

Predicting Homonegative Behaviour: A Cognitive or Affective Enterprise?

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By

Krista M. Trinder

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ABSTRACT

To date, there is a dearth of research examining the relationship between cognitive and affective aspects of prejudice and their ability to predict overt and covert homonegative behaviours. Research in this area is important as many gay men and lesbian women are the target of homonegative acts, and it is these behaviours that are important to understand. Therefore, the purpose of this thesis was to examine: 1) if modern homonegativity related to explicit affective measures; 2) if modern homonegativity related to implicit affective measures; 3) whether modern homonegativity related to implicit cognitive measures; 4) which measure was the best predictor of covert behaviour; and 5) which measure was the best predictor of overt behaviour. The four measures used as potential predictors were: 1) the Modern Homonegativity Scale (MHS), an explicit, cognitive measure; 2) the Implicit Association Test (IAT), an implicit, cognitive measure; 3) a feeling thermometer, an explicit, affective measure; and 4) facial electromyographic reactions, an implicit affective measure. This study consisted of three phases: in Phase I, 171 male undergraduates completed an online survey consisting of explicit measures of homonegativity. Fifty-five participants were recalled to participate in Phases II and III, which consisted of a behavioural component and the facial EMG and IAT components. Results indicated that modern homonegativity was associated with implicit cognitive measures as well as explicit measures of affect. However, modern homonegativity was not associated with implicit measures of affect. Additionally, positive affect in the form of cheek activity and negative affect toward images of couples kissing in the form of brow activity, measured through facial EMG, were associated with covert behaviour, with cheek activity being the better predictor. Brow activity toward images of gay couples kissing, indicative of negative affect, was the only measure associated with overt behaviour. Limitations and potential future directions for conducting research using implicit measures of homonegativity are discussed.

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LIST OF ABBREVIATIONS

ATG	Attitudes toward Gay Men Scale
ATLG	Attitudes toward Lesbians and Gay Men Scale
IAT	Implicit Association Test
Facial EMG	Facial Electromyography
FT	Feeling Thermometer
MC-SDS	Marlowe-Crowne Social Desirability Scale
MHS	Modern Homonegativity Scale
SOS	Sexual Opinion Survey

CHAPTER ONE – INTRODUCTION

Homonegativity is referred to as negative attitudes and behaviours directed towards people who are perceived, correctly or incorrectly, to be gay or lesbian (Morrison & Morrison, 2002), and this form of prejudice remains prevalent in Canadian society. Although the Canadian government has recently introduced measures to support basic human rights for gay men and lesbian women (e.g., legalizing same-sex marriage), many gay and lesbian individuals report that they have experienced acts of discrimination ranging from verbal insults to physical assaults in the past year (Morrison, 2007). Such discriminatory acts are believed to be influenced by negative thoughts and feelings directed toward gay men and lesbian women.

1.1 Affective and Cognitive Components of Prejudice

Currently, it is believed that social attitudes, including homonegativity, consist of both cognitive and affective components (Haddock & Zanna, 1999). Cognitive components of attitudes consist of beliefs about traits, properties, and characteristics attributed to a target group as well as value-based beliefs, which are beliefs that a target group either promotes or violates an individual's values (Haddock & Zanna, 1999). For example, stating that gay men are pushing too hard for equal rights reflects the cognitive component of homonegativity and a value-based belief. As well, cognitions are believed to remain relatively consistent over time (Anvik et al., 2008). Affective components of attitudes refer to the emotions evoked by a target group, such as feelings of disgust at seeing a gay couple holding hands. Affect is believed to change depending on context and personal feelings (Anvik et al., 2008). It is important to note that cognition and affect influence each other, so that it is unlikely that pure affect uncontaminated by cognition would exist or vice versa (Trafimow & Sheeran, 1998). However, certain beliefs are of a more

cognitive nature, while others are more affective.

Researchers have demonstrated that cognitive components of attitudes are distinct from affective components and load on separate factors (Anvik et al., 2008; Trafimow & Sheeran 1998). As well, affective and cognitive components of attitudes tend to be correlated to varying degrees. Depending on the situation, either affect or cognition may be a better predictor of overall attitudes. For example, Trafimow and Sheeran (1998, Study 1) found that 92% of smokers reported positive affect toward smoking, whereas 65% of smokers held positive cognitions toward smoking. Global attitude toward smoking was found to have a greater association with affect than cognition for smokers, while global attitude was more highly correlated with cognition than affect for non-smokers. Researchers have also found that both affect and cognition relate to global attitudes toward gay men (Haddock & Zanna, 1999). Thus, it is believed that both affect and cognition contribute to negative attitudes and behaviours directed toward those perceived to be non-heterosexual. The current study examined the relationship between cognitive and affective aspects of homonegativity and the ability of explicit and implicit measures of these aspects of prejudice to predict overt and covert homonegative behaviours.

1.2 Modern and Old-fashioned Homonegativity

Current theoretical and empirical evidence suggests that homonegativity is comprised of two distinct forms: old-fashioned and modern. Old-fashioned homonegativity is grounded in traditional objections and/or religious or moral disapproval of homosexuality (Morrison & Morrison, 2002). This form of prejudice is evident when blatant stereotypes about gay men and lesbian women are endorsed and human rights for sexual minorities, such as the right to housing and employment, are opposed. As well, blatant behaviours such as physically harming or verbally insulting gay and lesbian individuals reflect old-fashioned homonegativity. There are a

number of measures designed to assess old-fashioned homonegativity, with the most widely used measures being the Attitudes toward Lesbians and Gay Men Scale (ATLG; Herek, 1988; sample items are “Homosexual behaviour between two men is just plain wrong” and “Lesbians are sick”) and the Index of Homophobia (Hudson & Ricketts, 1980; sample item is “I would feel uncomfortable if I learned that my neighbour was homosexual”).

Of interest in this thesis is the modern form of homonegativity. In contrast to old-fashioned homonegativity, the modern form refers to negative attitudes and behaviours towards gay men and lesbian women based on contemporary, abstract objections or concerns. These include beliefs that: 1) discrimination against gay men and lesbian women is a thing of the past, 2) gay men and lesbian women are making unnecessary demands for changes in the status quo, and 3) gay men and lesbian women place too much emphasis on their sexual orientation which, in turn, prevents them from assimilating into mainstream society (Morrison & Morrison, 2002). To measure contemporary prejudice toward gay men and lesbian women, Morrison and Morrison (2002) developed parallel gay and lesbian versions of the Modern Homonegativity Scale (MHS). The MHS is cognitive in nature as the items reflect beliefs and attributes of gay men and lesbian women rather than emotions evoked by such individuals. Examples of items from this scale include, “In today’s tough economic times, Canadians’ tax dollars should not be used to support gay men’s [lesbian women’s] organizations,” and “Gay men [Lesbian women] should stop shoving their lifestyle down other people’s throats.”

Attitudinal studies using university and community samples indicate that the MHS is reliable and valid. Additionally, evidence suggests that modern homonegativity, as measured by the MHS, is distinct from its old-fashioned counterpart. For instance, researchers have found that individuals high in this form of prejudice endorse other modern forms of prejudice such as

neosexism and neoracism (Morrison & Morrison, 2002; Morrison, Kenny, & Harrington, 2005) more strongly than old-fashioned forms. Also, using both exploratory and confirmatory factor analyses, modern and old-fashioned scale items have been found to load on separate factors (e.g., Morrison & Morrison, 2002; Morrison, Morrison, & Franklin, in press).

One variable that could have implications for endorsement of modern homonegativity is sexual conservatism. Churchill (1967) proposed that negative attitudes toward gay men and lesbian women were the result of a sex-negative culture, in which the human sex drive is viewed as a threat. Past research has found that old-fashioned homonegativity is equally predicted by sexual conservatism and social prejudice (Ficarrotto, 1990). However, no known research has investigated this association with modern homonegativity. Thus, the current study included a measure of sexual conservatism to investigate this possible relationship.

1.3 Concern with Explicit Measures of Homonegativity

It is important to note that, to date, all of the research on modern homonegative attitudes has relied on explicit self-report questionnaire methodology and, therefore, taps attitudes that are under the control of the individual participant. A primary concern when using explicit measures is that, if worded in such a way that directly asks people about their attitudes, they are susceptible to social desirability bias that can occur when participants are aware that their attitudes and beliefs are not socially acceptable (e.g., Guglielmi, 1999). Modern homonegativity has not been found to be associated with social desirability (Morrison & Morrison, 2002). However, people who endorse homonegative attitudes have reported attempting to conceal these views in order to avoid being judged by or offending others (Jewell, 2007). The discrepancy between social desirability and attempting to conceal prejudice suggests that these may be distinct and separate phenomena. Some people may have an overall need for social desirability,

which might be evidenced through a need to consistently present one's self in an unrealistically positive manner. However, others may only attempt to conceal prejudiced attitudes when they are in a situation where they feel that it is undesirable to display prejudiced attitudes and are concerned about making a good impression. To combat people's attempts to conceal undesirable attitudes, researchers have developed various techniques to measure implicit components of attitudes (i.e., those that occur automatically and, thus, are less subject to self-presentation manipulation).

1.4 Implicit Measures of Prejudice

Social psychological researchers have differentiated between implicit and explicit components of attitudes. The theory of implicit social cognition proposed by Greenwald and Banaji (1995) makes two significant points about implicit cognitive attitudes. First, Greenwald and Banaji state that implicit attitudes are dependent upon past experiences that influence people's thoughts and behaviours, yet operate outside of conscious awareness. Second, Greenwald and Banaji (1995) state that explicit, self-report measures are not appropriate means to assess implicit, cognitive attitudes. Instead, they recommend that judgement latency measures be used, as they are believed to be useful tools to assess attitudes which people may be reluctant to openly express. Although researchers often describe attitudes measured implicitly as nonconscious, it is important to mention that other researchers have provided evidence that individuals may be aware of attitudes measured through implicit methods (Fazio & Olson, 2003; Gawronski, Hofman, & Wilbur, 2006). Essentially, the same attitude may underlie both explicit and implicit prejudice; it is just being measured in a different way. It is important to clarify that people may not be aware that they are responding in a prejudicial manner, yet be aware that they hold positive or negative attitudes toward a target group. Thus, following Fazio and Olson's

(2003) recommendations, the current study refers to implicit and explicit *measures* rather than implicit and explicit *attitudes*.

