</p> <p><i>Excluded participants:</i> $n = 960$</p>		<p>gay men). The remaining two out of four stimuli used to represent 'Gay' (i.e., 'Gay' and 'Homosexual') were held constant across the tasks. In addition, the same stimuli were used to represent the categories 'good', 'bad' and 'Straight,' on both IAT tasks. One IAT presented two images representing lesbian women (i.e., two wedding cake bride figurines together, and two female 'stick figures' side-by-side). The second IAT presented two images representing gay men (i.e., two wedding cake groom figurines together, and two male 'stick figures' side-by-side).</p>	<p>'Gay People' asked: "Which statement best describes you?" Questions were answered on scale ranging from -2 = strongly prefer straight people to gay people to 2 = strongly prefer gay people to straight people.</p>	<p>concerned age, sex, sexual orientation, political conservatism and group conservatism.</p>
Steffens (2005) Experiment 1	<p><i>Number of Participants:</i> Total $N = 80$</p> <p><i>Sampling method:</i> Participants were a convenience sample of students from a large University (<i>University of Trier</i>) based in a small German town.</p> <p><i>Gender:</i> $n = 48$ females, $n = 32$ males</p> <p><i>Age:</i> $M = 22$ yrs, $SD = 3$</p> <p><i>Sexual Orientation:</i> $n = 37$ heterosexual females, $n = 9$ bisexual females and $n = 2$ lesbian women;</p> <p>$n = 28$ heterosexual men, $n = 3$ bisexual men, $n = 1$ gay man. Approximately $n = 20\%$ were non-heterosexual.</p> <p><i>Ethnicity:</i> no details</p> <p><i>Religion:</i> no details</p> <p><i>Education:</i> no details</p> <p><i>Country:</i> Germany</p> <p><i>Incentives:</i> Incentives were offered to some for</p>	<p>A single-item measure tapping sexual identity was answered by participants on a 7-point Kinsey scale ranging from 1 or 2 = heterosexual, 3-5 = bisexual; and 7 = homosexual.</p>	<p>The Lesbian and Gay-IATs tested responses to four categories of items: Lesbian women (i.e., names of famous lesbian women, e.g., 'Hella von Sinnen) or Gay Men (i.e., names of famous gay men, e.g., 'George Michael') vs. heterosexual (e.g., 'wedding' or 'divorce'), pleasant words, and unpleasant words. Words were selected such that they bore no obvious relation to the concepts gay, lesbian or heterosexual but they had equal valence.</p>	<p>A specifically constructed German translation of the 10-item Attitudes Toward Lesbians and Gay Men Scale (ATLG; Herek, 1994) comprised both lesbian and gay men subscales (ATL and ATG, respectively). This scale includes 5 items that assess attitudes toward gay men and 5 that assess attitudes toward lesbians. Questions were answered on a 9-point scale. No further details were provided</p>	<p>No additional measures.</p>

	Same as Experiment 1	Same as Experiment 1	Same as Experiment 1
Steffens (2005) Experiment 2	<p>participation.</p> <p><i>Number of Participants:</i> Total $N = 64$</p> <p><i>Sampling method:</i> Participants were a convenience sample of students from a large University (<i>University of Trier</i>) based in a small German town.</p> <p><i>Gender:</i> $n = 32$ females, $n = 32$ males</p> <p><i>Age:</i> $M = 23$ yrs, $SD = 5$</p> <p><i>Sexual Orientation:</i> $n = 22$ heterosexual females, $n = 7$ bisexual females, $n = 3$ lesbian women; $n = 26$ heterosexual men and $n = 6$ bisexual men</p> <p><i>Ethnicity:</i> no details</p> <p><i>Religion:</i> no details</p> <p><i>Education:</i> no details</p> <p><i>Country:</i> Germany</p> <p><i>Incentives:</i> no details</p> <p><i>Excluded participants:</i> One was excluded due to error rates in excess of 25% on the IAT.</p>	<p>Same as Experiment 1</p>	<p>A specifically constructed ten-item subtle gender role-related beliefs scale was administered to participants (e.g., “Men should not openly show their feelings;” “Women should bring up the children because they are most capable of that task”). The authors noted that the scale had poor internal reliability.</p> <p>A Gender Self-Concept-IAT which tested responses to the following four categories of items: self (e.g., ‘me,’ ‘mine’), other (e.g., ‘you,’ ‘yours’), male (e.g., ‘independent,’ ‘brutal’), and female (e.g., ‘caring,’ ‘moody’).</p>
Steffens (2005) Experiment 3	<p>Same as Experiment 1</p>	<p>The same Lesbian and Gay-IAT tasks used in the earlier experiments were retained for Experiment 3.</p>	<p>A <i>modified</i> Gender Self-Concept-IAT which included self + gender associations to reflect modern (e.g., ‘competitive’) vs. traditional (e.g., ‘kitchen’) gender roles.</p> <p>A German version of the Modern Sexism Scale (MSS) and a scale to assess attitudes to working women were also administered (see Eckes and Six-Materna, 1998).</p>

<p>females; $n = 25$ heterosexual men, $n = 5$ bisexual men and $n = 2$ gay men. *Across the <i>three studies</i>, $n = \text{approx}$ <i>20% non-heterosexual</i>. <i>Ethnicity</i>: no details <i>Religion</i>: no details <i>Education</i>: no details <i>Country</i>: Germany <i>Incentives</i>: no details <i>Excluded participants</i>: Five participants were excluded due to error rates in excess of 25% on the IAT.</p>	<p>Rowatt, Tsang, Kelly, LaMartina, McCullers, and McKinley (2006)</p>	<p>No details.</p>	<p>The IAT tested responses to four categories of items: Gay men (e.g., 3 pictures and symbols - taken from Nosek, et al. [2005]), vs. Heterosexual (e.g., 3 pictures and symbols - also taken from Nosek, et al. [2005]), pleasant words (e.g., 'friendly', 'pleasant', 'lucky', 'warmth', 'cheer' and 'happy'), and unpleasant words (e.g., 'evil', 'failure', 'pain', 'sinful', 'agony' and 'rotten'). Two pictures depicted morphed faces side-by-side (e.g., man-woman; man-man). Two pictures were realistic drawings of people in romantic poses.</p>	<p>The Attitudes Toward Lesbians and Gay Men Scale - Short Form (Herek, 1988). This scale includes 5 items that assess attitudes toward gay men (e.g., "<i>I think male homosexuals are</i> <i>disgusting</i>") and 5 that assess attitudes toward lesbians (e.g., "<i>Lesbians just can't fit into our</i> <i>society</i>"). Questions were answered on a 7-point scale ranging from 1 = <i>very strongly disagree</i> to 7 = <i>very</i> <i>strongly agree</i>. Four feeling thermometers assessed attitudes toward heterosexual men, heterosexual women, gay men, and lesbian women. Scale ranged from 0 = <i>cold</i> to 5 = <i>neutral</i> to 10 = <i>warm</i>.</p>	<p>The Right-Wing Authoritarian Scale (see Altemeyer and Hunsberger, 1992) measures explicit authoritarian submission, authoritarian aggression, and conventionalism (e.g., "<i>Our</i> <i>country will be destroyed someday if</i> <i>we do not smash the perversions</i> <i>eating away at our moral fibres and</i> <i>traditional belief</i>"). It uses a 9-point scale, and answers range from 1 = <i>very strongly disagree</i>, to 9 = <i>very</i> <i>strongly agree</i>. The Religious Fundamentalism Scale (Altemeyer and Hunsberger, 1992) has a 9-point scale that ranges from 1 = <i>very</i> <i>strongly disagree</i> to 9 = <i>very strongly</i> <i>agree</i>. The Christian Orthodoxy Scale - Short Form (Hunsberger, 1989) contains 6-items that tap the extent to which an individual accepts formal Christian doctrines, beliefs and teachings (e.g., "<i>Jesus Christ was the</i> <i>divine Son of God</i>"). Answers are on a 7-point scale, ranging from 1 = <i>strongly disagree</i> to 7 = <i>strongly</i> <i>agree</i>. The Balanced Inventory of Desirable Responding (Paulhus and Reid, 1991) contains 20 items that</p>
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<p><i>Excluded participants:</i> Eleven participants from other mainstream world religions were excluded from the data set due to their small numbers.</p> <p><i>Number of Participants:</i> Total $N = 269,683$</p> <p><i>Sampling method:</i> Participants were a self-selected sample recruited via a public demonstration website at http://implicit.harvard.edu between February 1st 2000 and May 12th 2006.</p> <p><i>Gender:</i> $n = 71,393$ males, $n = 103,403$ females Age: $M = 25.8$ yrs, $SD = 13.4$, Range = 10 yrs - 60+ yrs.</p> <p><i>Sexual Orientation:</i> no details</p> <p><i>Ethnicity:</i> $n = 1,487$ American Indian, $n = 8,601$ Asian, $n = 9,288$ Black, $n = 9,059$ Hispanic, $n = 124,713$ White, $n = 8,316$ Multiracial, $n = 6,347$ Other</p> <p><i>Religion:</i> no details</p> <p><i>Education:</i> $n = 25,702$ some high school or less, $n = 10,681$ high school degree, $n = 44,407$ some college, $n = 24,120$ BA/BS, $n = 14,637$ advanced degree.</p> <p><i>Political Identity:</i> $M = -.62$, $SD = 1.61$ Country: $n = 141,115$ US, $n = 56,751$ Non-US.</p>	<p>A demographic questionnaire included items concerning sexual orientation. No further information was provided</p> <p>The target concepts 'straight people' and 'gay people' and the attribute concepts 'good' and 'bad' were employed in the IAT. No further details were reported by the authors. A detailed paper on the gay-straight IAT tasks from the demonstration websites is forthcoming.</p>	<p>An 11-point feeling thermometer assessed attitudes toward 'gay' and 'straight' target groups (a difference score was computed for analysis). A Social Group Attitudes Scale with the target concepts 'Straight People' and 'Gay People' asked: "Which statement best describes you?" Questions were answered on scale ranging from -2 = <i>strongly prefer straight people to gay people</i> to 2 = <i>strongly prefer gay people to straight people</i>.</p>	<p>measure impression management.</p> <p>A demographic questionnaire included items pertaining to political orientation. Items were answered on a 7-point scale that ranged from -3 = <i>'extremely liberal'</i> to +3 = <i>'extremely conservative'</i>. Additional questions concerned age, sex, sexual orientation, political conservatism and group conservatism.</p>
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Rohner and Bjorklund (2006) Experiment 1	<p><i>Incentives:</i> no details <i>Number of Participants:</i> Total $N = 70$ <i>Sampling method:</i> Participants were a convenience sample of students attending a high school in Sweden. <i>Gender:</i> $n = 38$ male, $n = 26$ female, and $n = 6$ of an undisclosed gender <i>Age:</i> $M = 17.89$, $SD = 1.07$ <i>Sexual Orientation:</i> $n = 53$ heterosexual male and female, $n = 11$ gay men and lesbian women, $n = 6$ of an undisclosed sexual orientation <i>Ethnicity:</i> no details <i>Religion:</i> no details <i>Education:</i> no details <i>Country:</i> Sweden <i>Incentives:</i> No incentives were offered for participation.</p>	Participants 'stated' their sexual orientation. No further information was provided	The IAT assessed implicit attitudes toward <i>both</i> heterosexual and gay and lesbian sexual orientations by testing responses to four categories of items: heterosexual (i.e., 10 pictures of different sex couples – hugging, kissing, or marrying), gay men and lesbian women (i.e., 10 pictures of same sex couples – hugging, kissing, or marrying. Half depicted male-male dyads and half depicted female-female dyads.), pleasant words (e.g., 10 words such as ' <i>hero</i> ', or ' <i>honest</i> '), and unpleasant words (e.g., 10 words such as ' <i>misery</i> ', or ' <i>cancer</i> '). The pictures portrayed the couples as lovers.	The Homophobia Scale (Wright, Adams, and Bernat, 1999). This scale measures affective, cognitive and behavioural components of anti-gay bias. The scale includes 25 items (e.g., " <i>I would get upset if I found out that a close friend was homosexual</i> " or " <i>I avoid homosexual individuals</i> "). Questions are answered on a 5-point scale ranging from 1 = <i>totally disagree</i> to 5 = <i>totally agree</i> .	A picture-rating measure (PRM) was administered to assess self-presentational biases. The PRM comprised images of opposite-sex and same-sex couples. Self presentation was manipulated by presenting the images as either an index of sexual orientation-related attitudes (i.e., socially sensitive) or as an index of attitudes toward couples of different age groups (i.e., less socially sensitive). The same images used in the IAT were employed in the PRM.
Rohner and Bjorklund (2006) Experiment 2	<p><i>Number of Participants:</i> Total $N = 60$ <i>Sampling method:</i> Participants were a self-selected sample of volunteers. <i>Gender:</i> $n = 30$ females, $n = 30$ males <i>Age Range:</i> $n = 34$ (0-30yrs); $n = 17$ (31-40yrs); $n = 6$ (41-50yrs); and $n = 3$ (51-60yrs). $M =$ no details, $SD =$ no details <i>Sexual Orientation:</i> $n = 30$ gay men and lesbian women, $n = 30$ heterosexual male and</p>	No details.	Same as Experiment 1.	No explicit measures.	No additional measures.

<p>Boysen, Vogel and Madon (2006) Experiment 1</p>	<p>female participants. (Note: Sexual orientation groups were matched for age group). <i>Ethnicity</i>: no details <i>Religion</i>: no details <i>Education</i>: no details <i>Country</i>: no details <i>Incentives</i>: No incentives were offered for participation. <i>Number of Participants</i>: Total $N = 151$ <i>Sampling method</i>: Participants were a convenience sample of psychology students from a large Midwestern University in the United States. <i>Gender</i>: $n = 51$ male, $n = 100$ female <i>Age</i>: $M = 19.6$ yrs, $SD =$ no details <i>Sexual Orientation</i>: $n = 51$ heterosexual male, $n = 100$ heterosexual female <i>Ethnicity</i>: $n = 128$ White, $n = 12$ Asian, $n = 6$ African-American, $n = 3$ Hispanic, and $n = 2$ 'other' <i>Religion</i>: no details <i>Education</i>: no details <i>Country</i>: United States <i>Incentives</i>: Incentives were offered for participation. (Note: Figures were expressed as percentages in the original publication). <i>Number of Participants</i>:</p>	<p>A demographic questionnaire included items concerning sexual orientation. No further information was provided</p> <p>Same as Experiment 1</p>	<p>A modified version of the Banse et al. (2001) Homosexuality-IAT that assessed implicit attitudes toward both gay and lesbian sexual orientations was used. Here, however, the pleasant and unpleasant words were taken from Greenwald, et al. (1998).</p> <p>Same as Experiment 1</p>	<p>The Index of Homophobia (IHP; Hudson and Ricketts, 1980) is a short-form scale and was constructed to assess homophobic versus non-homophobic attitudes (i.e., the fear of being in close quarters with homosexuals). Furthermore, it taps affective responses that occur from interacting with or coming into contact with gay people. The scale includes 25 category-partition (Likert-type) items (e.g., "if a member of my sex made a sexual advance toward me I would feel angry" or "I would feel at ease talking with a homosexual person at a party"). Questions are answered on a 5-point scale ranging from 1 = <i>Strongly agree</i> to 5 = <i>Strongly disagree</i>. The Heterosexism Scale (Park and Bieschke, 2002) is a subtle measure of explicit anti-gay bias. No further details were provided.</p> <p>No explicit measures.</p>	<p>A demographic questionnaire included items pertaining to gender, age and sexual orientation.</p> <p>Same as Experiment 1.</p>
<p>Boysen,</p>	<p><i>Number of Participants</i>:</p>	<p>Same as Experiment 1</p>	<p>Same as Experiment 1</p>	<p>No explicit measures.</p>	<p>Same as Experiment 1.</p>

Vogel and Madon (2006) Experiment 2	<p>Total $N = 103$</p> <p><i>Sampling method:</i> Participants were a convenience sample of psychology students from a large Midwestern University in the United States.</p> <p><i>Gender:</i> $n = 35$ male, $n = 66$ female, $n = 2$ undisclosed gender</p> <p><i>Age:</i> $M = 19.9$ yrs, $SD =$ no details</p> <p><i>Sexual Orientation:</i> $n = 103$ heterosexual</p> <p><i>Ethnicity:</i> $n = 90$ White, $n = 6$ Asian, $n = 4$ African-American, $n = 1$ Hispanic, $n = 1$ Native American, and $n = 1$ 'other'</p> <p><i>Religion:</i> no details</p> <p><i>Education:</i> no details</p> <p><i>Country:</i> United States</p> <p><i>Incentives:</i> Incentives were offered for participation.</p> <p><i>Excluded participants:</i> Four participants who had identified as non-heterosexual were removed from the data set.</p>	<p>A manipulation check assessed if participants in the bogus pipeline condition were more nervous than their no-bogus pipeline counterparts. The manipulation check asked participants to indicate their agreement with the statement "I am nervous about being hooked up to the physiological measures" on a scale ranging from 1 = <i>strongly disagree</i>, to 5 = <i>strongly agree</i>.</p>
Lemm (2006)	<p><i>Number of Participants:</i> Total $N = 92$</p> <p><i>Sampling method:</i> Participants were a convenience sample of undergraduate students from a medium sized Western Washington University in Bellingham, USA.</p> <p><i>Gender:</i> $n = 46$ male,</p>	<p>An adapted version of the ten-item Internal and External Motivation to Respond Without Prejudice Scale (cf. Plant and Devine, 1998) that was reworded to reflect prejudice toward gay men. That is, the words 'gay men' were substituted for the word "Blacks" in each of the scale items. Five items pertained to internal motivation (IMS; e.g., "Because of my personal values, I believe that using</p>
	<p>Two IAT measures (one with <i>all</i> verbal and one with <i>all</i> picture stimuli) assessed implicit attitudes <i>exclusively</i> to male sexuality. Thus, on one IAT, responses to the following four categories of items were assessed: heterosexual (e.g., photographs of different-sex dyads, posed side-by-side), gay men (e.g., photographs of same-sex male-male dyads, posed side-by-side), pleasant</p>	<p>A specifically adapted version of the ten-item Attitudes Toward Gay Men Scale (ATG; Herek, 1984) was used to assess attitudes toward gay men (i.e., to be consistent with current terminology, the phrase "male homosexuals" was rephrased to "gay men").</p>

<p><i>n</i> = 46 female Age: <i>M</i> = 21 yrs, <i>SD</i> = 3.65; Range = 18–42 yrs Sexual Orientation: <i>n</i> = 46 heterosexual male, <i>n</i> = 46 heterosexual female. Ethnicity: Participants were not asked for details pertaining to ethnicity but the sample reflected the 88% white demographic profile of Bellingham. Religion: no details Education: no details Country: no details</p>	<p>(i.e., pictures, but the details were not reported), and unpleasant (i.e., pictures, but the details were not reported). Men and women unknown to the participants were recruited to pose for the photographs. On another IAT, again, responses to four categories of items were assessed: heterosexual (e.g., the terms 'straight' and 'heterosexual'), gay men (e.g., the terms 'gay' and 'homosexual'), pleasant words (e.g., 'paradise', 'happy'), and unpleasant words (e.g., 'agony', 'tragedy').</p>
<p>Dasgupta and Rivera, (2006)</p>	<p>No explicit measures.</p>
<p><i>n</i> = 46 female Age: <i>M</i> = 26.12 yrs, <i>SD</i> = 11.98; Range = 17–65 yrs Sexual Orientation: <i>n</i> = 30 heterosexual male, <i>n</i> = 52 heterosexual female. Ethnicity: <i>n</i> = 58 White, <i>n</i> = 7 Black, <i>n</i> = 6 Asian, <i>n</i> = 5 Hispanic, <i>n</i> = 4</p>	<p>On the IAT, responses to the following four categories of items were assessed: heterosexual (e.g., photographs of different-sex couples), gay men (e.g., photographs of same-sex couples), pleasant words (e.g., 'paradise') and unpleasant words (e.g., 'poison'). The pictures portrayed the couples as lovers.</p> <p>A single-item measure tapping sexual identity (i.e., "In terms of sexual preference, how do you self identify?") was embedded in a demographic questionnaire. This was answered by participants on an 11-point bipolar scale ranging from 1 = "I identify as gay or lesbian exclusively" to 11 = "I identify as heterosexual exclusively."</p> <p>Participants were a purposive sample of residents from a small town in Massachusetts, United States. Participants responded to advertisements placed in community newspapers and flyers posted at local businesses. Gender: <i>n</i> = 30 male, <i>n</i> = 52 female Age: <i>M</i> = 26.12 yrs, <i>SD</i> = 11.98; Range = 17–65 yrs Sexual Orientation: <i>n</i> = 30 heterosexual male, <i>n</i> = 52 heterosexual female. Ethnicity: <i>n</i> = 58 White, <i>n</i> = 7 Black, <i>n</i> = 6 Asian, <i>n</i> = 5 Hispanic, <i>n</i> = 4</p>

stereotypes about gay men is wrong") and five pertained to external motivation (EMS; e.g., "I try to act non-prejudiced toward gay men because of pressure from others"). Questions on the scale were answered on a six-point scale ranging from *strongly disagree* to *strongly agree*. A specifically constructed measure of contact with gay, lesbian, and bisexual people (based on questions used by Herek and Capitano (1995) in their telephone interviews) was designed to assess the *number* and *nature* of contacts/relationships with gay men, lesbian women and bisexual individuals. On this measure, participants were also asked how they learned of the gay, lesbian, or bisexual person's sexual orientation.

A 15-item Traditional Beliefs about Gender and Gender Identity (TBGI) Scale was specially constructed (i.e., because interest was focused on the influence of both traditional beliefs about gender roles across a wide variety of domains and gender identity). The TBGI comprised two sub-scales. The Traditional Beliefs about Gender (TBG) subscale comprised eight items and assessed the degree to which people endorse traditional gender norms across a variety of daily life domains (e.g., "Openly expressing my affection to another person of my own sex is difficult for me because I don't want others to think I'm gay"). The Traditional Beliefs about Gender Identity (TBI) sub-scale comprised seven items and assessed the degree to which people are invested in emphasising their heterosexual identity to others and to themselves

multiracial, and $n = 2$
 undisclosed
Religion: no details
Education: no details
Country: United States
Incentives: Incentives
 were offered for
 participation.

(e.g., “*I would feel comfortable knowing that members of my sex found me attractive*”). Questions were answered on a seven-point scale ranging from 1 = *strongly disagree* to 7 = *strongly disagree*. Extensive scale validation tests were undertaken by the authors.

A three-item behavioural control scale was also specially constructed to assess individual differences in the degree to which people are aware of and able to control their subtle non-verbal behaviour during interpersonal interactions (e.g., “*While talking to another person I’m conscious of what I communicate silently with my ‘body language’*,” “*I try to keep an eye on my own actions when I’m interacting with others so that I don’t behave in a discriminatory manner without thinking*,” “*When I’m in the presence of a gay or lesbian person, I pay attention to my own behaviour so that they don’t get the impression that I’m prejudiced against them*”). Questions were answered on a seven-point scale ranging from 1 = *strongly disagree*, to 7 = *strongly agree*.

A measure of nonverbal behaviour toward a confederate was coded along six dimensions using the procedures of McConnell and Leibold (2001). Three items focused on specific behaviours (e.g., amount/nature of eye contact, smiling and body posture between the participant and confederate) and the remaining three focused on global behaviour (e.g., participant’s overall friendliness, comfort and interest). Behaviours were rated by confederates and coders on an 11-point scale ranging from 1 = *not at all*, to 11 = *very much*.

<p>Meir, Robinson, Gaither, and Heintz (2006)</p>	<p>Number of Participants: Total $N = 44$ Sampling method: Participants were a convenience sample of undergraduate students. Participants responded to volunteer sheets posted on a bulletin board and class room notices. Gender: $n = 44$ male Age: $M = 20.2$ yrs, $SD = 2.80$ Sexual Orientation: $n = 44$ heterosexual male Ethnicity: $n = 41$ Caucasian, $n = 1$ Hispanic/Latino, $n = 1$ African-American, and $n = 1$ 'other' Religion: no details Education: no details Country: no details Incentives: Incentives were offered for participation.</p>	<p>The Sequential Priming Procedure assessed responses to four categories of items: Gay Primes (i.e., images of clothed or semi-clothed gay male couples in sexual poses); Neutral Primes (e.g., images of neutral objects such as a chair or a lamp); positive (e.g., 'great', 'good') and negative target words (e.g., 'awful', 'bad'). Reaction times were assessed on the basis of four conditions (e.g., gay/positive, gay/negative, neutral/positive, and neutral/negative).</p>	<p>The Index of Homophobia (IHP; Hudson and Ricketts, 1980) is a short-form scale and was constructed to assess homophobic versus non-homophobic attitudes (i.e., the fear of being in close quarters with homosexuals). Furthermore, it taps affective responses that occur from interacting with or coming into contact with gay people. The scale includes 25 category-partition (Likert-type) items (e.g., "if a member of my sex made a sexual advance toward me I would feel angry" or "I would feel at ease talking with a homosexual person at a party"). Questions were answered on a 5-point scale ranging from 1 = <i>Strongly agree</i> to 5 = <i>Strongly disagree</i>.</p>	<p>The 20-item self-deception subscale of the Balanced Inventory of Desirable Responding (BIDR; Paulhus, 1991) assessed unconscious tendencies to deceive the self through self-enhancement and denial (e.g., "I always know why I like things," "It's hard for me to shut off a disturbing thought"). Questions were answered on a 7-point scale ranging from 1 = <i>not true</i>, through 4 = <i>somewhat true</i>, to 7 = <i>very true</i>. A viewing-time task presented 10 images (i.e., 5 gay images taken from the sequential priming task; and 5 novel images of clothed or semi-clothed heterosexual couples) for evaluation. Viewing time (i.e., the time it took for participants to press the space bar to rate the picture) was measured. Pictures were rated on a scale ranging from 1 = <i>very unpleasant</i>, to 9 = <i>very pleasant</i>.</p>
<p>Gabriel, Banse and Hug (2007)</p>	<p>Number of Participants: Total $N = 69$ Sampling method: Participants were a convenience sample of students from the University of Bern ($n = 28$ undergraduate psychology, $n = 17$ advanced psychology, and $n = 1$ high school). Participants responded to campus flyers and posters. Gender: $n = 69$ male Age: $M = 24.8$ yrs; $SD = 4.1$; Range = 19-42 yrs</p>	<p>The Homosexuality-IAT was identical to the one used by Banse et al. (2001). Specifically, the Homosexuality-IAT assessed implicit attitudes toward both gay and lesbian sexual orientations by testing responses to the following four categories of items: heterosexual (e.g., 10 color photographs of mixed gender couples), gay men and lesbian women (e.g., color photographs of same gender couples; i.e., 5 photographs of male couples, 5 photographs of female couples), 20 pleasant words, and 20 unpleasant words. Note: the couples were pictured standing side-by-side in full frontal view with no ostensible signs</p>	<p>A 36-item two-dimensional Cognitive and Affective Attitudes Toward Homosexuality Scale (Seise, Banse, and Neyer, 2002). The Cognitive attitudes sub-scale comprised 18-items and consisted of positive and negative statements about homosexuality or statements describing what should or should not be permitted (e.g., "Female homosexuality is a sickness," "Gay men should not work with children or adolescents"). Questions were answered on a 5-point agreement scale. The Affective attitudes sub-scale comprised 18-items and consisted of statements describing situations or events (e.g., "I learn that a teacher of</p>	<p>A German translation of the 17-item Motivation to Control Prejudiced Reactions Scale (Dunton and Fazio, 1997) was employed to assess internal motivation. Items were reworded to reflect minorities in general. Questions on the scale were answered on a five-point scale ranging from 1 = <i>absolutely wrong</i> to 5 = <i>absolutely right</i>.</p>