Currently, it is believed that prejudice measured explicitly may not relate to prejudice measured implicitly (Dovidio, Kawakami, & Gaertner, 2000). People may consciously endorse egalitarian attitudes, but still display an implicitly measured bias against certain social groups. Researchers suggest that this discrepancy may occur for two reasons. First, implicit measures are less prone to self-presentation manipulation and, therefore, may provide a more accurate measure of prejudiced attitudes. Second, individuals may be unaware that they hold certain negative attitudes, much in the same way that people may not have a memory of an event they have experienced (Nosek, Greenwald, & Banaji, 2005; 2007). According to the latter view, implicit measures are believed to tap into attitudes that people are not aware they hold. Regardless of whether implicit measures assess attitudes that individuals are *unwilling* versus *unable* to express, it is important for research to include both explicit and implicit measures of prejudice. The most widely used tool to implicitly measure attitudes is referred to as the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) and details about the test will be outlined below.

1.4.1 Implicit Association Test. The IAT was developed to implicitly measure individual differences in social cognition (Greenwald, McGhee, & Schwartz, 1998). Since its development, the IAT has been used extensively in empirical studies investigating various areas of social cognition, in particular stereotypes and attitudes associated with different forms of prejudice, such as racism (e.g., Cunningham, Preacher, & Banaji, 2001; Dasgupta, McGhee, Greenwald, & Banaji, 2000; Greenwald et al., 1998) and sexism (e.g., Kristensson, 2007; Rudman & Glick, 2001; Rudman, Greenwald, & McGhee, 2001). According to Poehlman, Uhlmann, Greenwald,

and Banaji (2006) in their meta-analytic review, the IAT may be an accurate predictor of numerous attitudes and overt and covert behaviours.

The premise of the IAT is that people will categorize strongly associated concepts together more quickly than concepts that are weakly associated (Greenwald et al., 1998). Methodology for the IAT involves the categorization of stimuli presented as words or pictures, typically across a series of trials. Participants are presented with a target category (e.g., White, Black, male, female) that is paired with an attribute category (e.g., good, bad, positive, negative). Participants practice categorizing either target or attribute stimuli by pressing a designated key. Then, targets are paired with attributes so that participants are required to press a key for the appropriate pairing (e.g., press one key for stimuli that are White or positive). Subsequent trials involve reverse pairings of target and attribute stimuli (e.g., press one key for stimuli that are Black or positive). These trials consist of congruent and incongruent pairings, where reaction times are recorded in order to measure association strengths that are believed to reflect negative and positive attitudes toward target groups.

Association strengths are measured by examining the difference between overall speeds for each block (Greenwald et al., 1998). For example, people who attribute negative values to Black individuals and positive values to White individuals would be expected to have faster response times for congruent trials that pair *positive and White* as well as *negative and Black* than for incongruent trials that pair *positive and Black* and *negative and White*. These differences (*D*) are labelled IAT effects.

It is important to mention that, to date, a large proportion of the research using the IAT has focused on the social categories of race and ethnicity. In fact, a PsycINFO search indicated that approximately 448 studies have used the IAT to examine implicitly measured racial bias.

Relatively speaking, little empirical attention has been invested in understanding implicitly measured *homonegative* bias, as gauged by the IAT. Thus, one purpose of the current study was to add to this small body of literature ($N = 13$). Of the studies that use the IAT to investigate homonegativity (for a review see Cullens & Barnes-Holmes, in press), results indicate that heterosexual participants tend to display an ingroup bias, as evidenced by faster response times for congruent (e.g., positive + heterosexual) than incongruent (e.g., positive + gay) trials. The first known empirical study to use the IAT to measure homonegativity examined the psychometric properties and fakeability of the Homosexuality-IAT (Banse, Seise, & Zerbes, 2001). Stimuli consisted of photographs of same-sex and opposite-sex couples as well as pleasant and unpleasant words. Three conditions were used to determine whether participants were able to fake IAT responses: 1) the demand condition, in which participants were told that investigating attitudes toward homosexuality is important due to discrimination based on sexual orientation, 2) the persuasion condition used the same statement as the demand condition, but included additional information in the form of: a) three texts, b) a film clip, and c) details about the struggle of various gay organizations, and 3) the manipulation condition, where participants were encouraged to fake positive attitudes toward homosexuals (Banse et al., 2001). A control condition also was used in which participants were informed that the purpose of the study was to develop new measures of attitudes toward homosexuality. As well, participants completed an explicit measure of cognitive and affective homonegative attitudes that was created by Banse and colleagues based on Herek's (1988) ATLG Scale.

Results indicated that participants displayed both explicit and implicit ingroup biases toward heterosexuals (Banse et al., 2001), with men evidencing greater explicit and implicit homonegativity in comparison to women. Additionally, participants were able to fake more

positive attitudes toward gay men and lesbian women on explicit, but not implicit tasks, suggesting that IAT responses were not influenced by self-presentation manipulation.

Research has suggested that attitudes measured by the IAT are stable across time. In a study conducted by Steffens and Buchner (2003), participants completed an IAT task using the following stimuli; a) same-sex male couple names, such as Thomas + Phillip, b) heterosexual couple names, such as Michael + Sarah, c) pleasant words, and d) unpleasant words. In one experiment, the IAT was repeated after one week, while a second experiment repeated the IAT after 10 minutes. Participants also completed an explicit measure of old fashioned homonegativity (Attitudes toward Gay Men; Herek, 1988). As expected, participants had longer response times for incongruent (gay + positive; heterosexual + negative) trials than congruent (heterosexual + positive; gay + negative) trials, suggesting an implicitly measured bias against gay men (Steffens & Buchner, 2003). Additionally, there were moderate, significant correlations between the repeated IAT trials, demonstrating that these implicitly measured attitudes were fairly consistent.

The degree to which implicitly measured attitudes toward gay men differ from those held toward lesbian women also has been examined. In three German studies conducted by Steffens (2005), IAT stimuli consisted of names of famous gay men and lesbian women, words associated with heterosexuality (e.g., wedding), pleasant words, and unpleasant words. In comparison to women, heterosexual men tended to hold more negative attitudes toward non-heterosexuals, with this difference being greater for gay male targets (Steffens, 2005). This sex difference has been found in other studies investigating homonegativity both implicitly (e.g., Banse et al., 2001; Nosek, Greenwald, & Banaji, 2005) and explicitly (e.g., Herek, 1988; Morrison & Morrison, 2002). Implicit measures of attitudes toward gay men were found to be correlated with explicit

measures of traditional objections to homosexuality, suggesting correspondence between explicitly and implicitly measured homonegative attitudes. This correlation also emerged for implicitly and explicitly measured attitudes toward lesbian women. However, women were not found to hold negative attitudes toward lesbian women, as measured by the IAT. Steffens (2005) suggested that this might be due to the acceptance of lesbian women in German society, particularly among young female students. As well, 60 percent of German women under the age of 30 report knowing someone who is gay or lesbian (Steffens & Wagner, 2004), which suggests that it is common for heterosexual and homosexual individuals to socialize, likely contributing to more positive attitudes toward non-heterosexuals (Steffens, 2005).

It is important to note that, to date, all studies involving the IAT have incorporated an explicit measure of old-fashioned homonegativity, while none have included a measure of modern homonegativity. The inclusion of a modern measure of homonegativity (e.g., the Modern Homonegativity Scale; MHS; Morrison & Morrison, 2002) may be particularly wise given Steffens' (2005) comment about the limited utility and borderline obsolescence of the old-fashioned Attitudes toward Lesbians and Gay Men Scale (ATLG; Herek, 1988), a relative gold standard measure in the field. As past research has found that heterosexuals are more likely to endorse modern than old-fashioned homonegative items (Morrison & Morrison, 2002), it is likely that attitudes measured through the IAT will be associated more so with attitudes measured through the MHS than ATLG. Thus, the current study examined the relationship between IAT effects and modern homonegativity.

Although the IAT has been used in many empirical studies investigating prejudice, one concern with this measure is that it is primarily cognitive in nature. As affect is a key component of prejudicial attitudes (Tropp & Pettigrew, 2005), researchers are recommending the inclusion

of affective measures for studying prejudice (Guglielmi, 1999). Further, of the studies that have compared cognitive and affective measures in an effort to better understand behavioural biases, results indicate that the affective component emerges as a more powerful predictor (e.g., Vanman, Saltz, Nathan, & Warren, 2004). Consequently, the current study compared the capacity of cognitive and affective explicit and implicit measures to predict homonegative behaviour.

1.4.2 Facial Electromyography. Facial electromyography (EMG) is an innovative implicit measure of affect. Electromyography is a technique that involves the use of electrodes to measure the way tension develops in muscles, including muscle activity that is too small to produce visible movement (Stern, Ray, & Davis, 1980). During muscle movement, electrical impulses are transmitted through electrodes and displayed on a computer screen in the form of electric signals. Although electromyography of various muscle sites is used in diagnosing several muscular disorders, researchers interested in emotion have utilized facial electromyography (EMG) to better understand facial movements associated with various affective states (Tassinary, Cacioppo, & Geen, 1989).