De Houwer, and De Bruycker (2007b)	<p><i>Sexual Orientation:</i> $n = 69$ heterosexual male <i>Ethnicity:</i> no details <i>Religion:</i> no details <i>Education:</i> no details <i>Country:</i> Switzerland <i>Incentives:</i> Incentives were offered for participation.</p> <p><i>Number of Participants:</i> Total $N = 82$ <i>Sampling method:</i> Participants were a purposive sample. Heterosexual participants responded to flyers and gay participants responded to a call for participation from several Gay Organizations. <i>Gender:</i> $n = 48$ male, $n = 34$ female <i>Age:</i> $M = 23.7$ yrs, $SD = 7.15$</p> <p><i>Sexual Orientation:</i> $n = 19$ heterosexual males, $n = 20$ heterosexual females, $n = 29$ gay men, and $n = 14$ lesbian women <i>Ethnicity:</i> no details <i>Religion:</i> no details <i>Education:</i> no details <i>Country:</i> no details <i>Incentives:</i> Incentives were offered for participation. <i>Excluded participants:</i> Nine participants were excluded because they did not identify their sexual orientation in an unambiguous manner.</p>	<p>A two-item measure tapping sexual identity/behavior (i.e., “How would you describe yourself concerning your sexual identity/sexual behavior?”). Questions were answered on a five-point scale ranging from 1 = <i>exclusively heterosexual</i> to 5 = <i>exclusively homosexual</i>.</p>	<p>pertaining to their sexual orientation. Participants were however, informed that the photographs depicted romantic couples.</p> <p>The IAT used was a conceptual replication of the Homosexuality-IAT that assessed implicit attitudes to both male and female sexuality offered by Banse et al. with the exception that word stimuli replaced the photographs employed by Banse et al. Thus, responses to the following four categories of items were assessed; heterosexual (i.e., 8 different-sex couple names, e.g., ‘Thomas + Isabel’); gay men and lesbian women (i.e., 8 same-sex couple names, e.g., ‘Sofie + Heidi’, ‘Thomas + Pieter’), 4 pleasant words (e.g., ‘good’, ‘honest’), and 4 unpleasant words (e.g., ‘bad’, ‘mean’). The Extrinsic Affective Simon Task (EAST; De Houwer, 2003) employed the same pleasant and unpleasant terms as in the IAT. The terms ‘Gay,’ ‘lesbian,’ ‘hetero,’ and ‘#####’ were employed as targets.</p>	<p><i>my son is gay,” “Nearby two lesbians are kissing each other”).</i> Questions were answered on a 5-point affective reaction scale ranging from 1 = <i>I would feel very uncomfortable</i> to 5 = <i>I would feel very comfortable</i>.</p> <p>A Dutch translation of the 36-item two-dimensional Cognitive and Affective Attitudes Toward Homosexuality Scale (Seise, Banse, and Neyer, 2002). The Cognitive attitudes sub-scale comprised 18-items and consisted of positive and negative statements about homosexuality or statements describing what should or should not be permitted (e.g., “Gay couples should have the right to get married”). Questions were answered on a 5-point agreement scale. The Affective attitudes sub-scale comprised 18-items and consisted of statements describing situations or events (e.g., “My daughter tells me she is a lesbian”). Questions were answered on a 5-point affective reaction scale ranging from 1 = <i>I would feel very uncomfortable</i> to 5 = <i>I would feel very comfortable</i>.</p>	<p>No additional measures.</p>
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Cullen,
Barnes,
Holmes,
Barnes,
Holmes, and
Stewart,
(2007)

Number of Participants: Total $N = 38$
Sampling method: Participants were a purposive sample of heterosexual undergraduate students from the National University of Ireland, Maynooth.
 A purposive sample of non-heterosexual participants responded to a call for participation from several Gay Organizations and to advertising placed in a national gay publication.
Gender: $n = 20$ male, $n = 18$ female
Age: $M = 25$ yrs; $SD = 6.8$
Sexual Orientation: $n = 20$ heterosexual, $n = 8$ gay, $n = 10$ bisexual
Ethnicity: $n = 33$ Irish; $n = 1$ British; $n = 1$ American; $n = 3$ 'Other EU.'
Religion: $n = 14$ Catholic; $n = 6$ Atheist; $n = 5$ Agnostic; $n = 4$; Protestant; $n = 2$; Spiritual; $n = 2$; Unspecified; $n = 5$ 'Other.'
Education: $n = 26$ Third Level; $n = 12$ Second Level
Country: Ireland.
Incentives: No incentives were offered for participation.

A multi-dimensional measure called the Klein Sexual Orientation Grid (KSOG; Klein, Sepekoff, and Wolf, 1985) tapping the seven dimensions of sexual attraction, sexual behavior, sexual fantasies, emotional preference, social preference, lifestyle, and self identification. Each of these dimensions is assessed across three temporal dimensions: namely past, present and ideal. It yields a total of 21 scores.

A multi-dimensional measure called the Alderson Sexuality Questionnaire (Alderson and Orzeck, 2006) tapping the six dimensions of sexual fantasies, sexual behavior, sexual attraction, sexual preference, propensity to fall in love, and actually being in love. Each of these dimensions is assessed across two temporal dimensions: namely past and present. Same and opposite sex interests are assessed as separate parallel independent dimensions as opposed to a single continuous dimension (as is the case with the KSOG). It yields a total of 24 scores (i.e., 12 primary and 12 secondary).

The IRAP assessed responses to the following four categories of items: heterosexual (e.g., 'Straight'); Gay (e.g., 'Gay'); pleasant words (e.g., 'normal,' 'natural,' 'safe,' 'healthy,' 'acceptable' and 'decent') and unpleasant words (e.g., 'abnormal,' 'unnatural,' 'dangerous,' 'sick,' 'unacceptable' and 'offensive'). Thus, the four IRAP trials that were assessed were: Gay/Positive, Gay/Negative, Straight/Positive and Straight/Negative. The task did *not* distinguish target sex and employed verbal stimuli only.

A 20-item version of the Modern Homonegativity Scale (MHS; Morrison and Morrison, 2002) comprising two ten-item sub-scales. The Lesbian women sub-scale (MHS-L) comprised 10-items (e.g., "Lesbian women should stop complaining about the way they are treated in society and simply get on with their lives") and The Gay men sub-scale (MHS-G) comprised 10-items (e.g., "Gay men should stop shoving their lifestyle down other people's throats"). Questions were answered on a 5-point scale ranging from 1 = *strongly disagree*, to 5 = *strongly agree*. NOTE: 10 items, instead of the 12 were used for each subscale.

The 13-item Marlow Crowne Social Desirability Scale Short-Form (Reynolds, 1982). This scale provides a measure of impression management and self deception (e.g., "No matter who I'm talking to, I'm always a good listener." "I sometimes try to get even rather than forgive and forget"). Questions on the scale were answered as either 'True' or 'False.'
 An adapted version of the ten-item Internal and External Motivation to Respond Without Prejudice Scale (cf. Plant and Devine, 1998) that was reworded to reflect prejudice toward gay men and lesbian women. That is, the words 'gay men' and 'lesbian women' were substituted for the word "Blacks" in each of the scale items. Five items pertained to internal motivation (IMS: e.g., "Because of my personal values, I believe that using stereotypes about gay men and lesbian women is wrong") and five pertained to external motivation (EMS: e.g., "I try to act non-prejudiced toward gay men and lesbian women because of pressure from others"). Questions on the scale were answered on a six-point scale ranging from *strongly disagree* to *strongly agree*.
 The 25-item Cognitive Failures Questionnaire (CFQ; Broadbent et al., 1982) a measure of self-reported failures in perception, memory, and motor function (e.g., "Do you fail to notice signposts on the road?"). Questions were answered on a 5-point scale ranging from 4 = *very often* to 0 = *never*.
 Gay, lesbian and bisexual participants completed the eight-item Identification and Involvement in the

Gay Community Scale (see Stokes, McKirnan, and Burzette, 1993). This scale was designed to measure involvement with and perceived closeness to the gay community. Four items focus on the importance of self-identifying as gay, lesbian or bisexual (GLB) and associating with a GLB community. Questions were answered on a 5-point scale ranging from 1 = *do not agree at all*, to 5 = *strongly agree*. Three items tap the frequency with which participants read GLB publications and attend GLB organizations or events. A final item assesses overall number of GLB friends in the participant's social network.

A demographic questionnaire asked questions about a range of demographic and social issues (e.g., age, sex, gender, gender roles, gender identity, religion, political orientation, relationship status, acceptability and purpose of sexual activity, nature and level of contact experiences with gay, lesbian and bisexual people, and perceived causes of homosexuality). Gay, lesbian and bisexual participants completed a specially constructed questionnaire that assessed immersion and involvement in gay culture and self-disclosure patterns.

Results showed that, in general, attitudes toward homosexuality were relatively positive. In Experiment 1, however, implicit and explicit attitudes converged to reveal in-group biases for both groups (i.e., heterosexually- and homosexually-identified participants). Specifically, the IAT correlated moderately with explicit cognitive attitudes toward homosexuality (e.g., “*Male homosexuality is a sickness*” or “*Lesbian women should not work with children or adolescents*”) but strongly with the affective attitudes (e.g., I would feel very uncomfortable if “*I learn that a teacher of my son is gay*” or “*Nearby two lesbians are kissing each other*”). A significant main effect for gender suggested that compared to females, males were more homonegative on each type of measure. A main effect for sexual orientation suggested that compared to gay men and lesbian women, heterosexuals were more explicitly and implicitly homonegative. These main effects, however, were not qualified by a gender x sexual orientation interaction effect. In the second experiment, participants were able to fake a *more* positive explicit but not implicit attitude toward gay men and lesbian women. Neither implicit nor explicit attitudes were influenced by persuasive information. Individuals with a weak motivation to control prejudice showed more homonegativity on both the IAT and the cognitive (but not affective) explicit measure than those who were strongly motivated.

In 2003, German researchers Steffens and Buchner published results from two experiments designed to explore the transituational stability (i.e., test-retest reliability) of the IAT using structural equation modeling. In contrast to Banse et al. the IAT used by Steffens et al. assessed implicit attitudes toward male homosexuality and male-female heterosexuality. IAT responses to the following four categories of items were assessed: heterosexual men and women (e.g., couple names ‘*Michael + Sarah*’), gay men (e.g., couple names ‘*Thomas + Philip*’), pleasant words and unpleasant words. Given their sample (i.e., heterosexual and homosexual men and women), it was assumed that responses would reflect pro-straight/anti-gay attitudes. In addition to the IAT, explicit measures were administered to participants in both experiments. In the first experiment, the IAT was repeated after one week whereas in the second experiment, it was repeated after only 10 minutes. In the latter case, the IAT also was modified to improve test-retest reliability (i.e., more items were presented to participants and the stimuli were altered), but the changes proved to have no effect.

In both experiments, explicit attitudes toward gay men were positive and stable across situations. In contrast, implicit attitudes were negative and unstable. This was confirmed by the test-retest correlation for the explicit attitudes which was significantly higher than the correlation obtained for the implicit attitudes. Correlations between implicit and explicit attitudes were moderate. Specifically, in the first study, implicit attitudes assessed on both the first and second measurement occasions were related to explicit attitudes assessed on both occasions. The correlations between implicit and explicit attitudes slightly improved when both were assessed on the second measurement occasion. Despite a change of explicit measure, the same pattern of correlations was observed in the second study. Excluding the non-heterosexual participants did not change the results of the statistical tests. In summary, these findings were taken to indicate that IAT effects measured at a given time point should not be interpreted as reflecting stable trait-like cognitions.

The review of IAT studies examining implicit homonegativity reveals that in-group biases were *repeatedly* evidenced by heterosexuals but not by non-heterosexuals. Thus, in general, evidence for the known-groups validity of the homosexuality-IAT was provided. In addition, the IAT was shown to be impervious to persuasion and faking, but repeated

administrations revealed that the measure is relatively unstable and, thus, cannot be used to assess individual traits.

THE IAT AND MODERATING VARIABLES

In the first American-based study, Jellison, McConnell, and Gabriel (2004) reported two experiments germane to the work reported by Banse et al. (2001), with the exception that only male participants were used because previous research has shown that homonegativity is more common among men than among women (e.g., Adams, Wright, and Lohr, 1996; Banse et al., 2001). In their first experiment, using a known-groups approach, Jellison et al. (2004) assessed whether implicit and explicit attitudes would: (a) be related; (b) differ as a function of participants' sexual orientation; and (c) predict behaviors relevant to sexual orientation among gay men. The second experiment which employed only heterosexual participants replicated and extended the first experiment by investigating the moderating influence of motivation to control prejudice and traditional gender and identity role norms on the relationship between implicit and explicit homonegativity. The Homosexuality-IAT³ assessed implicit attitudes toward male homosexuality, using a combination of images and verbal stimuli. A modified version of the Homosexuality-IAT was used in their second experiment. In addition to the IAT, explicit attitudes toward male homosexuality were assessed via a range of self-report questionnaires. The gay male participants in Experiment 1, however, completed various behavioral questionnaires constructed to assess immersion in gay culture and self-presentational strategies such as counterfeiting a heterosexual identity or avoiding disclosure of sexual orientation.

Consistent with previous research (e.g., Banse et al., 2001; Steffens and Buchner, 2003), implicit and explicit sexual orientation attitudes were related and differed as a function of participants' sexual orientation. Specifically, significant in-group and relatively strong out-group implicit and explicit biases were produced by both heterosexual and gay male participants. That is, on *all* of the measures, participants produced positive attitudes towards their own sexual orientation in-group and negative attitudes toward their sexual orientation out-group. Interestingly, compared to the gay male participants, the implicit in-group biases were stronger for the heterosexual participants. The measures also predicted separate gay-related behaviors. In particular, implicit attitudes predicted involvement and immersion in gay culture, while explicit attitudes predicted self-disclosure behaviors for gay men.

In the second experiment, the pro-straight implicit and explicit in-group bias was related to endorsements of heterosexual identity and traditional masculine gender roles (Herek, 2002). Contrary to Banse et al. (2001), implicit attitudes were *not* related to motivation to control prejudice.

In the same year, Jost, Banaji and Nosek (2004) analysed the data from heterosexual and gay respondents obtained between March and October 2002, from the Gay-Straight IAT

³ Jellison et al. (2004) actually refer to their IAT as the Sexual Orientation-IAT. However, that IAT was a conceptual replication of the IAT offered by Banse et al. (2001) and, thus, for consistency we refer to it as the Homosexuality-IAT.

tasks⁴ available at <http://tolerance.org>. Their study was undertaken to explore the moderating influence of self-reported conservatism on implicit and explicit homonegativity. The IAT employed a mixture of symbols and words as stimuli.

Results showed that both gay and heterosexual groups produced strong explicit in-group biases but only the heterosexuals produced strong implicit in-group biases. Gay respondents exhibited only a slight implicit in-group bias. In fact, contrary to previous research (e.g., Banse et al., 2001; Jellison et al., 2004), findings indicated that more than a third (37.5%) of gay participants showed an implicit *out-group* bias. Political conservatism was strongly predictive of implicit and explicit *in-group* biases for heterosexual participants. In contrast, political conservatism predicted *out-group* implicit and explicit biases for the gay participants.

One year later, as part of a larger study measuring implicit attitudes to a diverse range of social targets, Nosek, Greenwald and Banaji (2005) analyzed the data from two Gay-Straight IAT tasks available at the same demonstration website (i.e., <http://tolerance.org>). The study sought to assess if subtle shifts in semantic meaning of the exemplars representing the concept category 'Gay' could influence IAT effects. No details pertaining to participant sexual orientation were provided by the researchers. The two IATs, which employed a total of 24 picture and verbal stimulus items, were almost identical with the exception that the emphasis of *two items* representing the category 'Gay' were shifted to emphasize gender (i.e., lesbian women or gay men). All remaining stimuli were held constant across the tasks. Stimulus modality (i.e., pictures or words) was not shown to influence IAT effects. As a result of changing the salience of *only two* of the exemplars, differences in implicit attitudes toward homosexuality emerged between the two IAT tasks. That is, consistent with previous explicit attitude research (e.g., Herek, 1984), implicit homonegativity was stronger when gay men as opposed to lesbian women were emphasized.

Using male and female heterosexual and homosexual students, Steffens (2005) conducted three experiments in Germany to explore implicit and explicit attitudes toward both lesbian women and gay men on *separate* IAT tasks. In the first experiment, half of the participants started with the Lesbian Women-IAT first and half started with the Gay Men-IAT first. In the second study, implicit gender-related attitudes were first assessed via a Gender-Self-Concept IAT. Directly afterwards, males responded to the Gay Men-IAT and females responded to the Lesbian Women-IAT. In the final study, the order of Lesbian and Gay-IATs and Gender-Role-IATs were counterbalanced. In all three studies, implicit attitudes were assessed prior to explicit attitudes. The experiments assessed if implicit and explicit attitudes would: (a) be related; (b) differ as a function of the target (e.g., 'lesbian women' and 'gay men') and participant sexual orientation; and (c) differ as a function of gender related beliefs (Study 2 and 3). Contrary to Nosek et al., the IAT tasks employed verbal stimuli only.

Although attitudes were not extremely negative, heterosexual males repeatedly expressed implicit and explicit in-group biases across the studies (Banse et al., 2001) while females did not. In the first study, both implicit and explicit attitudes toward gay men and lesbian women were related. The correlations, however, were subject to order effects. Specifically, beginning with the Gay Men-IAT resulted in a strong relationship between implicit and explicit attitudes, but this relationship disappeared for participants who completed the Lesbian

⁴ The term "straight" is used here (instead of heterosexual) to maintain consistency with the terminology employed by Jost et al. (2004).

Women-IAT first. Furthermore, sexual orientation was related to implicit attitudes toward gay men but only for participants who had undertaken the Gay Men-IAT first. Finally, a small correlation was observed between sexual orientation (sex was controlled for) and explicit attitudes towards gay men and lesbian women.

In the second study, there were no correlations among the implicit attitudes toward gay men and lesbian woman and implicit gender-related attitudes. Females' implicit attitudes toward lesbian women and explicit gender-related attitudes were related. Sexual orientation was correlated with implicit gender-related attitudes but only for males. That is, males screened as heterosexual more strongly associated self + male on the Gender Self-Concept-IAT.

In the final study, again, no relationships were observed among implicit attitudes toward gay men and lesbian woman and implicit gender-related attitudes. There were, however, correlations between the explicit measures. Specifically, for both genders, explicit attitudes toward gay men and lesbian women were strongly related. In addition, males' explicit attitudes toward working women were related to attitudes toward lesbian women and gay men (the latter correlation was stronger). For females, modern sexism was related to explicit attitudes toward lesbian women and gay men (again, the latter correlation was the stronger of the two). The Lesbian-IAT was moderately related to explicit attitudes towards lesbian women, explicit modern sexism, and explicit gender-related attitudes. The Gay Men-IAT was moderately related to explicit attitudes toward working women. Unlike the first two studies, sexual orientation was unrelated to implicit and explicit attitudes. A combined analysis of the data from all three experiments (controlling for sex) revealed in-group implicit biases for the small number of lesbian and gay participants but interestingly not for bisexual participants.

In another American-based study, the IAT was used to determine to what extent implicit homonegativity is moderated by religious dimensions of personality (Rowatt et al., 2006). The IAT assessed participants' implicit attitudes toward male homosexuality and employed a mixture of images and words as stimuli. In addition, self-reported religious orientation, impression management and attitudes toward homosexuality were assessed. Unfortunately, no details pertaining to participant sexual orientation were provided.

As a group, participants produced a pro-straight/anti-gay bias on both the IAT and the explicit attitudinal measures. Contrary to previous research (e.g., Banse et al., 2001), no sex differences in IAT performance were observed. After controlling for impression management, explicit and implicit attitudes toward homosexuality were weakly correlated. Religious fundamentalism, Christian orthodoxy, right-wing authoritarianism, and impression management predicted both implicit and explicit homonegativity with religious fundamentalism being the strongest predictor.

The following year, the data obtained between 2000 and 2006 from the Gay-Straight IAT tasks available on <http://implicit.harvard.edu> were analyzed as part of a larger demonstration website data analysis of 17 different social targets (Nosek et al., 2007). The research was undertaken to assess if implicit and explicit homonegativity are (a) pervasive across demographic groups; (b) moderated and predicted by inter-individual difference variables (demographic as opposed to psychological); and (c) related constructs. The sexual orientation of the participants was not reported. The IAT and explicit measures were exactly the same as those employed in the Jost et al. (2004) study. The results showed that, in general, implicit and explicit homonegativity are relatively pervasive across demographic groups. Replicating previous studies, the majority (i.e., 68%) of participants showed a pro-straight implicit bias

but only 15% produced a pro-gay implicit bias. Implicit and explicit attitudes to sexual orientation were moderately related. In fact, this was the strongest relationship evidenced across all 17 social group attitudes assessed. In addition, there was considerable inter-individual variability.

Consistent with previous research (for reviews see Herek, 1984; Kelley, 2001; Kite and Whitley, 1996; Weishut, 2000), implicit and explicit attitude relationships were moderated by gender, ethnicity, nationality, political orientation, and age. Specifically, compared with females, males were more implicitly and explicitly homonegative. With regard to ethnicity, white individuals were less homonegative than black individuals. Participants from the U.S. and Asia showed stronger implicit and explicit pro-straight biases than those from Australia, Canada, Europe and the U.K. Politically liberal individuals produced a moderate pro-straight implicit bias but no explicit bias. In contrast, conservatives produced a strong pro-straight bias on both implicit and explicit measures. Interestingly, for liberals, implicit attitude effect magnitudes were stronger than those for explicit attitudes, but the reverse was the case for conservatives. Age moderated the relationship between implicit and explicit attitudes toward homosexuality but not in the usual way (see for example Herek, 1984; Hudson and Ricketts, 1980). Specifically, a curvilinear pattern on both the IAT and the explicit measures showed that older and younger participants produced stronger pro-straight biases than their middle-aged counterparts.

In summary, consistent with previous research using self-reported attitudes toward homosexuality (e.g., Herek, 1984), research has shown that implicit homonegativity is moderated by a range of inter-individual differences (both demographic and psychological). The type of exemplars employed by the IAT also was observed to influence IAT effects. Critically, the IAT was shown to predict gay-related behavior.

FOCUSING ON THE MODERATING EFFECTS OF MOTIVATION

Given the somewhat inconsistent findings observed in previous research regarding the influence of motivation to control implicit homonegativity, the following five studies targeted this issue in particular. The first of these studies (Rohner and Björklund, 2006) assessed implicit and explicit attitudes toward *both* male and female homosexuality with a sample of predominantly heterosexual participants. Motivation to control homonegativity was *directly* as opposed to self-reportedly manipulated using two experimental conditions (i.e., ‘attend to homosexuality’ – socially sensitive; and ‘attend to age’ – less socially sensitive). Specifically, a computerised picture rating measure (PRM) presented images of same and opposite-sex couples to participants who were instructed to rate *each* picture in terms of its positive and negative valence. Instructions were manipulated, such that participants assigned to the ‘attend to homosexuality’ condition were informed that attitudes toward gay and lesbian couples were being assessed. In the ‘attend to age’ condition, participants were told that attitudes towards young and old couples were being investigated. In their second experiment, a known-groups approach was employed to investigate if implicit attitudes, as measured by the IAT from Experiment 1, differed as a function of sexual orientation.

The results of Experiment 1 showed that consistent with previous research, in general an implicit pro-straight/anti-gay bias was produced on the IAT and the PRM. On the PRM,

attending to *homosexuality* as opposed to *age* resulted in a larger number of participants giving negative ratings to same-sex pictures. Picture ratings and explicit attitudes toward homosexuality were strongly related, but the IAT was only weakly correlated with both of these measures. Contradicting the findings of Banse et al. (2001), neither implicit nor explicit attitudes were influenced by motivational intent. The results of Experiment 2 showed that implicit attitudes differed as a function of participant sexual orientation. Specifically, an in-group bias was produced on the IAT by heterosexual participants. In contrast, gay men and lesbian women produced relatively neutral attitudes. Consistent with Rowatt et al. (2006), no sex differences in implicit or explicit attitudes were observed in either of the two experiments.

American researchers, Boysen, Vogel, and Madon (2006), conducted two experiments to explore the moderating influences of situational *and* motivational variables on heterosexual participants' implicit and explicit attitudes toward homosexuality. A modified version of the Banse et al. (2001) IAT was employed to assess implicit attitudes toward *both* lesbian women and gay men. Participants assigned to the '*public assessment condition*' were told that the experimenter would be privy to their IAT and explicit scores. In the '*private assessment condition*' all measures were completed in private and participants were informed that their attitudes toward homosexuality would remain private. Consistent with earlier research, participants generally produced pro-straight in-group biases on the IAT. The bias was reduced by more than half when assessed in the public assessment situation. A similar pattern emerged for the explicit attitudes. That is, in general intolerant attitudes were produced on the Index of Homophobia (Hudson and Ricketts, 1980) *and* on the Heterosexism Scale (Park and Bieschke, 2002). Participants expressed less hostility toward gay men and lesbian women on these explicit measures in the public assessment situation compared to the private assessment situation (the difference was significant for the Heterosexism Scale only). Implicit and explicit attitudes toward gay men and lesbian women were unrelated in the public setting. In the private setting, however, attitudes expressed on the IAT and on the Heterosexism Scale were weakly correlated, but this measure specific effect is not discussed by the authors.

In the second experiment, the participants completed the IAT used in Experiment 1, in a public assessment situation under either a '*bogus pipeline*' or '*no-bogus pipeline*' condition. All participants believed that skin conductance and heart rate would be monitored following completion of the IAT (although none were actually monitored). Participants in the no-bogus pipeline condition believed that this was part of a separate study but those in the bogus pipeline condition believed that the experimenter would have access to their "true" attitudes toward homosexuality. A manipulation check revealed that participants in the latter condition were significantly more nervous than their no-bogus pipeline counterparts. The basic assumption was that participants in the bogus-pipeline condition would not be motivated to manipulate their IAT performance because the "truth" would be revealed by the skin conductance measure; in contrast, participants in the no-bogus pipeline condition would be motivated to the same level as participants in the public condition in Experiment 1. Interestingly, implicit homonegativity was unaffected by the bogus pipeline manipulation. The authors, thus, concluded that the impact of the public setting on the IAT performance occurred via a process that remains outside participants' awareness or voluntary control.