Facial EMG implicitly measures both negative and positive affect via involuntary muscle movements occurring below the skin's surface. When collecting facial EMG data, electrodes are most commonly placed on the *corrugator supercilium* muscle site, located above the eyebrow, and on the *zygomaticus major* muscle site, located on the cheek. Greater brow activity provides an indication of negative affect in the form of imperceptible frowns while greater cheek activity illustrates positive affect in the form of imperceptible smiles. These two locations have been used in several studies investigating emotional processes and have been found to be psychometrically sound (Tassinary et al., 1989). For example, people have been found to display

more cheek activity (i.e., positive affect) and less brow activity (i.e., negative affect) when viewing images they reported liking (Cacioppo, Petty, Losch, & Kim, 1986). As well, participants displayed more brow activity and less cheek activity for pictures they reported disliking (Cacioppo et al., 1986). Despite the abundance of research on emotion utilizing facial EMG, to date, only three studies have used this technique to investigate emotion associated with prejudice (Brown, Bradley, & Lang, 2006; Vanman, Paul, Ito, & Miller, 1997; Vanman, Saltz, Nathan, & Warren, 2004).

The experiment conducted by Vanman et al. (1997, Experiment 3) utilized facial EMG to examine how implicitly measured affect related to explicit measures of racism (e.g., the Modern Racism Scale [McConahay, 1986]). Additionally, facial EMG recordings were taken from the corrugator and zygomaticus muscle regions while participants viewed pictures of Black and White individuals. While viewing images, participants were instructed to pay attention to images of people from one ethnic group and ignore images from the other ethnic group for a specified duration. Results indicated that those high in modern racial prejudice displayed more cheek activity when viewing pictures of White targets than when viewing Black targets. Further, high-prejudiced participants also displayed more negative affect in the form of more brow activity while viewing pictures of Black targets than White targets. Differences in positive and negative affect for images of Black and White targets were not found in low-prejudiced participants.

Another study utilizing facial EMG involved presenting both pleasant and unpleasant images depicting either Black or White individuals to both Black and White participants (Brown, Bradley, & Lang, 2006). Participants were also instructed to rate how pleasant they found each image. Results indicated that African American participants displayed greater brow activity when viewing unpleasant images of Black than White individuals, while no differences were

found for White participants. As well, both Black and White participants displayed greater cheek activity when viewing pleasant images of Black compared to White individuals. Brown et al. suggested that Black participants may have been displaying ingroup empathy toward images of Black individuals in both pleasant and unpleasant situations. As well, the authors did not find evidence of outgroup antipathy, which would have been evident in greater negativity toward both pleasant and unpleasant images toward people of a different ethnicity. However, this study did not include a measure of racism. As well, Brown et al. did not examine how facial EMG scores related to behaviour when interacting with someone of a different ethnicity. Thus, it is unknown whether participants' facial responses would have been related to explicitly endorsed prejudicial attitudes or discriminatory behaviour.

Vanman and colleagues (2004) conducted another study to better understand whether implicitly measured racial attitudes were related to discriminatory behaviour. Both IAT and facial EMG were used to measure implicit aspects of racism and to what degree these measures predicted discriminatory behaviour. Participants ($N = 36$) were asked to choose the most qualified applicant for a teaching fellowship from among three candidates (2 White and 1 Black). Results indicated that participants who showed more positive affect through cheek activity for photographs of White than Black people were more likely to choose a White applicant. No relationship was found between brow activity (negative affect) and selection preference, suggesting that positive affect toward ingroup members may be a better predictor of discriminatory behaviour than negative affect toward outgroup members.

The idea that prejudice may be displayed through ingroup favouritism, rather than outgroup derogation, has been supported by previous research (Aberson, Swan, & Emerson, 1999; Pettigrew & Meertens, 1995; Swim, Ferguson, & Hyers, 1999). In a study conducted by

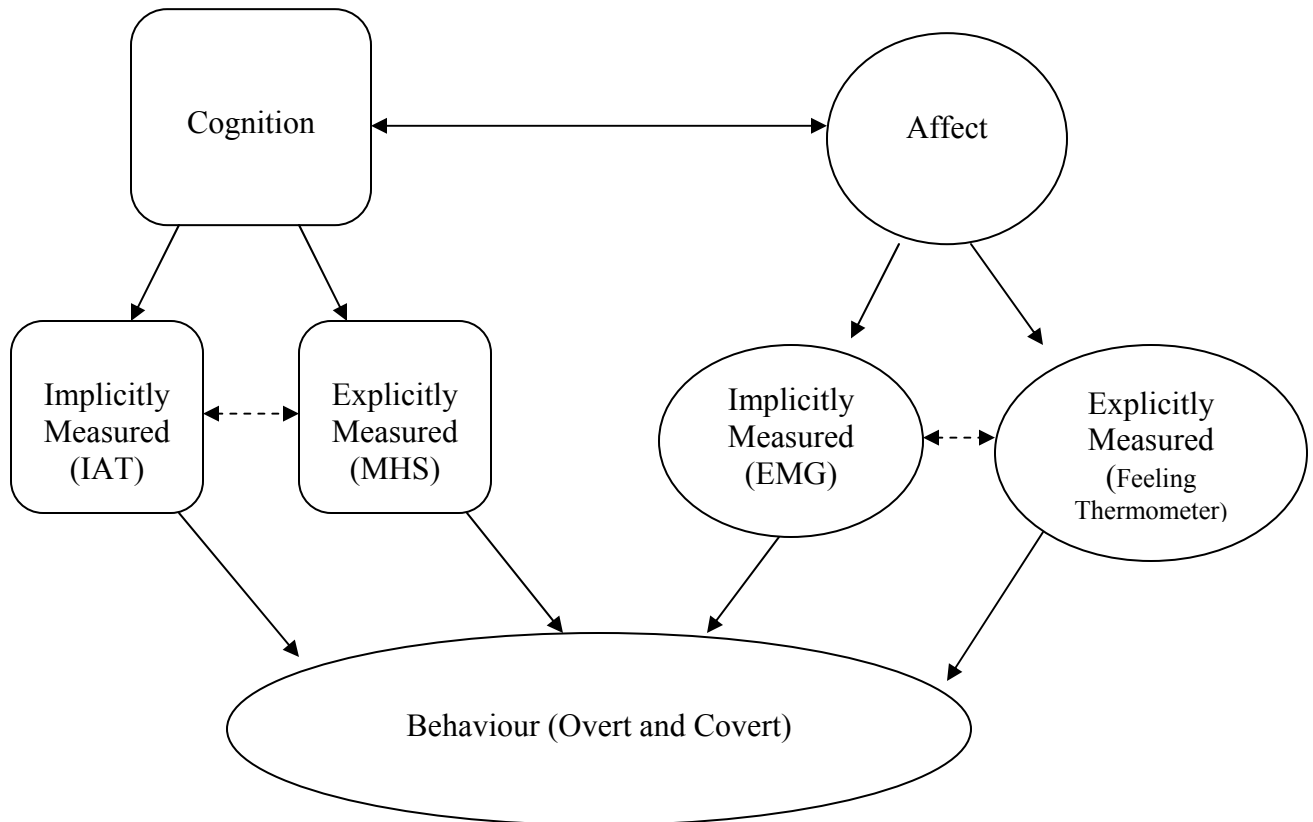
Aberson and colleagues, participants viewed a videotape of either a gay or heterosexual man interviewing for the position of an HIV spokesperson. After the interview, participants were asked to rate the candidate on several positive and negative adjectives. In one condition, the interviewee stated that they knew college students could be stupid, allowing for justification for giving more negative ratings. Overall, gay candidates were rated more favourably than heterosexual candidates. However, in the justification condition, participants gave fewer positive and negative traits to gay men than heterosexual men. Thus, when they could justify their ratings, people displayed bias in the form of favouritism toward heterosexuals rather than bias against gay men. In their study of racism, Pettigrew and Meertens (1995) found that people were more likely to display favouritism toward their own ethnic group than negativity toward ethnic outgroups. Swim et al. (1999) also found that high-prejudiced women displayed ingroup favouritism by agreeing with perceived heterosexual individuals who expressed unpopular opinions rather than a lesbian woman who expressed a more popular opinion.

Although Vanman et al. (2004) found that implicitly measured ingroup favouritism was related to discrimination, no correspondence was found between the cognitive IAT and hiring behaviour. This finding suggests that implicitly measured affect emerged as the stronger predictor of discriminatory behaviour than did implicit cognition. However, these findings should be interpreted cautiously as participants in this study were all relatively “low” in prejudice.

Facial EMG recordings have been shown to significantly predict discrimination; however, this innovative technique has yet to be applied outside a racism framework. As well, the only study utilizing both facial EMG and a behavioural measure focuses on overt behaviour (e.g., behaviours that individuals might exert more control over), as indicated via hiring

preferences, rather than covert, non-verbal behaviour (e.g., eye contact, smiles), which may be associated with implicitly measured negative affect. Thus, the current study aimed to contribute to this area of literature by using facial EMG to document implicitly measured biases directed toward gay men as well as investigate how predictive this measure was of both overt and covert homonegative behaviour. The current study also included the IAT as a means of comparing whether implicitly measured cognition or affect best predicted discriminatory behaviour. Finally, the predictive validity of these implicit measures in relation to explicit affective and cognitive measures of homonegativity was assessed (see Figure 1).

Figure 1. Potential cognitive and affective predictors of overt and covert behaviour



1.5 Predicting Overt and Covert Discrimination through Implicit and Explicit Measures

Gay men and lesbian women are often targets of overt and covert discrimination. For example, Herek, Gillis, and Cogan (1999) reported that 25% of gay men and 20% of lesbian

women reported experiencing a form of criminal discrimination in the past year, ranging from verbal harassment to physical assault. Whereas overt acts of homonegativity may draw a greater amount of attention, gay men and lesbian women are more likely to experience less drastic, yet nonetheless painful, episodes of discrimination, much of which may be subtle or covert (Morrison, 2007). Researchers (e.g., Dovidio, Kawakami, & Gaertner, 2002; Hebl, Foster, Mannix & Dovidio, 2002; McConnell & Leibold, 2000) have begun investigating subtle manifestations of discrimination in the form of nonverbal and verbal behaviours. A brief overview of some of this literature is outlined below.

Research investigating subtle discrimination has relied primarily on body language and verbal cues during interpersonal contact (e.g., Dovidio, Kawakami, Johnson, Johnson & Howard, 1997; McConnell & Liebold, 2000). Based on a review of empirical literature of covert behavioural cues associated with emotion and attitude, McConnell and Liebold devised a 16-item coding scheme to measure covert behaviour, which included such items as: a) friendliness, b) abruptness of responses, c) body lean toward experimenter, d) number of smiles, and e) number of speech errors. Interestingly, explicit (i.e., consciously endorsed) measures of modern racism were not found to be predictive of these behaviours, while implicit racism, as measured by the IAT, was predictive of these subtle behaviours.

In a series of studies, Dovidio and colleagues (1997) examined the degree to which implicit and explicit measures of modern racism were related to covert and overt discriminatory behaviours. During the behavioural component, in which 33 participants were interviewed separately by both a White and Black confederate, participants' covert behaviours were evaluated on the following dimensions: a) the amount of time spent responding to questions, b) the amount of time spent looking at each interviewer, and c) rate of blinking during each

response. Participants' overt discrimination was assessed via evaluations of each interviewer (either Black or White) on various factors such as likeability and sincerity. Using multiple regression analyses, results indicated that explicitly endorsed modern racist attitudes were predictive of overt discrimination, whereas implicitly endorsed racist attitudes, as measured through a priming task, were predictive of more negative subtle behaviours toward the Black interviewer.

Further, Dovidio et al. (2002) distinguished between behaviours predicted by explicit and implicit measures of prejudice. In this study, 143 participants completed Brigham's (1993) Attitudes toward Blacks (ATB) scale, a measure combining both old-fashioned and contemporary racism. From this sample, 40 participants were randomly selected to complete an implicit priming task followed by a task that involved either interracial or intraracial contact, where participants were instructed to discuss a particular topic with a confederate. Verbal behaviours, coded by listening to audiotapes, were distinguished from nonverbal behaviours, which were coded by watching silent videotapes of the interviews. Both verbal and nonverbal measures of: a) friendliness, b) cruelty, c) unfriendliness, d) "unlikeableness," and e) "coldness" were recorded for each participant. Results indicated that ATB scores were associated with verbal discrimination, as evidenced in audiotape recordings, whereas implicitly measured prejudice was related to non-verbal discrimination, as evidenced during viewing of participants' interactions with the White and Black experimenter.¹

Of the studies that have examined covert forms of discrimination, only three have examined bias based on sexual orientation (Dasgupta & Rivera, 2006; Gabriel, Banse, & Hug,

¹ Although overt and covert discriminatory behaviours have been described in a number of ways and given different labels by social psychologists (e.g., formal, interpersonal, verbal, nonverbal), the current study used the terms *overt* and *covert* discrimination.

2007; Hebl et al., 2002). In a study conducted by Hebl et al. (2002), eight male and eight female confederates posed as job applicants and were randomly chosen to apply for various jobs advertised across 84 different stores. In the experimental condition, confederates wore a hat with the slogan “Gay and Proud,” while those in the control condition wore a hat with the slogan “Texan and Proud.” Confederates asked to speak to someone in charge at each store and wore hidden audio-recording devices to record their conversations with store employees.

Using principal components analysis, the audiotape and confederate reports data formed two components: one labelled “formal” discrimination, and one labelled “interpersonal” discrimination. The formal discrimination component was defined as discrimination in the areas of hiring, promotions, access, and resource distribution and was indicative of blatant, overt discrimination as denoted on measures of job availability indicated by store employees, permission to complete a job application, job call-back, and permission to use the washroom. Interpersonal discrimination was defined as the covert, nonverbal (and some verbal) behaviours that occur in social situations. The indicants of interpersonal discrimination were: interaction length, word count, negativity perceived by applicants, and negativity coded by trained judges through listening to audiotapes. Gay and lesbian confederates did not experience any more formal discrimination than “neutral” confederates. However, applicants wearing the “Gay and Proud” hat experienced significantly more interpersonal discrimination than the “neutral” confederates.

The study conducted by Hebl and colleagues (2002) illustrated the subtle nature of the negativity experienced by gay men and lesbian women in job settings. However, there were no attempts to link these behaviours to either explicit or implicit homonegativity (or their cognitive and affect components).

Dasgupta and Rivera (2006) examined the extent to which the relationship between implicitly measured homonegativity and non-verbal discriminatory behaviour is moderated by motivation and conscious control over subtle behaviours. In Experiment 1, 82 community members from a small town completed the IAT and measures of beliefs regarding gender identity and conscious control of nonverbal behaviour. IAT stimuli consisted of pictures of gay male couples, pictures of heterosexual couples, positive words, and negative words. One week later, participants returned to complete what they believed to be a different study, which consisted of an interview. Prior to the interview, participants viewed two folders containing a resumé and photograph of two confederates, both of whom would interview participants after they reviewed the resúms. In the experimental condition, extracurricular activities of the interviewer included involvement with the campus gay students' alliance, whereas the control condition listed involvement with the campus fraternity. Thus, the authors intended that the interviewer involved with the gay students' alliance would be perceived as gay, while the student involved with the fraternity would be perceived as heterosexual.

All interviews were video-recorded in order to code participants' nonverbal behaviours when interacting with the presumed gay or presumed heterosexual interviewer in the areas of: a) eye contact, b) number of smiles, and c) body posture (Dasgupta & Rivera, 2006, Experiment 1). As well, the following items were coded: a) overall comfort, b) friendliness, and c) interest in interaction. Consistent with previous research, participants displayed an implicitly measured antigay bias as evidenced through IAT effects. Results indicated that male participants' nonverbal behaviour was found to be influenced by implicitly measured attitudes, gender beliefs, and motivation to control nonverbal behaviour. Specifically, men were found to engage in nonverbal discriminatory behaviour, such as less eye contact, fewer smiles, and less interest in

the interaction, when they: a) held negative implicitly measured attitudes toward gay men, b) held non-egalitarian gender beliefs, and c) were less motivated to control nonverbal behaviour (Dasgupta & Rivera, 2006, Experiment 1). However, no differences in nonverbal behaviours were found for women, regardless of implicitly measured attitudes, gender beliefs, or motivation to control behaviour. The researchers felt that the female participants may have been more egalitarian than women in the general population as they were recruited from a community with several feminist organizations and women's colleges. Therefore, a second experiment was conducted using a community sample of 67 people from a larger city where people were expected to hold more heterogeneous attitudes. Results from this replication indicated that both men and women who hold traditional gender beliefs, have more negative implicitly measured attitudes, and are less motivated to control behaviour are more likely to engage in non-verbal discriminatory behaviour toward gay men (Dasgupta & Rivera, 2006, Experiment 2).

A recent Swiss study investigated the joint moderating effects of personal and situational variables on the relationship between implicitly measured homonegativity and helping behaviour (Gabriel et al., 2007). In this study, participants completed the same IAT used by Banse et al. (2001), which assessed attitudes toward gay men and lesbian women, as well as explicit measures of old-fashioned homonegativity (Seise, Banse, & Neyer, 2002) and motivation to control homonegativity (Dunton & Fazio, 1997). The behavioural measure consisted of asking participants to sign a petition and donate money to a local gay and lesbian organization that had recently received media attention. Helping was measured across two conditions: a) public, where the experimenter remained in the room after mentioning the petition and showing the participant a donation box and b) private, where the experimenter left the room after describing the petition and showing the donation box.

Results revealed that people were more likely to engage in helping behaviour when an experimenter was present (Gabriel et al., 2007). As well, helping behaviour was predicted by cognitive and not affective explicit measures of homonegativity developed by German researchers (Gabriel et al., 2007). Those with less motivation to control prejudiced reactions reported more homonegative attitudes through explicit and implicit measures, the latter gauged by the IAT. Thus, these findings demonstrate that both implicit and explicit measures of homonegativity, as well as situational factors may significantly influence behaviour.

1.6 Purpose

The purpose of this thesis was to examine the relationship among affective and cognitive aspects of homonegativity, measured explicitly and implicitly, and how they relate to discriminatory behaviours. Specifically, the key research questions were:

- 1) Does modern homonegativity relate to explicit affective measures?
- 2) Does modern homonegativity relate to implicit affective measures?
- 3) Does modern homonegativity relate to implicit cognitive measures?
- 4) Which measure (explicit affective, explicit cognitive, implicit affective, or implicit cognitive) best predicts covert discriminatory behaviour toward gay men?
- 5) Which measure (explicit affective, explicit cognitive, implicit affective, or implicit cognitive) best predicts overt discriminatory behaviour toward gay men?

CHAPTER TWO - METHOD

2.1 Phase I – Method

2.1.1 Participants. Participants were 171 male undergraduate students between the ages of 18 and 52 ($M = 22.87$, $SD = 5.09$) recruited from an online bulletin board from a midsize

university in Western Canada. The majority of participants identified as heterosexual (87.5%) and most reported their ethnicity as Caucasian (79%). Only men were used as participants in the current study as past research has found that men display elevated explicitly (e.g., Morrison & Morrison, 2002) and implicitly measured (e.g., Steffens, 2005) homonegativity compared to women. Further, heterosexual men are most likely to direct their homonegativity toward gay targets compared to lesbian targets (e.g., Morrison & Morrison, 2002). Given the detailed nature of the experimental procedures, it seemed wise to begin with the group most likely to harbour negative cognitions and affect toward sexual minorities. Participants were asked to complete an online questionnaire measuring explicit homonegative attitudes. While completing this online questionnaire, participants were asked to provide contact information if they consented to be involved with a future study.

2.2 Explicit Measures

2.2.1 The Modern Homonegativity Scale-Gay (MHS, Morrison & Morrison, 2002). The MHS-G was designed to measure modern negative attitudes toward gay men. This scale consists of 12 items (e.g., “Gay men should stop shoving their lifestyle down other people’s throats”), and uses a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicate greater modern prejudice toward gay men, and the MHS-G has been found to be internally consistent, with alpha values greater than .80, and has demonstrated construct (correlates with related constructs in hypothesized direction), discriminant (non-significant relationships have emerged with measures of social desirability), and predictive validity (Morrison & Morrison, 2002; Morrison et al., 2005).