Previous researchers had not distinguished between both internal and external sources of motivation to control prejudice when assessing its influence on implicit homonegativity. Furthermore, the influence of inter-group contact on implicit homonegativity had been a relatively under-studied phenomenon up to this point, with Jellison et al. (2004) reporting an

attenuating effect for heterosexual males but with no data on females. Lemm (2006) was the first to assess the *dual* roles of internal and external sources of motivation *and* inter-group contact on implicit and explicit homonegativity. Implicit and explicit attitudes toward gay males were assessed. Prior to assessing explicit attitudes toward gay men, heterosexual participants' implicit attitudes were assessed via separate counterbalanced IAT tasks. One IAT employed verbal stimuli and another employed picture stimuli.

Replicating the pattern observed in earlier research, generally a strong pro-straight in-group implicit bias was produced on the IAT but not on the explicit measures. Implicit and explicit attitudes were moderately correlated, and the two IATs were strongly correlated. As observed by previous researchers, implicit and explicit attitudes toward homosexuality did not differ significantly between the sexes. Positive implicit and explicit attitudes toward gay men were related to the amount and nature of contact with gay, lesbian, and bisexual individuals. In addition, participants who received direct disclosure of sexual orientation from their closest contacts reported less anti-gay attitudes than those who had not. Explicit and implicit attitudes toward gay men were moderated by self-reported internal but not external motivation to control prejudiced reactions. Participants who had self-reported high internal motivations were significantly less homonegative than those reporting low internal motivations. Amount of contact was weakly related to internal motivation. Motivation (both internal and external), however, was a stronger predictor of implicit and explicit homonegativity than contact.

Dasgupta and Rivera (2006) conducted two experiments to investigate the extent to which the relationship between implicit homonegativity and negative behavior is jointly moderated by: (a) conscious motivation to have egalitarian gender-related attitudes; and (b) conscious control over subtle behaviors. The IAT employed a mixture of pictures and words to assess heterosexuals' implicit attitudes toward gay men. In addition, self-reported attitudes about gender roles and gender identity, and self-reported behavioral control were assessed. Contrary to previous research, explicit attitudes toward homosexuality were not assessed. Finally, behavioral reactions toward either a gay male or heterosexual male confederate were coded. Specifically, six items (adopted from McConnell and Leibold, 2001) were used to code behaviors as positive and negative. In particular, three items (i.e., amount of eye contact, number of smiles, and body posture) focused on specific behaviors observed to occur between the participant and confederate. A further three (i.e., the participant's overall friendliness, apparent comfort, and apparent interest in the interaction with the confederate) focused on global behaviors. The second experiment replicated the first, but used a more diverse sample.

Across the experiments, participants evidenced the in-group implicit biases typically found in implicit homonegativity research. The anti-gay implicit bias worsened, however, in the second experiment. Additionally, self-reported gender-related beliefs were more traditional among males than among females. IAT and gender-related effects were more pronounced both for males and overall in Experiment 2. In the first experiment, both sexes reacted positively toward the confederate irrespective of his perceived sexual orientation. In the second experiment, compared to females, male behavioral reactions toward the gay confederate were more negative. Implicit homonegativity was related to discriminatory behavior among participants who were both *weakly* motivated to be egalitarian and *unable* to control their behavior.

A final IAT study, based in Switzerland, investigated the *joint* moderating effects of situational and person variables on the relationship between implicit attitudes toward gay men and lesbian women and deliberate helping behaviour (Gabriel, Banse, and Hug, 2007). The

IAT, which had been used by Banse et al. (2001), was employed to assess heterosexual men's implicit attitudes toward both lesbian women and gay men. Explicit attitudes toward homosexuality also were measured. Helping behaviour was examined by providing participants with an opportunity to donate money to a local gay organisation and sign a petition. Internal motivation to control homonegativity was assessed both explicitly and experimentally by the absence or presence of an experimenter who sought support for a local gay organisation.

Relationships between implicit and explicit attitudes were weak. The relationship between implicit attitudes toward homosexuality and deliberate helping behaviour was moderated by situational and person variables. More helping behaviour was shown in the public rather than private situation. Individuals who were less internally motivated to control homonegativity showed corresponding implicit and explicit attitudes, while a divergence was shown for highly motivated individuals. Helping behaviour in the public setting only was predicted by implicit attitudes and motivation to control homonegativity. Surprisingly, in the public setting, participants who had more positive implicit attitudes and a strong motivation to control homonegativity showed the least helping behaviour for a gay organisation. The authors explained this result by suggesting that individuals who are both highly motivated to control prejudice and hold pro-gay implicit attitudes may fear appearing pro-gay and, thus, correct their behaviour to appear less so. In contrast, individuals with weak motivations to control prejudiced reactions did not have to correct for perceived bias and thus acted in accordance with their implicit attitudes (cf. the flexible correction model; Wegener and Petty, 1997). The authors recognized, however, that this explanation was post-hoc and that more research was needed to explore further the moderating influence of cognitive variables on the homonegative attitude-behaviour link.

In summary, consistent with previous studies using Homosexuality-IATs, in-group implicit biases were repeatedly produced by heterosexual participants but not by gay and lesbian participants. In addition, results pertaining to the relationship between homonegativity and motivation to be egalitarian were mixed. To illustrate, Rohner and Björklund (2006) and Boysen et al. (2006) reported no relationship between implicit anti-gay attitudes and the motivation to control homonegativity. In contrast, research that distinguished between levels and sources of motivation did show a relationship (e.g., Lemm, 2006). Specifically, a high level of internal motivation to control homonegativity predicted less implicit anti-gay attitudes. Combinations of implicit homonegativity and conscious processes (e.g., behavioural control and weak motivation) also predicted discriminatory behaviour. Overall, therefore, the relationship between implicit homonegativity and helping behaviour were moderated by both motivational (i.e., internal) and situational variables.

SOME INCONSISTENCIES IN THE RESEARCH

A number of inconsistencies were evident across the IAT studies and these will be discussed in turn. The first issue relates to stimulus modality. Specifically, there was wide variability across the studies with regard to the stimuli employed. Some studies used only verbal stimuli, others employed only picture stimuli, and some used a combination of the two. Evidence to suggest that stimulus modality has no effect on implicit attitudes was provided by two of the studies that examined implicit homonegativity using the IAT (Nosek et al., 2005;

Lemm, 2006). In contrast, researchers' investigating other constructs (such as fear of spiders) – but with the EAST – have provided evidence to suggest that picture stimuli activate attitudes more directly than verbal stimuli (e.g., Huijding and de Jong, 2005, 2006).

Furthermore, some studies did not make clear that exemplars representing the category 'gay' were related to homosexuality. For example, *some* participants may have perceived the task to be an assessment of same and opposite-sex friendships and not attitudes toward gay and straight people, thus perhaps reducing the size of the anti-gay effect. A second issue pertains to the target categories. Specifically, many of the studies assessed attitudes towards *both* lesbian women and gay men, while others focussed on attitudes toward gay men *or* lesbian women only. This makes cross-study comparisons difficult. In addition, explicit measures that were compared to implicit measures, varied with regard to their specificity. Some explicit measures required participants to rate "Gay" relative to "Straight," while others required participants to rate "Gay" alone (i.e., not relative to "Straight"). Furthermore, when semantic differentials were used they did not always use the terms employed with the implicit measures. Finally, it appears that many, if not all, of the studies summarized thus far utilized relatively crude measures of sexual orientation. Given that implicit measures are sensitive to group differences it would be important for future studies to use more sensitive multidimensional screens. (Further details on this issue will be provided in a later section of the chapter.)

POSSIBLE ALTERNATIVES TO THE IAT

Evidence in support of the reliability and validity of the IAT as a measure of implicit cognition has been reported across a wide variety of domains (e.g., Fazio and Olson, 2003; Nosek et al., 2002). A number of limitations inherent in the measure, however, have been identified (see Arkes and Tetlock, 2004; Blanton and Jaccard, 2006; Blanton, Jaccard, Gonzales, and Christie, 2006; Cunningham, Preacher, and Banaji, 2001; De Houwer, 2002; Fiedler, Messner, and Bluemke, 2006; Nosek and Sriram, 2007). Two limitations, in particular, will be discussed. The first is that the IAT provides a measure of *relative* associative strength and, thus, cannot be used to measure the valence of individual concepts (De Houwer, 2002; Nosek et al., 2005). The second limitation concerns the fact that the IAT provides a relatively *indirect* measure of implicit attitudes.

The IAT provides a relativistic measure because each trial involves presenting both of the relevant categories, such as *Gay* and *Straight*. Thus, the IAT effect is based on responses that occur in the context of both categories, rather than each independently. As a result, a pro-straight/anti-gay IAT effect could indicate that a participant has a positive attitude to "Straight" and a neutral attitude to "Gay", or it could indicate a neutral attitude to "Straight" and a negative attitude to "Gay". The IAT can indicate that x is preferred to y, but it cannot reveal to what extent x and y are liked or disliked, *per se*. The three studies outlined subsequently offer alternatives to the IAT as a methodology for the assessment of implicit homonegativity.

The EAST. In order to circumvent the relativistic nature of the IAT, the EAST (De Houwer, 2003) was developed to assess implicit attitudes toward individual concepts. Unlike the IAT, the EAST is based on a comparison of performance on trials within a single task rather than on a comparison of performances on different tasks. On some trials, white words

are presented while on other trials the words are coloured green or blue. Participants are required to press a key in response to the meaning of white words (e.g., left = positive, right = negative) and the colour of the green and blue words (e.g., left = green, right = blue). The premise is that responses become extrinsically associated with positive or negative valence. Thus, responses should be faster when a positive word is presented in green (the positive colour) rather than blue (the negative colour). Similarly, responses should be faster when a negative word is presented in blue rather than green. In other words, performance should be superior on trials in which participants are required to categorize colored positive words positively and colored negative words negatively.

Recently, a Belgian study employed a known-groups approach to: (a) test the validity of the EAST and the IAT; and (b) determine if implicit homonegativity as measured by the EAST and IAT differed as a function of participant sexual orientation (De Houwer and De Bruyckner, 2007b; Experiment 3). The IAT used was a conceptual replication of the IAT developed by Banse et al. (2001), with the exception that photographs were replaced by word stimuli. Thus, implicit attitudes toward *both* male and female homosexuality were assessed. The terms that had been employed in the IAT were retained for use in the EAST, with the exception that the targets '*homosexual*' and '*heterosexual*' were replaced by the terms '*hetero*,' '*gay*,' '*lesbian*,' and the neutral stimulus, '#####.' Explicit cognitive and affective attitudes toward homosexuality also were assessed.

Implicit attitudes as measured by the IAT, but *not* the EAST, differed as a function of participant sexual orientation. Specifically, both groups produced in-group implicit biases on the IAT. Furthermore, on the explicit measures, gay men and lesbian women reported more positive attitudes toward homosexuality than did heterosexual participants. Consistent with Banse et al. (2001), the IAT correlated weakly with explicit cognitive attitudes toward homosexuality but strongly with affective attitudes, suggesting that the IAT captures spontaneous or evaluative "gut reactions". These results provided support for the validity of the IAT, while the EAST failed its challenge to offer an alternative measure of implicit homonegativity. (However, it should be noted that recent research suggests a modified EAST procedure may prove to be more sensitive; De Houwer and De Bruycker, 2007a).

Sequential priming. Another alternative to the IAT, which has been offered recently, is the Sequential Priming Procedure. Similar to the EAST, it does not share the IAT's limitation of being a relativistic measure because evaluations of target stimuli are based upon associations between the target stimulus and its preceding prime alone. Only one published study has employed sequential priming as a measure of implicit attitudes to homosexuality (Meir, Robinson, Gaither, and Heinert, 2006). Specifically, these authors developed the procedure to assess: (a) the moderating influence of self-deception on heterosexual males' implicit attitudes toward gay men; and (b) implicit cognitive reactivity to images of gay sexual activity.

In the Sequential Priming Procedure, heterosexual males were presented with a prime stimulus followed by a reaction-time measurement of their target stimulus evaluations. There were two categories of primes (i.e., A = images of clothed or semi-clothed gay couples in sexual poses and B = images of neutral objects such as a chair or a lamp). A single prime was presented on each trial. Participants were invited to categorize the primes vocally as either "Gay" or "Neutral" with both speed and accuracy. Immediately following the prime categorizations, a positive (e.g., "great," "good") or negative (e.g., "awful," "bad") target word appeared on the screen. Participants were instructed to categorize the words as

'positive' or 'negative,' again with speed and accuracy, by pressing the appropriate response key. Reaction times were assessed on the basis of four conditions: gay/positive, gay/negative, neutral/positive, and neutral/negative. If presentation of the gay prime resulted in faster categorizations of positive as opposed to negative target words, this was assumed to indicate that the participant had a positive bias toward the gay prime. In contrast, if the gay prime resulted in faster categorizations of negative rather than positive targets, this was assumed to be evidence of a negative bias toward the gay prime. Participants also were exposed to a picture viewing-time task that measured time spent viewing images of gay and heterosexual sex. Self-deception and attitudes toward homosexuality were assessed via self-report questionnaires.