2.2.2 Feeling Thermometer. A feeling thermometer with 101 points ranging from 0 to 100 was given to measure affect toward gay men. The feeling thermometer was similar to those

used by Herek and Capitano (1999), with higher scores indicating greater levels of warmth and positivity and lower scores reflecting feelings that are more cold and negative. A rating of 50 signified a neutral evaluation. Feeling thermometers toward various targets, including gay men, have been found to demonstrate construct validity through significant correlations with other measures of attitudes toward gay men in the hypothesized direction (e.g., Haddock, Zanna, & Esses, 1993).

2.2.3 *The Sexual Opinion Survey* (SOS; Fisher, Byrne, White, & Kelley, 1988). The SOS was used to measure sexually restrictive attitudes and behaviours. This measure was included as it has been found to be a significant predictor of homonegative attitudes (Ficarrotto, 1990). The SOS is affective in nature and consists of 21 items which contain three subscales: a) ten items measuring open sexual display (e.g., “Almost all pornographic material is nauseating”), b) seven items measuring sexual variety (e.g., “The thought of engaging in unusual sexual practice is highly arousing” [reverse-scored]), and c) four items measuring homoeroticism (e.g., “Thoughts that I may have homosexual tendencies would not worry me at all” [reverse-scored]). All items are rated on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). Responses are coded so that higher scores indicate greater sexual conservatism. This scale has been found to be internally consistent and demonstrate construct validity through significant relationships with related measures in the predicted direction (e.g., Fisher et al., 1988).

2.2.4 *Marlowe-Crowne Social Desirability Scale* (MC-SDS Form C; Reynolds, 1982). This scale was administered to measure the degree to which people are inclined to respond in a socially acceptable manner. Form C contains 13 items (e.g., “I’m always willing to admit it when I make a mistake”) with a true/false response format. Items are scored so that higher scores reflect greater social desirability. This version of the MC-SDS has been found to be internally

consistent and demonstrate construct validity through significant correlations with other measures of social desirability (Reynolds, 1982) as well as discriminant validity (non-significant relationship with motivation to control prejudice; Plant & Devine, 1998).

2.2.5 Sexual orientation. Sexual orientation was measured by a single item that consisted of 9 response options, 7 of which range from “Exclusively heterosexual” to “Exclusively homosexual.” As well, participants could choose a response of “Do not know” or “If you do not believe these response options capture your sexual identity, then please list it in the space provided.” This measure is based on the Kinsey scale (Kinsey, Pomeroy, & Martin, 1948), and has been used by Morrison & Morrison (2002; Morrison et. al., 2005) repeatedly their research on homonegative attitudes.

2.3 PHASES II and III – Method

2.3.1 Participants. On the basis of their modern homonegativity scores, 55 heterosexual participants between the ages of 18 and 45 ($M = 23$, $SD = 5.16$) from Phase I were invited to participate in two additional studies.² Specifically, those who scored in the top 33% or bottom 33% were invited to participate in Phases II and III. Of these participants, 79% identified as Caucasian. It has been confirmed that selecting participants with high or low scores maximizes the likelihood of demonstrating that behaviour is influenced by an attitudinal variable (Cox, 1957). The research participants were informed that they would be participating in two separate studies that were paired together as neither took much time to complete. Participants were informed that one study involved answering questions about campus services, while the second study involved completing two computer tasks. A post-experimental inquiry revealed that 38

² It should be mentioned that a research assistant, not involved with Phase I, was responsible for contacting participants via telephone. This assistant was the only person aware of participants’ modern homonegativity scores while data collection and coding was ongoing.

participants believed that the two studies were related, but not until after they began the second study. Of these participants, 15 reported that they did not realize the connection until they were specifically asked. As well, at the time of debriefing, 16 participants indicated that they did not see a common element between the two studies. Thus, participants entered Phases II and III believing that they were participating in separate studies.

2.4 Materials and Procedure

2.4.1 Behavioural component (PHASE II). Using a modified procedure by Dovidio and colleagues (1997), participants' overt and covert discriminatory behaviour toward men perceived to be gay was assessed. Participants were informed that this session was part of an interview requirement for an upper-year psychology class and they would be interviewed by one or more students and that the interview would be video-recorded for later evaluation. Prior to the interview, participants were asked to sign a consent form explaining that they would complete an interview about campus services and that participation was strictly voluntary; the study had received ethical approval; they could withdraw from the study at any time without penalty; and all data would remain confidential.

Each participant met individually with two male researchers for an innocuous interview. Sexual orientation of the gay interviewer was indicated through identification with the campus Pride Center near the beginning of the interview (see Appendices A and B for interview protocol). Sexual orientation was portrayed in this way as past research has found that people often assume that men who voluntarily associate with gay men have homosexual tendencies (Sigelman, Howell, Cornell, Cutright, & Dewey, 1991). Two interviewers, recruited from the campus Pride Center served as gay interviewers, while three upper-year psychology students served as heterosexual interviewers. As well, one upper-year psychology student served as both a

gay and heterosexual interviewer. The order in which the interviewers appeared in the room in which the participant was seated was counterbalanced. During the interview, participants were asked to respond to a total of six pre-determined questions regarding campus issues (e.g., food services and transportation to campus), with each interviewer asking three questions. After the first interviewer completed his questions, he excused himself to retrieve the second interviewer. In total, each interview took approximately 15 minutes.

A post-experimental inquiry (see Appendix C) revealed that all of the participants correctly believed that each interviewer was the intended sexual orientation. However, it should be mentioned that four participants stated that they were not convinced that the “gay” interviewer was, in fact, gay, but suspected he might be. Additionally, no participants reported being aware of the true purpose of the interview, indicating that the manner in which sexual orientation was depicted did not arouse suspicion. However, one participant knew one of the interviewers, and thus, was excluded from analyses.

Interviews were video-recorded by a discrete camera located near the ceiling and three trained judges, unaware of participants’ explicitly and implicitly measured attitudes, coded participants’ covert behaviour according to Dasgupta and Rivera’s (2006) coding scheme, with possible scores ranging from 6 to 66 for each interviewer (see Appendix D). According to this scheme, lower scores denoted greater covert discrimination. The following behaviours were coded: a) eye contact, b) number of smiles, c) body posture (leaning toward vs. away from interviewer), d) overall comfort, e) overall friendliness, and f) overall interest in the interaction. These six items were summed separately for each interviewer. Cronbach’s alpha scores revealed that this coding scheme was reliable (i.e., $\alpha = .92$ [95% CI, .89 - .95] for both the first and second interviewer among all judges). As well, Pearson’s correlation coefficients revealed that

there were high correlations between the judges' ratings of each interviewer, ranging from $r = .72$ to $.86$, $ps < .001$. Therefore, the ratings for all three judges were collapsed into a single measure of behaviours directed toward the gay interviewer and a single measure of behaviour directed toward the heterosexual interviewer. Finally, scores for the gay interviewer were subtracted from scores for the heterosexual interviewer, with larger scores corresponding to more discriminatory behaviour directed toward the gay confederate.

Overt discrimination was measured by having participants complete an evaluation of each interviewer after the interview (see Appendix E). In this evaluation, participants were asked to rate the interviewers on such factors as "professional manner," "friendliness," and "sincerity" on a scale of 0 (not at all) through 10 (very much), with higher scores reflecting a more positive evaluation. As well, participants were asked to indicate, based on their ratings, to what degree they would recommend that each interviewer conduct interviews in the future and to what extent they would consider hiring each interviewer. Participants were informed that the interviewers would be allowed to see the ratings they received; thus, heightening the realistic nature of their reviews. After participants completed the evaluation, they were greeted by a third experimenter and escorted to another room in the same department for the second study.

Total scores for overt discrimination were obtained through separately summing the score for the evaluation of each interviewer. Cronbach's alpha revealed that this measure was reliable, with $\alpha = .77$ (95% CI, .66 - .85) for ratings of the first interviewer and $\alpha = .82$ (95% CI, .73 - .88) for ratings of the second interviewer. Additionally, scale score reliability was $.81$ (95% CI, .73 - .88) for ratings of gay interviewers and $.78$ (95% CI, .68 - .86) for ratings of heterosexual interviewers. Total scores from the evaluation of the gay interviewer were subtracted from the total scores from the evaluation of the heterosexual interviewer, with larger scores reflecting

greater levels of overt discriminatory behaviour. To achieve normal distribution, one outlier was deleted.

2.4.2 Facial EMG component (PHASE III). After completing the behavioural component, participants were escorted to a separate room to complete the IAT and facial EMG, with the order counterbalanced. Participants were required to sign a second consent form pertaining to the facial EMG and IAT which outlined the purpose of the study, participants' rights, and confidentiality of the data. Facial EMG was utilized to implicitly measure participants' affective responses to pictures of gay and heterosexual couples, as well as to neutral images. Electrodes were placed on the *zygomaticus major* (cheek) and *corrugator supercilium* (brow) muscle regions according to Tassinari et al.'s (1989) recommendations. As well, dummy electrodes were placed on the back of the neck according to Vanman and colleagues' (1997) recommendations to divert participants' attention from the face as the area of interest. Following Vanman et al.'s (1997) instructions, participants were informed that the electrodes measured neural impulses that emanated from the head. Facial EMG data were recorded using Biopac 150 hardware and AcqKnowledge 3.7.3 software.

Forty-five black and white pictures of gay and heterosexual couples as well as neutral images (e.g., nature scenes) were presented in random order using Superlab 4.0 software. Specifically, there were 15 pictures from each category. All pictures had been pilot-tested for attractiveness of targets, sex of targets, and perceived sexual orientation. In addition to implicitly measuring participants' affect while viewing these pictures, participants were asked to provide explicit ratings of each picture on a scale ranging from 0 (extremely negative) to 9 (extremely positive) in order to determine how much they liked or disliked each image. Thus, it was intended that participants would indicate how they felt while viewing the image and that higher

ratings would indicate greater levels of positivity toward the image. These ratings constituted a measure of explicit attitudes toward gay men and were used to explicitly assess affect toward each image. Ratings were performed on a Biopac transducer, which is a device with a sliding lever that participants move to reflect the rating they wish to assign to each image. Ratings assigned through the transducer were viewed on the computer monitor along with the facial EMG data by the experimenter in an adjoining room. Following data acquisition, a series of steps were performed to integrate the data (see Appendix F).

2.4.3 IAT component (PHASE III). Participants viewed 12 of the pictures used in the facial EMG condition (six gay and six heterosexual images). In addition to the gay and heterosexual images, participants also viewed 12 words: six positive (gift, excellent, free, wholesome, beneficial, wonderful) and six negative (failure, accident, unsafe, harmful, unhealthy, stupid). These words were chosen from existing IAT tasks as well as words that Crites, Fabrigar, and Petty (1994) described as cognitive in nature. This IAT script was designed using Superlab 4.0 software. All images and words appeared in black and white. The stimuli were presented with 250 ms inter-image intervals in order to clear the screen between trials. As well, images used in the IAT were randomly selected from a larger set of images without replacement.

Participants were presented with seven consecutive blocks of IAT trials. For the initial target-concept discrimination trial (Block 1), participants viewed the 12 images of gay and heterosexual couples and categorized the images as “gay” or “straight” by pressing the appropriate keys. Following this first trial, participants completed the attribute discrimination task (Block 2) in which they categorized the words as “positive” or “negative.” Then, participants completed the first pairing task, which included 24 practice trials (Block 3) followed

by 48 experimental trials (Block 4). Block 5 consisted of 24 practice trials where the position of the target-concept targets was reversed from the previous trials. Finally, participants completed the reversed pairing task, which consisted of 48 practice trials (Block 6) and 48 experimental trials (Block 7). The reversed combination task included an additional practice block to control for order effects that are typically observed between the two combined tasks (Greenwald, Nosek, & Banaji, 2003).

Two versions of the IAT were created, one with the incongruent combined task presented first, and one with the congruent combined task presented first. To address order effects, half the participants completed the incongruent block first, while half completed the congruent block first. In the incongruent critical block, participants were instructed to press the “d” key for positive words as well as images of gay couples and the “k” key for negative words and images of heterosexual couples. In the congruent critical block, participants pressed the “d” key for negative words and images of gay couples and the “k” key for positive words and images of heterosexual couples. For all trials, participants were instructed to respond as quickly as possible. In addition, when participants incorrectly classified a stimulus (e.g., classifying a gay couple as heterosexual), a red “X” was presented on the screen along with a message that they must press the correct response key to continue. IAT data were analyzed following Greenwald et al.’s (2003) recommendations (see Appendix G).

After completing the implicit measures, participants were involved in the post-experimental inquiry conducted by a separate researcher to investigate whether the participants were aware of the true purpose of the study. After that, they were debriefed with regard to the purpose of the study. During the debriefing session, participants were informed of the purpose of the interview conducted during the previous phase, as well as the fact that the interview was

video-recorded for the purposes of identifying various subtle behaviours, such as number of smiles. Participants then signed video release forms, indicating that they gave consent for their interviews to be watched and coded for research purposes. Participants were also given a debriefing form that included contact information should they have any questions or concerns about the study.

CHAPTER THREE - RESULTS

Means, standard deviations, ranges, scale score reliability coefficients and their 95% confidence intervals for all measures are presented in Table 1. As can be seen, participants had mean modern homonegativity, sexual conservatism, and social desirability scores that were below the scale midpoint. As well, mean feeling thermometer scores were above the scale midpoint, reflecting overall positive feelings toward gay men. Alpha coefficients greater than .80 revealed that the MHS and SOS demonstrated excellent internal consistency (see Table 1). The alpha coefficient for social desirability is similar to that found in other studies (Morrison & Morrison, 2002).

3.1 Correlations for Phase I

3.1.1 Does modern homonegativity correlate with explicit affective measures?

Correlations between modern homonegativity and feeling thermometer scores were calculated to better understand the relationship between explicit cognitive and affective measures of homonegativity. (see Table 2). Modern homonegativity was found to be significantly associated with scores on the feeling thermometer. Thus, participants higher in modern homonegativity were more likely to report having colder feelings toward gay men. Modern homonegativity was

also positively associated with sexual conservatism. Given this correlation, conservatism was partialled out for all subsequent analyses.

3.1.2 Which measures correlate with social desirability? Only sexual conservatism was found to correlate significantly with social desirability (see Table 2). Thus, participants with a greater social desirability bias were more likely to report more sexually conservative attitudes.

3.2 Correlations for Phases II and III

To examine whether the strength of the relationship between the cognitive and affective measures observed for the overall sample were consistent with those for the subsample (those participants called back to be involved in the behavioural interview and implicit IAT and EMG components), the correlations were repeated. The additional variables (e.g., participant ratings of the gay imagery, IAT effect (*D*), brow and cheek activity, and overt and covert behaviour) measured during the interview (Phase II) and implicit facial EMG and IAT testing (Phase III) were included in the analyses. The relationships among these variables and their relative significance are presented in Table 3.

3.2.1 Does modern homonegativity correlate with explicit affective measures? Modern homonegativity was significantly negatively correlated with feeling thermometer scores and ratings of gay images. Thus, as in Phase I, those with higher modern homonegativity scores were less likely to feel warmly toward gay men. As well, those with higher levels of homonegativity reported they were less comfortable viewing pictures of gay couples. These correlations remained statistically significant when sexual conservatism was partialled out. Partial correlations conducted separately for low and high-prejudiced participants revealed a negative correlation for both groups.

3.2.2 Does modern homonegativity correlate with implicit affective measures? To examine the relationship between modern homonegativity and facial EMG, cheek and brow bias scores were computed for each participant by subtracting the mean EMG amplitude during the gay trials from the mean amplitude during the heterosexual trials. Thus, higher scores for the cheek EMG bias reflect more positive affect when viewing images of heterosexual couples, while higher scores for brow EMG bias reflect more negative affect for heterosexual images compared to gay images. To help achieve a normal distribution, one extreme outlier was deleted for both brow and cheek activity. No statistically significant correlations were noted between modern homonegativity and either cheek or brow activity. However, when partial correlations were conducted separately for high and low prejudiced participants, modern homonegativity and cheek activity were positively correlated for low prejudiced participants ($r = .46, p < .05$), but negatively correlated for high-prejudiced participants ($r = -.26, p = .06$). Thus, low-prejudiced participants with higher MHS scores (i.e., participants who scored at the higher end of the range of scores between 12 and 28) displayed greater cheek activity toward images of heterosexual couples than gay couples, while high-prejudiced participants with higher MHS scores (i.e., participants who scored at the higher end of the range of scores between 37 and 57) displayed greater cheek activity toward images of gay than heterosexual couples.

3.2.3 Does modern homonegativity correlate with implicit cognitive measures?

Correlational analyses revealed that modern homonegativity was significantly correlated with IAT bias. Thus, those with higher levels of modern homonegativity also displayed an implicitly measured bias in favour of heterosexual individuals. This correlation remained statistically significant when sexual conservatism was partialled out. This was similar for high and low prejudiced participants.

3.2.3 Does explicitly measured affect correlate with implicit cognitive measures?

Feeling thermometer score was significantly negatively correlated with IAT bias. Therefore, those with colder feelings toward gay men displayed an implicitly measured bias in favour of heterosexual individuals. However, when sexual conservatism was partialled out, this correlation was no longer statistically significant.

3.2.4 Does explicitly measured affect correlate with implicit affective measures?

Correlational analyses revealed that the feeling thermometer was not significantly correlated with either brow or cheek activity. Thus, those who reported colder feelings toward gay men did not display an implicitly measured affective bias against gay men.

3.2.5 Do implicit affective measures correlate with implicit cognitive measures?

Correlational analyses revealed that the IAT was not significantly correlated with either brow or cheek activity. Therefore, an implicitly measured cognitive bias in favour of heterosexuals did not correspond with implicitly measured positivity or negativity.

3.2.6 Does sexual conservatism correlate with affective and cognitive implicit measures? Sexual conservatism was significantly positively correlated with IAT bias, $r = .32$, $p = .02$. Therefore, those with more sexually conservative attitudes were more likely to display a greater implicitly measured cognitive bias toward heterosexuals. No significant correlations were found between sexual conservatism and facial EMG scores.

3.2.7 Does modern homonegativity correlate with covert and overt behaviour? Modern homonegativity was significantly correlated with covert behaviour. Thus, participants who reported more negative attitudes toward gay men were more likely to display discomfort while interacting with a gay man. However, when sexual conservatism was controlled for, this

correlation was no longer statistically significant. Modern homonegativity was not found to correlate significantly with overt behaviour.

3.2.8 Does the feeling thermometer correlate with covert and overt behaviour?

Correlational analyses revealed that explicit affect, measured by the feeling thermometer, did not significantly correlate with either covert or overt behaviour. Thus, participants behaved in a similar manner toward gay interviewers regardless of their reported feelings toward gay men.

3.2.9 Does the IAT correlate with covert and overt behaviour? IAT bias was not significantly correlated with either covert or overt behaviour. Thus, those with greater implicitly measured bias toward heterosexual individuals were not more likely to display covert or overt discriminatory behaviour toward gay men.

3.2.10 Does facial EMG correlate with covert and overt behaviour? Correlational analyses revealed that cheek activity was positively correlated with covert behaviour. Thus, participants were more likely to engage in covert discriminatory behaviour when they displayed greater implicit positive affect toward heterosexual individuals. As well, when sexual conservatism was controlled for, this correlation remained statistically significant. This relationship was similar in direction for high and low prejudiced participants.