Consistent with research using the IAT for the assessment of implicit homonegativity, participants generally produced implicit and explicit in-group biases. Additionally, implicit and explicit anti-gay biases were evident in participants who were high (as opposed to low) in self-deception. Participants who were both high in self-deception and explicitly anti-gay spent less time viewing images of gay sex in the viewing-time task in comparison to those reporting low levels of self-deception. The findings suggest that anti-gay individuals with high levels of self-deception react to images of gay sex in a *homophobic* aversive and avoidant manner. In contrast, anti-gay individuals with low levels of self-deception react to such images in a sexually prejudiced manner (c.f. Herek, 2000) that manifests as a general discomfort and condemnation of gay sex as opposed to extreme phobic aversion and avoidance.

The Implicit Relational Assessment Procedure. As noted previously, a second possible limitation to the IAT (and, indeed, the EAST and Sequential Priming), is that it provides a relatively *indirect* measure of implicit attitudes. In noting the indirect nature of the IAT, for example, De Houwer (2002) argued that:

. . . [it] does not provide a measure of beliefs, nor was it designed to do so. It can only provide an index of associations that are assumed to be involved in certain beliefs and thus indirect evidence for the presence of certain beliefs (pp. 117-118).

Thus, if a methodology such as the IAT indicates that 'Gay' and negative words are strongly associated, it then is inferred that such implicit associations underlie negative attitudes about gay people. Although such an inference seems reasonable, it is prudent to develop additional methodologies that aim to provide relatively direct measures of implicit cognition. One such methodology has recently been offered: the Implicit Relational Assessment Procedure (IRAP; Barnes-Holmes, Barnes-Holmes, Power, Hayden, Milne, and Stewart, 2006, Barnes-Holmes, Hayden, Barnes-Holmes, and Stewart, in press; McKenna, Barnes-Holmes, Barnes-Holmes, and Stewart, 2007). It is theorized that the IRAP's structure may permit a more fine-grained assessment of implicit homonegativity than that afforded by the IAT.

The IRAP was developed from a modern behavioral theory of human language and cognition, **known as** Relational Frame Theory (RFT; Hayes, Barnes-Holmes and Roche, 2001). According to RFT, the core elements of human cognition are relational acts. Unlike the IAT (and EAST and Sequential Priming), *each* trial of the IRAP asks participants to confirm or deny a specific attitude or belief by responding to a previously established verbal relation between a sample stimulus and a target term (e.g., Gay – Normal = Similar or Opposite?).

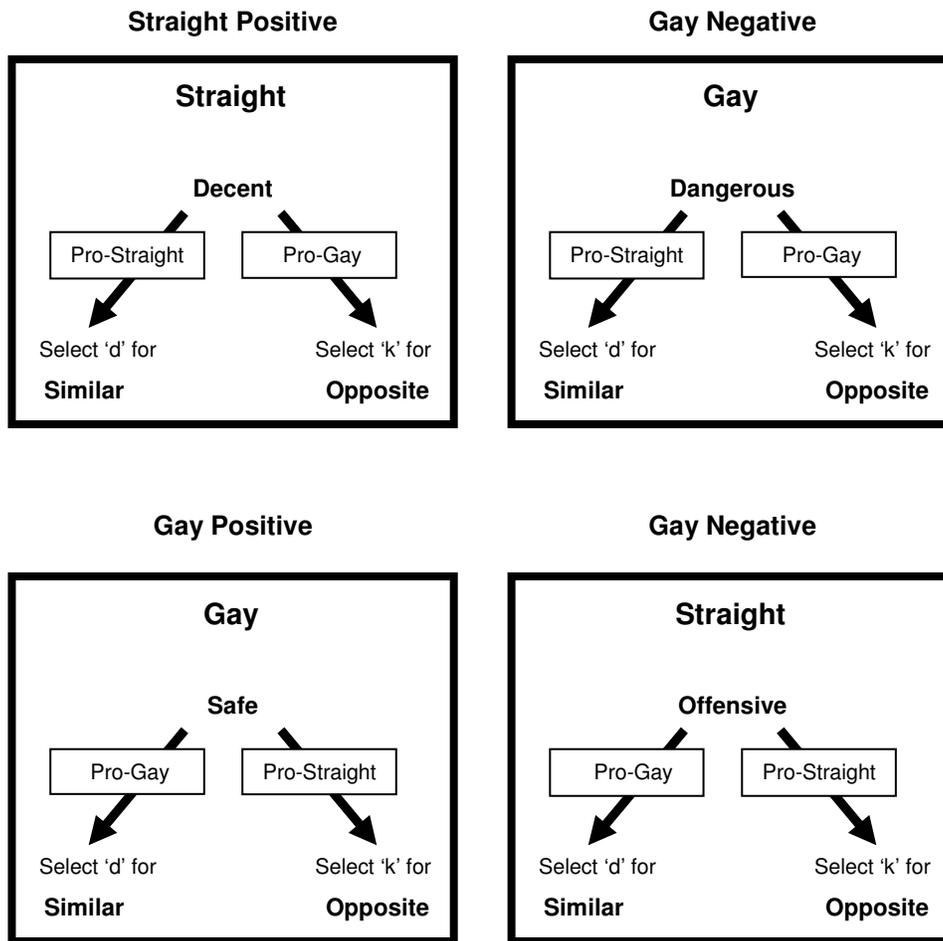


Figure 1. Examples of the four IRAP trial-types. The sample (“Straight” or “Gay”), target word (Safe, offensive, etc.) and response options (Similar and Opposite) appeared simultaneously on each trial. Arrows with superimposed text boxes indicate which responses were deemed pro-straight or pro-gay (boxes and arrows did not appear on screen). Selecting the pro-straight response option during a pro-straight block, or the pro-gay option during a pro-gay block, cleared the screen for 400 ms before the next trial was presented; if the pro-gay option was chosen during a pro-straight block, or the pro-straight option during a pro-gay block, a red X appeared on screen until the participant emitted the alternative response.

In brief, the IRAP requires participants to respond quickly and accurately in ways that are either consistent or inconsistent with their putative attitudes. Theoretically, it is assumed that overt relational responses defined as consistent on the IRAP will be preceded by incipient or private responses that occur at a higher probability than those responses defined as inconsistent; the probability of such responses is assumed to be determined by historical and current contextual variables.

Its basic rationale is that participants should respond more quickly on tasks that reflect their attitudes (i.e., pro-straight or pro-gay attitudes) than on tasks that do not because incipient relational responding will coordinate more frequently with the consistent overt responding. In other words, during inconsistent trials participants’ responding is expected to

be slower, as they respond against their more probable incipient relational responses. The extent of the observed difference between pro-straight and pro-gay trials is assumed to provide a *direct* index of the strength of the specific attitude being assessed.

An important feature of the IRAP, in the context of providing an alternative measure of implicit homonegativity to that offered by the IAT, is the fact that it consists of four trial-types (see below), and this structure may permit the assessment of specific, rather than relative implicit responses. In a very recent and currently unpublished IRAP study, for example, a known-groups approach was employed to determine if explicit and implicit attitudes toward homosexuality would: (a) be related; and (b) differ as a function of participants' sexual orientation (Cullen, Barnes-Holmes, Barnes-Holmes, and Stewart, 2007). The IRAP presented one of two sample stimuli (e.g., 'Straight' or 'Gay'). Additionally, two sets of target stimuli were presented; one comprised negative stereotypical terms for gay people (e.g., 'abnormal,' or 'dangerous') and the other set comprised positive stereotypical terms for straight people (e.g., 'normal,' or 'safe'). Each set of target terms was presented with each sample. Thus, four different trial-types were created (see Figure 1). The fact that the two categories ('Gay' and 'Straight') were presented on separate trials with just one target permits a less relativistic measure of implicit responses to those categories than that provided by the IAT (which presents both categories on each trial during the critical test blocks). Participants were required to respond as quickly and accurately as possible to the relation between the sample and target by pressing the appropriate response key in order to choose one of the two relational terms (e.g., 'Similar' or 'Opposite'). In addition to the IRAP, the Modern Homonegativity Scale (MHS; Morrison and Morrison, 2002), assessed self-reported attitudes toward lesbian women and gay men. Consistent with the theoretical positions of both Klein, Sepekoff, and Wolf (1985) and Alderson and Orzeck (2006), sexual orientation was conceptualized as multi-variate and dynamic, and was assessed using two multi-dimensional measures.⁵

The raw latency data were transformed using an adaptation of the D-algorithm developed by Greenwald, Nosek, and Banaji (2003) to control for individual variations in speed of responding that may act as a possible confound when analyzing between-group differences. Specifically, (1) only response latency data from test-blocks were used; (2) latencies above 10,000ms were eliminated from the dataset; (3) the data for participants for whom more than 10% of test-block trials had latencies less than 300ms were eliminated; (4) twelve standard deviations for the four trial-types (i.e., four for the response latencies from test blocks 1 and 2, test blocks 3 and 4, and test blocks 5 and 6) were computed; (5) twenty-four mean latencies for the four trial-types in each test-block were computed; (6) difference scores for each of the four trial-types, for each pair of test-blocks were computed by subtracting the mean latency of the consistent test-block from the mean latency of the corresponding inconsistent test-block; (7) each difference score was divided by its corresponding standard deviation (from step 4), yielding 12 D-IRAP scores, one score for each trial-type for each pair of test-blocks; (8) four overall trial-type D-IRAP scores were calculated by averaging the three scores for each trial-type across the three pairs of test blocks.

⁵ We do not believe that our statistical analysis (i.e., collapsing scores into a dichotomy of heterosexual and non-heterosexual) alters our conceptualization of sexual orientation. Using two different samples, Weinrich et al. (1993) found that all 21 items of the KSOG loaded onto the first orthogonal factor with the implication that little injury results from reducing the grid to a single number called sexual orientation.

Initial results for each of the four IRAP trial-types are presented in Figure 2.⁶ Specifically, on the IRAP, both groups responded more quickly when confirming rather than denying ‘Straight-Positive’ and ‘Gay-Positive’ belief-statements. Furthermore, both groups responded more quickly when denying rather than confirming ‘Straight-Negative’ statements.

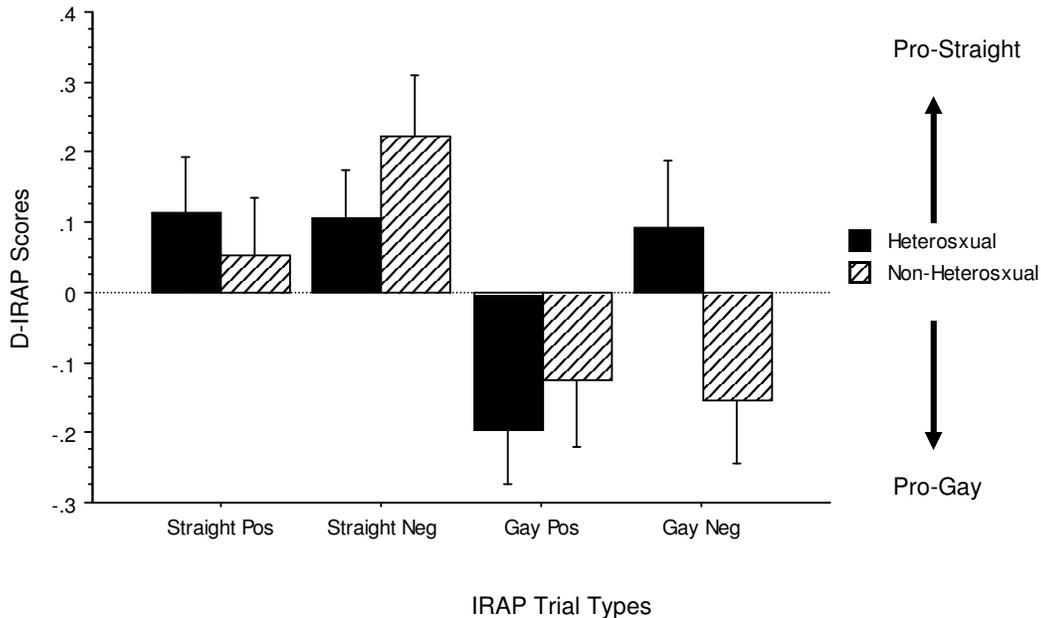


Figure 2. Overall mean adjusted D-IRAP scores for the Heterosexual and Non-Heterosexual groups with respect to the four IRAP trial-types. On the graph positive D-IRAP scores reflect a pro-straight implicit bias and negative D-IRAP scores reflect a pro-gay bias. The zero-point reflects no bias. Both heterosexual and non-heterosexual groups confirmed ‘Straight-Positive’ belief statements (e.g., Straight – Safe = True) more quickly than they denied them (Straight – Safe = False). The heterosexual group confirmed them faster than the non-heterosexual group. Both groups denied ‘Straight-Negative’ belief statements (e.g., Straight – Dangerous = False) faster than they confirmed them (e.g., responding ‘True’), but this time the non-heterosexual group denied the statements more quickly than the heterosexual group. The two groups confirmed ‘Gay-Positive’ statements (e.g., Gay – Safe = True) faster than they denied them (e.g., responding ‘False’). The heterosexual group did so, faster than the non-heterosexual group. The groups diverged when responding to ‘Gay-Negative’ IRAP statements (e.g., Gay – Dangerous = True). Specifically, the heterosexual group confirmed the statements (by responding ‘True’ faster than responding ‘False’) but the non-heterosexual group denied them (by responding ‘False’ faster than ‘True’).

Critically, however, the groups diverged when responding to ‘Gay-Negative’ trial-types. Specifically, the heterosexual group confirmed the statements more quickly (positive D-score) than the non-heterosexual group who denied them more quickly (negative D-score). Although the data set are not yet complete, it is worth noting that only this final Gay-Negative trial type produces a group difference that approaches significance ($p = .07$).