Overall brow activity was not correlated with any variables. However, as there was concern about whether the images were explicit enough to elicit an affective response, brow activity was computed only for images of couples kissing. For easier interpretability, this variable was calculated by subtracting scores for heterosexual images from scores for gay images, with larger scores reflecting more negative affect when viewing images of gay couples kissing than heterosexual couples kissing. To achieve a normal distribution, one outlier was deleted. Results indicated that participants who displayed greater negativity toward images of

gay couples kissing were more likely to engage in overt discrimination by rating the heterosexual interviewer more favourably than the gay interviewer. This correlation remained statistically significant when sexual conservatism was controlled. Additionally, brow activity for images of couples kissing was significantly negatively correlated with covert behaviour. When sexual conservatism was partialled out, this correlation remained statistically significant. This relationship was similar for low and high prejudiced participants. This suggests that those who displayed greater negativity toward images of couples kissing were less likely to engage in covert discrimination.

3.2.11 Which variable is the best predictor of covert behaviour? As cheek activity and brow activity when viewing images of couples kissing were correlated with covert behaviour, a multiple regression analysis was conducted in order to better understand which of these variables was the better predictor of covert behaviour. Additionally, sexual conservatism was found to correlate with covert behaviour, $r = .35, p = .009$, so a hierarchical regression was conducted with this variable entered as a covariate. First, the Mahalanobis distance was calculated, which revealed no multivariate outliers. Then, sexual conservatism was entered as a covariate and cheek activity and brow activity toward images of couples kissing were entered in Block 2. The adjusted R^2 value of .12 indicated that sexual conservatism accounted for 12% of the variance of covert behaviour, which was statistically significant, $R = .37, F(1,50) = 7.92, p = .01$. Cheek activity and brow activity for images of couples kissing significantly increased the adjusted R^2 value to .22, which was a significant increase in the variance of covert behaviour, $R = .52, F(2,48) = 4.57, p = .015$. However, only cheek activity was found to be a significant predictor of covert behaviour, $\beta = .26, p = .04$. Therefore, cheek activity was determined to be the better predictor of covert behaviour. Furthermore, a specification error was not of concern as points on

a scatterplot were normally distributed around 0. A histogram revealed that covert behaviour, the dependent variable, was normally distributed. As well, homoscedasticity was good given that the standardized residuals were scattered normally against the predicted values of covert behaviour.

3.2.12 Group comparisons. Paired-samples t-tests were conducted to compare the ratings that participants gave to images of gay couples, heterosexual couples, and neutral imagery. Overall, participants gave more positive ratings to images of heterosexual couples ($M = 6.73$, $SD = 1.30$) than gay couples ($M = 5.02$, $SD = 2.31$), $t(52) = -5.35$, $p < .001$, $d = .91$. As well, more positive ratings were given to neutral images ($M = 7.10$, $SD = 1.23$) than gay images, $t(52) = -6.27$, $p < .001$, $d = 1.12$. Additionally, when these analyses were conducted separately for participants with MHS scores below the 33rd percentile or above the 66th percentile, it was revealed that very high-prejudiced participants rated heterosexual images more positively than gay images, $t(17) = -5.05$, $p < .001$, $d = 1.86$, while very low-prejudiced participants did not, $t(17) = -1.02$, $p = .32$, $d = .11$.

3.2.13 Behavioural measures. First, a paired-samples t-test was conducted to compare whether participants displayed more positive covert and overt behaviours toward gay or heterosexual interviewers. Results indicated that participants displayed more positive covert behaviours toward interviewers perceived as heterosexual ($M = 34.88$, $SD = 4.29$) than those perceived as gay ($M = 32.99$, $SD = 4.90$), $t(53) = -4.20$, $p < .001$, $d = .41$. However, there were no significant differences in overt behaviour, as measured by participants' ratings of gay ($M = 77.83$, $SD = 8.89$) and heterosexual ($M = 79.05$, $SD = 7.62$) interviewers, $t(52) = -1.54$, $p = .13$, $d = 0.15$.

Subsequent analyses were conducted comparing covert and overt behaviour for participants below and above the median score in modern homonegativity. Results indicated that only participants with modern homonegativity scores above the median displayed more negative covert behaviour toward gay interviewers ($M = 32.24$, $SD = 5.41$), compared to heterosexual interviewers ($M = 34.74$, $SD = 5.03$), $t(27) = -5.91$, $p < .001$, $d = 1.08$. As well, neither low nor high-prejudiced participants displayed more negative overt behaviour toward the gay interviewer.

CHAPTER FOUR – DISCUSSION

This thesis is the first known study to utilize facial EMG as an implicit measure of affect toward sexual minorities, in this case, gay men. As well, this is the first known study to compare the predictive utility of facial EMG and the IAT vis-à-vis homonegative behaviour. These results indicate that facial EMG is an appropriate technique to use when investigating homonegativity and may, in fact, be a better predictor of both overt and covert discrimination than the IAT. Additionally, significant correlations between modern homonegativity and the feeling thermometer and IAT further establishes convergent validity of the MHS.

In Phase I of this thesis, modern homonegativity was found to be associated with feeling thermometer scores and sexual conservatism. Specifically, higher MHS scores corresponded with colder feelings toward gay men and greater sexual conservatism. As well, social desirability was associated with sexual conservatism, but not modern homonegativity or feeling thermometer scores. Therefore, it appears that participants with a greater social desirability bias reported more sexually conservative attitudes. This finding has been reported in previous research (e.g., Meston, Heiman, Trapnell, & Paulhus, 1998) and has been a long-standing concern for researchers examining sexuality. However, as social desirability was not significantly associated

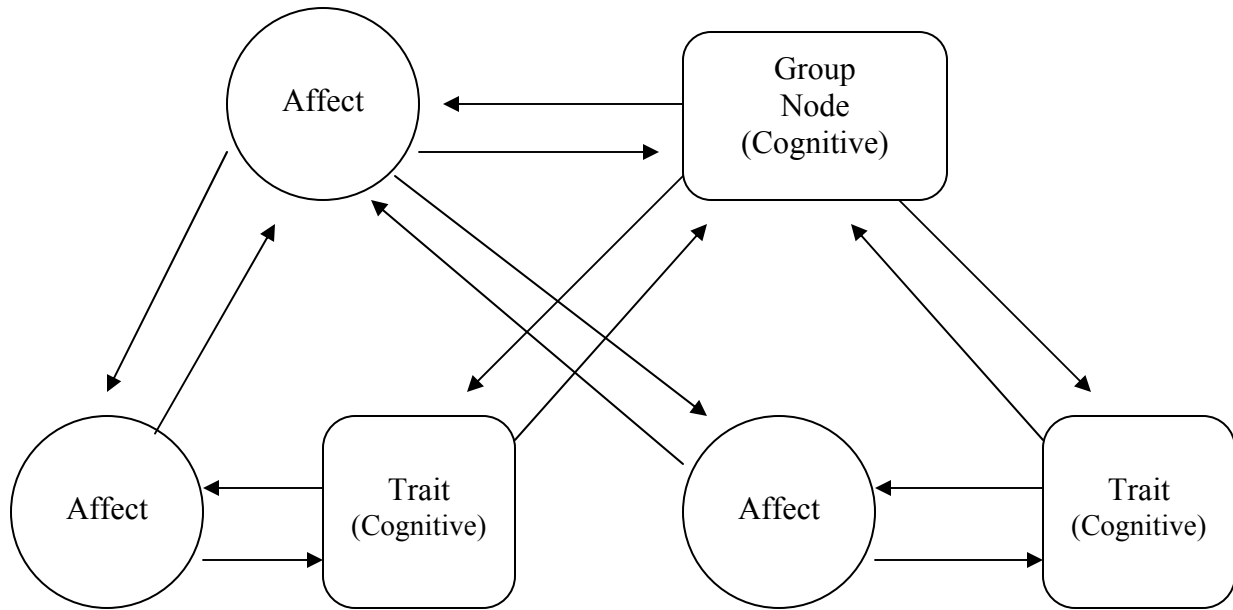
with cognitive or affective explicit measures of homonegativity, it appears that these measures are not associated with the desire to present oneself in a consistently positive way as is sexual conservatism.

4.1 Relationship between Modern Homonegativity and Explicit Affective Measures

In Phase II, findings revealed that higher scores on the MHS were associated with colder feelings toward gay men as well as lower ratings given to images of gay couples, both of which were explicit affective tasks. The relationship between affective and cognitive aspects of homonegativity supports the dual process network proposed by Stephan and Stephan (1993), where cognition and affect are believed to operate parallel to one another (see Figure 2). According to Stephan and Stephan, activation of cognitive nodes, represented in Figure 2 as group nodes and traits, would trigger activity in associated affective nodes and vice versa. The strength of the associations between affective and cognitive nodes is dependent on the frequency and consistency with which they are associated.

As described by Forgas (1999), some affective nodes are believed to be biologically based and may become elaborated as the result of learning. Therefore, while the questions on the MHS are primarily cognitive in nature, both cognitive and affective processes may be activated when answering such questions. It could be understood that people are biologically predisposed to have certain affective reactions toward out-group members, including gay men. However, if one is exposed to the belief that homosexuality is something negative, these affective responses may be strengthened, which may correspond with an increase in negative cognitive responses.

Figure 2. Parallel affective and cognitive networks



4.2 Relationship between Modern Homonegativity and Implicit Affective Measures

Unlike the earlier finding of Vanman and colleagues (1997), the current study failed to find an overall relationship between modern homonegativity and facial EMG recordings from the cheek and brow areas. However, more recent research has not found cheek or brow activity to be related to prejudiced attitudes (Vanman et al., 2004). When analyses were conducted separately for low and high-prejudiced participants, significant correlations were found for cheek activity. The finding that low-prejudiced participants with higher MHS scores (i.e., participants who scored at the higher end of the range of scores between 12 and 28) were more likely to display greater cheek activity when viewing images of heterosexual than gay couples is similar to the findings of Vanman and colleagues (1997). However, the finding that high prejudiced participants with higher MHS scores (i.e., participants who scored at the higher end of the range of scores between 37 and 57) displayed greater cheek activity when viewing images of gay couples than heterosexual couples suggests that those with the highest levels of homonegativity

may have been smirking at the gay pictures. As homonegativity often takes the form of anti-gay jokes or laughing at gay individuals (Jewell, 2007), greater cheek activity toward gay images may not have been indicative of positive affect. Therefore, it appears that high and low prejudiced individuals may react differently to images of gay couples. To differentiate between genuine smiles and smirks, future researchers should place electrodes on the periocular muscle region in addition to the cheek region, as has been done in past research (e.g., Surakka & Hietanen, 1998).