⁶ At the time of writing, data collection was incomplete and thus the analyses are preliminary.

The IRAP data are broadly consistent with the results of other studies (e.g., Jost, et al., 2004; Rohner and Björklund, 2006), in that the only evidence of implicit out-group prejudice was observed for the heterosexuals (but only on one trial-type). The fact that this effect only emerged for the Gay-Negative trial-type could be seen as consistent with recent evidence that suggests the influence of a negativity bias in attitude formation (cf. Kunda, 1999). That is, when negatively valenced stimuli are presented with “Gay,” this serves to activate an implicit anti-gay bias, which is not observed when positively valenced stimuli are presented. This result could have some interesting implications to which we will return subsequently.

On the Modern Homonegativity Scale, self-reported attitudes toward gay men and lesbian women were not positive. In addition, significant between-group differences emerged. Specifically, heterosexual participants reported more homonegative attitudes toward both gay men and lesbian women compared to the attitudes reported by non-heterosexuals. Both groups’ self-reported attitudes toward gay men were more negative than attitudes toward lesbian women. Consistent with previous research (e.g., Rohner and Björklund, 2006), there were no significant correlations between the implicit and explicit measures.

In summary, heterosexual in-group implicit biases were produced on the Sequential Priming Procedure, the IRAP and the IAT but not on the EAST. Critically, the IRAP replicated the implicit effects reported in previous studies even though participants were required to respond directly to relatively blunt “belief-statements” about human sexuality (e.g., Gay – Dangerous – Similar).

Before concluding, two general issues arising from the current review seem important.

Failures to conceptually and operationally define sexual orientation. Despite attempts to investigate known-group validity, many researchers failed to operationally and conceptually define participant sexual orientation. In order to better test this form of validation, future researchers should include such definitions. Some of the studies reviewed here *did* employ a single-dimension self-identification assessment of sexual orientation (e.g., on a Kinsey-type bipolar scale). However, this method has been criticized as an over-simplification, with many researchers (e.g., Chung, and Katayama, 1996; Coleman, 1987; Klein, et al., 1985; Storms, 1980) arguing that self-identification fails to consider other relevant dimensions. Given the lack of consensus in the literature (cf. Berkey, Perelman-Hall, and Kurdek, 1990), we *cannot* make a ‘definitive’ recommendation regarding the ‘best’ measure for the assessment of sexual orientation. Nevertheless, it appears that multi-dimensional measures offer more conceptual complexity than self-identification measures.

Relationship between implicit and explicit attitudes. Within the domain of prejudice, a divergence between performance on implicit and explicit attitude measures has been viewed as evidence to support the theoretical distinctiveness of implicit and explicit cognitions (e.g., Greenwald and Banaji, 1995; Greenwald, et al., 1998). A majority of the studies reviewed here, revealed diverging and weak relationships between implicit and explicit attitude measures. Interestingly, however, a number of medium to strong relationships also were observed. Although the findings appear contradictory, two types of variables (i.e., individual difference variables and procedural variables) may help to explain the conditions under which implicit and explicit attitudes are related.

First, attention was focussed, across studies, on the role of one individual difference variable in particular (i.e., motivation). When participants were *internally* motivated to control their prejudice (e.g., Lemm, 2006) at a *low* level (e.g., Banse et al., 2001), implicit and explicit attitudes were shown to correlate. Conversely, when participants were *internally*

motivated but at a *high* level, implicit and explicit attitudes diverged (e.g., Gabriel et al., 2007). Second, the procedural variable that may account for the presence or absence of a relationship between implicit and explicit attitudes is the type of explicit or implicit measure employed. Consistent with the view that implicit measures tap affective or evaluative cognitions (e.g., Wilson et al., 2000), strong relationships between explicit *affective* and implicit attitudes were observed (e.g., Banse et al., 2001). Relationships between implicit and explicit attitudes were shown only in studies that employed the IAT as a measure of implicit homonegativity, whereas studies that employed the EAST, the Sequential Priming Procedure and the IRAP showed weak and diverging relationships.

DISCUSSION

In general, implicit attitudes as measured by the IAT, the Sequential Priming Procedure and the IRAP (but not the EAST) differed as a function of group status. Heterosexual in-group implicit biases were repeatedly shown. Non-heterosexuals repeatedly produced responses on implicit measures that failed to indicate a strong in- or out-group bias. In contrast, both groups produced in-group biases on the explicit measures. Implicit and explicit attitudes toward homosexuality were moderated by a range of interpersonal, situational and procedural variables. Support for the theoretical distinctiveness of implicit and explicit attitudes was provided, such that the majority of studies showed weak and diverging implicit-explicit attitude relationships. Moreover, implicit attitudes predicted commonly practiced behaviors relevant to sexual orientation among gay men (e.g., immersion in gay culture) whereas explicit attitudes predicted behaviours that require deliberation such as the decision to disclose one's sexual orientation and the nature of that disclosure (e.g., Jellison et al., 2004). The IAT was shown to be impervious to faking, but test-retest correlations were low. Additional analyses of the IRAP, EAST and Sequential Priming Procedure's reliability and validity are needed. Furthermore, additional analyses will be needed to test the controllability of these measures and their vulnerability to motivational influences (but see McKenna, et al. [2007] for evidence that the IRAP is resistant to faking).

Despite trends in the polls suggesting that attitudes towards homosexuality have become more liberal in recent times, heterosexual in-group implicit biases (though not *extremely* anti-gay) paint a rather different picture. It may not be 'politically correct' to outwardly express negativity toward gay men and lesbian women; however, implicit homonegative attitudes may manifest themselves in situations where relative judgements are required (e.g., considering a gay versus straight candidate for a job promotion). Indeed, the "negativity bias" observed with the IRAP suggests that vigilance in this area is particularly important. In the job promotion scenario, for example, if a gay man or lesbian woman (but *not* a heterosexual man or woman) exhibits even a *single* behaviour perceived to be negative, then he or she may become a casualty of both an out-group prejudice (assuming that the interviewer is heterosexual) and a negativity bias. Interventionists would do well to encourage people to *be aware* that despite self reported positive feelings toward gay men and lesbian women, they may be more sensitive to negative characteristics present in a gay rather than straight individual. In any case, there is clear evidence for in-group heterosexual "pride" and out-

group “prejudice” using both implicit and explicit attitude measures, and thus any perceived liberalisation of views within this area should be treated with caution.

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REFERENCES

- Adams, H. E., Wright, L. W., and Lohr, B. A. (1996). Is homophobia associated with homosexual arousal? *Journal of Abnormal Psychology, 10*, 440-445.
- Alderson, K., and Orzeck, T. (2006, June 9). *Sexual orientation: What is it and how do we measure it?* Presentation at the Canadian Psychological Association Annual Convention, Calgary, Alberta, Canada.
- Altemeyer, B. (2001). Changes in attitudes towards homosexuals. *Journal of Homosexuality, 42*, 63-75.
- Altemeyer, B., and Hunsberger, B. (1992). Authoritarianism, religious fundamentalism, quest, and prejudice. *International Journal for the Psychology of Religion, 2*, 113-133.
- Arkes, H. R., and Tetlock, P. E. (2004). Attributions of implicit prejudice, or “Would Jesse Jackson ‘fail’ the Implicit Association Test? *Psychological Inquiry, 13*, 257-278.
- Banse, R., Seise, J., and Zerbes, N. (2001). Implicit attitudes toward homosexuality: Reliability, validity, and controllability of the IAT. *Zeitschrift für Experimentelle Psychologie, 48*, 145-160.
- Barnes-Holmes, D., Barnes-Holmes, Y., Power, P., Hayden, E., Milne, R., and Stewart, I. (2006). Do you really know what you believe? Developing the Implicit Relational Assessment Procedure (IRAP) as a direct measure of implicit beliefs. *The Irish Psychologist, 32*, 169-177.
- Barnes-Holmes, D., Hayden, E., Barnes-Holmes, and Stewart, I. (in press). The Implicit Relational Assessment Procedure (IRAP) as a response-time and event-related-potentials methodology for testing natural verbal relations: A preliminary study. *The Psychological Record*.
- Berkey, B. R., Perelman-Hall, T., and Kurdek, L. A. (1990). The multidimensional scale of sexuality. *Journal of Homosexuality, 19*, 67-87.
- Blanton, H., and Jaccard, J. (2006). Arbitrary metrics in psychology. *American Psychologist, 61*, 27-41.
- Blanton, H., and Jaccard, J., Gonzales, P. M., and Christie, C. (2006). Decoding the Implicit Association Test: Implications for criterion prediction. *Journal of Experimental Social Psychology, 42*, 192-212.
- Bosson, J. K., Swann, W. B., and Pennebaker, J. W. (2000). Stalking the perfect measure of implicit self-esteem: The blind men and the elephant revisited? *Journal of Personality and Social Psychology, 79*, 631-643.

- Boysen, G. A., Vogel, D. L., and Madon, S. (2006). A public versus private administration of the Implicit Association Test. *European Journal of Social Psychology, 36*, 845-856.
- Broadbent, D. E., Cooper, P.F., FitzGerald, P., and Parkes, K. R. (1982). The Cognitive Failures Questionnaire (CFQ) and its correlates. *British Journal of Clinical Psychology, 21*, 1-16.
- Chung, B. Y., and Katayama, M. (1996). Assessment of sexual orientation in lesbian/gay/bisexual studies. *Journal of Homosexuality, 30*, 49-62.
- Coleman, E. (1987). Assessment of sexual orientation. *Journal of Homosexuality, 14*, 9-24.
- Crowne, D. P., and Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*, 349-354.
- Cullen, C., Barnes-Holmes, D., Barnes-Holmes, Y., and Stewart, I. (2007, May). *Implicit Relational Assessment Procedure (IRAP) and the malleability of negative attitudes to sexual orientation*. Paper presented at the Annual Convention for the Association of Behavior Analysis International, San Diego, CA.
- Cunningham, W. A., Preacher, K. J., and Banaji, M. R. (2001). Implicit attitude measures: Consistency, stability, and convergent validity. *Psychological Science, 12*, 163-170.
- Dambrun, M., and Guimond, S. (2004). Implicit and explicit measures of prejudice and stereotyping: Do they assess the same underlying knowledge structure? *European Journal of Social Psychology, 34*, 663-676.
- Dasgupta, N., and Greenwald, A. G. (2001). On the malleability of automatic attitudes: Combating automatic prejudice with images of admired and disliked individuals. *Journal of Personality and Social Psychology, 81*, 800-814.
- Dasgupta, N., and Rivera, L. M. (2006). From automatic antigay prejudice to behavior: The moderating role of conscious beliefs about gender and behavioral control. *Journal of Personality and Social Psychology, 91*, 268-280.
- De Houwer, J. (2002). The Implicit Association Test as a tool for studying dysfunctional associations in psychopathology: Strengths and limitations. *Journal of Behavior Therapy and Experimental Psychiatry, 33*, 115-133.
- De Houwer, J. (2003). The Extrinsic Affective Simon task. *Experimental Psychology, 50*, 77-85.
- De Houwer, J. (2006). What are implicit attitudes and why are we using them? In R. W. Wiers, and A. W. Stacy (Eds.). *The handbook of implicit cognition and addiction* (pp. 11-28). Thousand Oaks, CA: Sage Publishers.
- De Houwer, J., and De Bruycker, E. (2007a). The identification-EAST as a valid measure of implicit attitudes toward alcohol-related stimuli. *Journal of Behavior Therapy and Experimental Psychiatry, 38*, 133-143.
- De Houwer, J., and De Bruycker, E. (2007b). The Implicit Association Test outperforms the Extrinsic Affective Simon Task as an implicit measure of interindividual differences in attitudes. *British Journal of Social Psychology, 46*, 401-421.
- de Jong, P. (2002). Implicit self-esteem and social anxiety: Differential self-positivity effects in high and low anxious individuals. *Behaviour Research and Therapy, 40*, 501-508.
- Dunton, B. C., and Fazio, R. H. (1997). An individual difference measure of motivation to control prejudiced reactions. *Personality and Social Psychology Bulletin, 23*, 316-326.
- Eckes, T., and Six-Materna, I. (1998). Leugnung von Diskriminierung: Eine Skala zur Erfassung des modernen Sexismus (Denial of discrimination: A scale measuring modern sexism). *Zeitschrift für Sozialpsychologie, 29*, 224-238.

- Fazio, R. H. (1995). Attitudes as object-evaluation associations: Determinants, consequences, and correlates of attitude accessibility. In R. E. Petty and J. A. Krosnick (Eds.), *Attitude strength, antecedents and consequences* (pp. 247-282). Mahwah, NJ: Lawrence Erlbaum Associates.
- Fazio, R. H., and Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual Review of Psychology*, *54*, 297-327.
- Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., and Kardes, F. R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology*, *50*, 229-238.
- Fiedler, K., Messner, C., and Bluemke, M. (2006). Unresolved problems with the "I," the "A," and the "T": A logical and psychometric critique of the Implicit Association Test (IAT). *European Review of Social Psychology*, *17*, 74-147.
- Foucault, M. (1967). *Madness and civilization*. Oxon: Tavistock Publications
- Gabriel, U., Banse, R., and Hug, F. (2007). The prediction of private and public helping behavior by implicit attitudes and the motivation to control prejudiced behavior. *British Journal of Social Psychology*, *46*, 363-382.
- Gemar, M. C., Segal, Z. V., Sagrati, S., and Kennedy, S. J. (2001). Mood-induced changes on the Implicit Association Test in recovered depressed patients. *Journal of Abnormal Psychology*, *110*, 282-289.
- Greenwald, A. G., and Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review*, *102*, 4-27.
- Greenwald, A. G., McGhee, D. E., and Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, *74*, 1464-1480.
- Greenwald, A. G., Nosek, B. A., and Banaji, M. R. (2003). Understanding and using the Implicit Association Test: 1. An improved scoring algorithm. *Journal of Personality and Social Psychology*, *85*, 197-216.
- Greenwald, A. G., Nosek, B. A., Banaji, M. R., and Klauer, K. C. (2005). Validity of the salience asymmetry interpretation of the Implicit Association Test: Comment on Rothermund and Wentura (2004). *Journal of Experimental Psychology: General*, *134*, 420-425.
- Hayes, S. C., Barnes-Holmes, D., and Roche, B. (2001). *Relational Frame Theory: A post-Skinnerian account of human language and cognition*. New York: Plenum.
- Herek, G. M. (2002). Gender gaps in public opinion about gay men and lesbians. *Public Opinion Quarterly*, *66*, 40-66.
- Herek, G. M. (2000). The psychology of sexual prejudice. *Current Directions in Psychological Science*, *9*, 19-22.
- Herek, G. M. (1994). Assessing attitudes toward lesbians and gay men: A review of empirical research with the ATLG scale. In B. Greene and G. M. Herek (Eds.), *Lesbian and gay psychology: Theory, research, and clinical applications* (pp. 206-228). Thousand Oaks, CA: Sage.
- Herek, G. M. (1988). Heterosexuals' attitudes toward lesbians and gay men: Correlates and gender differences. *Journal of Sex Research*, *25*, 451-477.
- Herek, G. M. (1984). Attitudes toward lesbians and gay men: A factor-analytic study. *Journal of Homosexuality*, *10*, 39-51.
- Herek, G. M., and Capitano, J. P. (1995). Black heterosexuals' attitudes toward lesbians and gay men in the United States. *Journal of Sex Research*, *32*, 95-105.

- Herek, G. M., Kimmel, D. C., Amaro, H., and Melton, G. B. (1991). Avoiding heterosexual bias in psychological research. *American Psychologist*, 46, 957-963.
- Hicks, G. R., and Lee, T. (2006). Public attitudes toward gays and lesbians: Trends and predictors. *Journal of Homosexuality*, 51, 57-78.
- Hudson, W. W., and Ricketts, W. A. (1980). A strategy for the measurement of homophobia. *Journal of Homosexuality*, 5, 357-372.
- Huijding, J., and de Jong, P. J. (2005). A pictorial version of the Extrinsic Affective Simon Task: Sensitivity to generally affective and phobia-relevant stimuli in high and low spider fearful individuals. *Experimental Psychology*, 52, 289-295.
- Huijding, J., and de Jong, P. J. (2006). Specific predictive power of implicit associations for automatic fear behavior. *Behavior, Research and Therapy*, 44, 161-176.
- Hunsberger, B. (1989). A short version of the Christian orthodoxy scale. *Journal for the Scientific Study of Religion*, 28, 360-365.
- Jellison, W. A., McConnell, A. R., and Gabriel, S. (2004). Implicit and explicit measures of sexual orientation attitudes: Ingroup preferences and related behaviours and beliefs among gay and straight men. *Personality and Social Psychology Bulletin*, 30, 629-642.
- Jost, J. T., Banaji, M. R., and Nosek, B.A. (2004). A decade of system justification theory: Accumulated evidence of conscious and unconscious bolstering of the status quo. *Political Psychology*, 25, 881-918.
- Kelley, J. (2001). Attitudes toward homosexuality in 29 nations. *Australian Social Monitor*, 4, 15-22.
- Kite, M. E., and Whitley, B. E., Jr. (1996). Sex differences in attitudes toward homosexual persons, behaviors, and civil rights: A meta-analysis. *Personality and Social Psychology Bulletin*, 22, 336-353.
- Klein, F., Sepekoff, B., and Wolf, T. J. (1985). Sexual orientation: A multi-variable dynamic process. In F. Klein and T. J. Wolf (Eds.), *Bisexualities: Theory and research*. (pp. 35-49). Binghamton, NY: Haworth Press.
- Kunda, Z. (1999). *Social cognition: Making sense of people*. Cambridge, MA: MIT Press.
- Larson, K. S., Reed, M., and Hoffman, S. (1980). Attitudes of heterosexuals toward homosexuals: A Likert-type scale and construct validity. *Journal of Sex Research*, 16, 245-257.
- Lemm, K. M. (2006). Positive associations among interpersonal contact, motivation, and implicit and explicit attitudes toward gay men. *Journal of Homosexuality*, 51, 79-100.
- Levitt, E. E., and Klassen, A. D. (1974). Public attitudes toward homosexuality: Part of the 1970 national survey by the Institute for Sex Research. *Journal of Homosexuality*, 1, 29-43.
- Loftus, J. (2001). America's liberalization in attitudes toward homosexuality, 1973 to 1998. *American Sociological Review*, 66, 762-782.
- Luhtanen, R., and Crocker, J. (1992). A collective self-esteem scale: Self evaluation of one's social identity. *Personality and Social Psychology Bulletin*, 18, 302-318.
- Masters, W. H., Johnson, V. E., and Kolodny, R. C. (1995). *Human sexuality*. New York: Addison-Wesley Longman Publishers.
- McConnell, A. R., and Leibold, J. M. (2001). Relations among the Implicit Association Test, discriminatory behavior, and explicit measures. *Journal of Experimental Social Psychology*, 37, 435-442.

- McKenna, I. M., Barnes-Holmes, D., Barnes-Holmes, Y., and Stewart, I. (2007). Testing the fake-ability of the Implicit Relational Assessment Procedure (IRAP): The first study. *International Journal of Psychology and Psychological Therapy*, 7, 123-138.
- Meir, B. P., Robinson, M. D., Gaither, G. A., and Heinert, N.J. (2006). A secret attraction or defense loathing? Homophobia, defense, and implicit cognition. *Journal of Research in Personality*, 40, 377-394.
- Morrison, M.A., and Morrison, T.G. (2002). Development and validation of a scale measuring modern prejudice toward gay men and lesbian women. *Journal of Homosexuality*, 43, 15-37.
- Morrison, T.G., Kenny, P., and Harrington, A. (2005). Modern prejudice toward gay men and lesbian women: Assessing the viability of a measure of modern homonegative attitudes within an Irish context. *Genetic, Social, and General Psychology Monographs*, 131, 219-250.
- Nosek, B. A., and Banaji, M. R. (2001). The go/no-go association task. *Social Cognition*, 19, 625-666.
- Nosek, B. A., Banaji, M., and Greenwald, A. G. (2002). Harvesting implicit group attitudes and beliefs from a demonstration web site. *Group Dynamics*, 6, 101-115.
- Nosek, B. A., Greenwald, A. G., and Banaji, M. R. (2005). Understanding and using the Implicit Association Test: II. Method variables and construct validity. *Personality and Social Psychology Bulletin*, 31, 166-180.
- Nosek, B. A., Smyth, F. L., Hansen, J. J., Devos, T., Lindner, N. M., Ranganath, K. A., Tucker Smith, C., Olson, K. R., Chugh, D., Greenwald, A. G., and Banaji, M. R. (2007). Pervasiveness and correlates of implicit attitudes and stereotypes. *European Review of Social Psychology*, 18, 36-88.
- Nosek, B. A., and Sriram, N. (2007). Faulty assumptions: A comment on Blanton, Jaccard, Gonzales, and Christie (2006). *Journal of Experimental Social Psychology*, 43, 393-398.
- Nungesser, L. G. (1983). *Homosexual acts, actors and identities*. New York: Praeger.
- Park, J., and Bieschke, K. L. (2002, August). *Development of the Heterosexism Scale*. Poster session presented at the Annual Convention of the American Psychological Association, Chicago, IL.
- Paulhus, D.L. (1984). Two-component model of socially desirable responding. *Journal of Personality and Social Psychology*, 46, 598-609.
- Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. R. Shaver, and L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (pp. 17-59). New York: Academic Press.
- Paulhus, D.L., and Reid, D. B. (1991). Enhancement and denial in socially desirable responding. *Journal of Personality and Social Psychology*, 60, 301-317.
- Plant, E. A., and Devine, P. G. (1998). Internal and external motivation to respond without prejudice. *Journal of Personality and Social Psychology*, 75, 811-832.
- Pratto, F., and John, O. P. (1991). Automatic vigilance: The attention grabbing power of negative social information. *Journal of Personality and Social Psychology*, 61, 380-391.
- Proctor, R. N. (1995). The destruction of 'Lives Not Worth Living.' In J. Terry and J. Ursula (Eds.), *Deviant bodies* (pp. 179-196). Bloomington and Indianapolis, Indiana: Indiana University Press.
- Raja, S., and Stokes, J. P. (1998). Assessing attitudes toward lesbians and gay men: The Modern Homophobia Scale. *Journal of Gay, Lesbian, and Bisexual Identity*, 3, 113-134.

- Rasinski, K. A. (1989). The effect of question wording on public support for government spending. *Public Opinion Quarterly*, 53, 388-394.
- Reynolds, W. M. (1982). Development of reliable and valid short forms of the Marlowe-Crowne Social Desirability Scale. *Journal of Clinical Psychology*, 38, 119-125.
- Rohner, J. C., and Björklund, F. (2006). Do self-presentation concerns moderate the relationship between implicit and explicit homonegativity measures? *Scandinavian Journal of Psychology*, 47, 379-385.
- Rowatt, W. C., Tsang, J., Kelly, J., LaMartina, B., McCullers, M., and McKinley, A. (2006). Associations between religious personality dimensions and implicit homosexual prejudice. *Journal for the Scientific Study of Religion*, 45, 397-406.
- Rudman, L. A., and Glick, P. (2001). Prescriptive gender stereotypes and backlash toward agentic women. *Journal of Social Issues*, 57, 743-762.
- Rudman, L. A., Greenwald, A. G., Mellott, D. S., and Schwartz, J. L. K. (1999). Measuring the automatic components of prejudice: Flexibility and generality of the Implicit Association Test. *Social Cognition*, 17, 437-465.
- Rust, J., and Golombok, S. (1999). *Modern psychometrics: The science of psychological assessment* (2nd ed.). New York: Routledge.
- Seise J., Banse, R., and Neyer, F. J. (2002). Individuelle Unterschiede in impliziten und expliziten Einstellungen zur Homosexualität: Eine empirische Studie. [Individual differences in terms of implicit and explicit attitudes toward homosexuality: An empirical study]. *Zeitschrift für Sexualforschung*, 15, 21-42.
- Sellers, R. M., Smith, M. A., Shelton, J. N., Rowley, S. A. J., and Chavous, T. M. (1998). Multidimensional Model of Racial Identity: A reconceptualization of African American racial identity. *Personality and Social Psychology Review*, 2, 18-39.
- Steffens, M. C. (2005). Implicit and explicit attitudes toward lesbians and gay men. *Journal of Homosexuality*, 49, 39-66.
- Steffens, M. C., and Buchner, A. (2003). Implicit Association Test: Separating transsituationally stable and variable components of attitudes toward gay men. *Experimental Psychology*, 50, 33-48.
- Steffens, M. C., and Wagner, C. (2004). Attitudes toward lesbians, gay men, bisexual women, and bisexual men in Germany. *Journal of Sex Research*, 41, 137-149.
- Stokes, J. P., McKirnan, D. J., and Burzette, R. G. (1993). Sexual behavior, condom use, disclosure of sexuality, and stability of sexual orientation in bisexual men. *Journal of Sex Research*, 30, 202-213.
- Storms, M. D. (1980). Theories of sexual orientation. *Journal of Personality and Social Psychology*, 38, 783-792.
- Teachman, B. A., Gregg, A. P., and Woody, S. R. (2001). Implicit associations for fear-relevant stimuli among individuals with snake and spider fears. *Journal of Abnormal Psychology*, 110, 226-235.
- Terry, J. and Urla, J. (1995) *Deviant bodies*. Bloomington and Indianapolis, Indiana: Indiana University Press
- Thompson, E. H., and Pleck, J. H. (1986). The structure of male role norms. *American Behavioral Scientist*, 29, 531-543.
- Treas, J. (2002). How cohorts, education, and ideology shaped a new sexual revolution on American attitudes toward nonmarital sex, 1972-1998. *Sociological Perspectives*, 45, 267-283.

- Weeks, J. (1983). *Coming out: Homosexual politics in Britain, from the nineteenth century to the present*. London: Quartet Books Ltd.
- Wegener, D. T., and Petty, R. E. (1997). The flexible correction model: The role of naïve theories of bias in bias correction. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 29, pp. 141-208). Mahwah, NJ: Erlbaum.
- Weinberg, G. (1972). *Society and the healthy homosexual*. New York: St. Martin's.
- Weinrich, J. D., Snyder, P. J., Pillard, R. C., Grant, I., Jacobson, D. L., Robinson, S. R., McCutchan, J. A. (1993). A factor analysis of the Klein sexual orientation grid in two disparate samples. *Archives of Sexual Behavior*, 22, 157-168.
- Weishut, D. J. N. (2000). Attitudes toward homosexuality: An overview. *Israel Journal of Psychiatry and Related Sciences*, 37, 308-319.
- Wilson, T. D., Lindsey, S., and Schooler, T. Y. (2000). A model of dual attitudes. *Psychological Review*, 107, 101-126
- Wright, L. W., Adams, H. E., and Bernat, J. (1999). Development and validation of the Homophobia Scale. *Journal of Psychopathology and Behavioral Assessment*, 21, 337-347.
- Yang, A. S. (1997). Trends: Attitudes toward homosexuality. *Public Opinion Quarterly Autumn*, 61, 477-507.