Although the overall non-significant relationship may have been due to different responses for high and low prejudiced individuals, the lack of overall findings may be partially due to the nature of the images shown in the current study. None of the images were sexually explicit and, therefore, may not have been “extreme” enough to elicit a strong positive or negative affective response. Many studies involving facial EMG use images from the International Affective Picture System, which includes images of burn victims, dirty toilet bowls, attacks, mutilations, and laughing people (Lang, Bradley, & Cutberth, 1999). Images used in the International Affective Picture System underwent pilot testing to ensure that each picture only evoked one emotion. The images used in the current study depicted happy couples displaying affection for one another. Thus, while some people may experience negative affect while viewing gay men engaging in physical displays of affection, this may be mixed with positive affect as many of the pictures depict smiling individuals. As well, it is possible that the black and white images used in the current study may have been viewed as more artistic than coloured images.

Other studies involving facial EMG have used audio recordings depicting emotional events in which participants were asked to imagine themselves (Allen, Horne, & Trinder, 1996;

Fiorito & Simons, 1994). Such events included: a) receiving the highest grade in a class, b) waking up in the night to an intruder in the house, and c) having one's romantic partner secretly date one's best friend. It is possible that strong images and scenarios such as these may be more likely to elicit emotional responses than those shown in the current study. Recent unpublished research has found that participants who viewed moderately sexually explicit videos of either gay or heterosexual couples displayed more brow activity when viewing the gay video than the heterosexual video (Morrison, 2008). Thus, future research in this area should utilize more explicit stimuli in order to obtain greater implicit affective responses.

4.3 Relationship between Modern Homonegativity and Implicit Cognitive Measures

Findings from the current study revealed a significant relationship between modern homonegativity and the IAT. This supports past research that has found the IAT to be associated with explicit measures of prejudice (e.g., Steffens, 2005). The significant relationship between the IAT and the MHS suggests that there is overlap between what is measured through implicit and explicit cognitive tasks. This provides support for Fazio and Olson (2003), who suggest that implicit and explicit techniques may measure the same attitude. However, other researchers have not found a relationship between the IAT and explicit measures of prejudice (Vanman et al., 2004). Past research has found that the relationship between explicit and implicit measures of attitudes, as recorded by the IAT, to be varied, although it is usually a positive relationship (Greenwald & Nosek, 2001). One explanation for this inconsistent relationship is that explicit measures, unlike implicit measures, are subject to self-presentation manipulation (e.g., Gawronski, Geschke, & Banse, 2003). Thus, individuals who attempt to conceal their prejudiced attitudes on explicit measures might be less successful doing so on the IAT.

4.4 Relationship between Explicit Measures of Affect and Implicit Measures of Cognition

The IAT was found to be significantly correlated with feeling thermometer scores. However, once sexual conservatism was partialled out, this relationship was no longer significant. This suggests that factors shared by the feeling thermometer and sexual conservatism were responsible for the relationship with the IAT. The IAT was significantly correlated with sexual conservatism, indicating that affect associated with sexually conservative attitudes measured at the explicit level is associated with cognition measured at the implicit level. This further provides evidence for network theories, which propose that affect and cognition operate parallel to one another (e.g., Stephan & Stephan, 1993).

4.5 Relationship between Explicit and Implicit Measures of Affect

The feeling thermometer was not found to significantly correlate with facial EMG scores. As well, facial EMG scores were not associated with ratings given to images of gay couples. This suggests that implicitly and explicitly measured affect do not relate in the same way as implicitly and explicitly measured cognition. One explanation for the non-significant relationship between feeling thermometer and facial EMG recordings is that feeling thermometers are prone to self-presentation manipulation. Thus, participants were able to report having warmer feelings toward gay men if they so desired.

The non-significant relationship between image ratings and facial EMG is in contrast to previous research that has found greater brow and less cheek activity for images that people report disliking (Cacioppo et al., 1986). In the study conducted by Cacioppo and colleagues, images were selected that were deemed to be either mildly or moderately positive or negative. Then, similar to the current study, participants were asked to indicate from 1 to 9 how much they liked or disliked each image. However, other researchers have asked participants to report how

stimuli made them feel by completing a measure assessing such emotions as fear, anger, and happiness (Fiorito & Simons, 1994). Although the images in the current study were pilot-tested for sexual orientation, attractiveness, and gender, they were not pilot-tested for positivity or negativity. As previously discussed, the pictures used in the current study may not have been sufficient to elicit strong emotions associated with affective facial responses. Therefore, future research in this area could use a rating system similar to Fiorito and Simons (1994) to ensure that stimuli are sufficient to evoke implicit and explicitly measured affect.

4.6 Relationship between Implicit Measures of Affect and Cognition

The non-significant correlation between IAT score and facial EMG is similar to the finding by Vanman and colleagues (2004), which also failed to discover a significant relationship between these two measures. This finding suggests that affect and cognition may operate more separately at the implicit than explicitly measured level. Although participants would likely have been experiencing both affect and cognition during the implicit tasks, these implicit measures may have been better able than explicit measures to tap into affect or cognition specifically. Another potential explanation for the non-significant correlation between the IAT and facial EMG is the possibility that the IAT may not have been measuring an individual's endorsed negative cognitions. Some researchers have suggested that the IAT may actually measure a person's *awareness* of qualities attributed to certain targets rather than the degree to which that person actually *endorses* those attributions (Karpinski & Hilton, 2001). Examining the individual IAT scores revealed that only two participants did not have an IAT score showing a bias in favour of heterosexuals. Therefore, even participants who did not endorse modern homonegative items still responded to the IAT in a manner that indicated they held more favourable implicitly measured cognitions toward heterosexuals than gay men. This suggests that participants low in

modern homonegativity were still aware that gay men have been historically portrayed in a negative manner in Canadian society, which may be reflected in the IAT score.

The finding that nearly all participants displayed an IAT bias in favour of heterosexuals is supportive of Devine's (1989) model of stereotyping. According to Devine (1989), stereotypes of a target group are automatically activated for both high and low-prejudiced individuals when they encounter a member of the target group. These automatically activated attitudes have been found to influence behaviour. However, for those who are motivated to maintain a non-prejudiced identity, controlled processes can override the influence of automatic processes. Thus, depending on the situation, one's knowledge of stereotypes as well as one's personal endorsement of such stereotypes may influence behaviour to varying degrees.

Researchers have demonstrated that it is often difficult to separate cultural associations from personal associations as attitudes are the product of learning experiences that take place in one's culture (Banaji, 2001; Fazio & Olson, 2003; Lowery et al., 2001). For example, Fazio and Olson (2003) state that an individual with peanut allergies would develop a strong negative association with peanuts based on personal experience. However, such a person would also know that most people enjoy peanuts. Thus, it is likely that someone with a peanut allergy would complete the IAT in a manner reflecting a positive association with peanuts. Likewise, it is possible that participants with low levels of modern homonegativity may have had positive attitudes toward gay men based on personal experiences but were still aware that many people view gay men in a negative manner. However, given that there was a correlation between the MHS and IAT, personally endorsed attitudes may have moderated the IAT bias.

4.7 Predicting Covert and Overt Behaviour

The finding that greater cheek activity toward images of heterosexual couples was the best predictor of covert behaviour is similar to the finding by Vanman and colleagues (2004). Thus, it appears that greater implicitly measured positivity toward heterosexuals was the best predictor of subtle, covert behaviour that was likely to occur without a great deal of control or awareness. Although the behavioural measure used by Vanman and colleagues (2004) was less covert in nature than the one used in the current research, both studies suggest that greater implicitly measured positivity toward ingroup members, rather than negativity toward outgroup members may be the best predictor of certain types of behaviour. Past research has demonstrated that people are more likely to smile when encountering an ingroup member than an outgroup member (Gonsalkorale, 2005). Accordingly, individuals who displayed more smiles and other measures of comfort when interacting with a heterosexual man displayed greater cheek activity when viewing images of heterosexual couples, demonstrating ingroup favouritism in both tasks. This is supportive of past research which has found that discriminatory behaviours may be the result of positivity toward one's ingroup rather than negativity toward an outgroup (e.g., Aberson et al., 1999; Swim et al., 1999). Further, explicitly measured affect, as obtained through feeling thermometer scores, was not associated with covert behaviour. This finding provides further evidence that implicit measures of affect may be appropriate tools for predicting behaviour.

Initially, modern homonegativity was associated with covert behaviour. However, this correlation was no longer significant when sexual conservatism was partialled out. This suggests that the components common to both modern homonegativity and sexual conservatism were responsible for the relationship with covert behaviour. Moreover, sexual conservatism was measured through an affective, explicit scale. Therefore, the finding that modern homonegativity

was no longer associated with covert behaviour when this measure of affect was partialled out provides further evidence that subtle, covert behaviour is related to affect rather than cognition.

Participants high in modern homonegativity did not display greater overt discrimination than those low in modern homonegativity. As well, there were no overall differences in ratings given to the gay and heterosexual interviewers on the measure of overt discrimination. The similarity in ratings given to each interviewer supports the literature on modern prejudice where individuals do not behave in a discriminatory fashion if they believe that their actions will be construed as discriminatory (Hebl et al., 2002; Morrison & Morrison, 2002). As indicated through the post-experimental inquiry, 15 participants reported that when they were asked to rate each interviewer, they believed the purpose of the interview was to investigate whether people would give lower ratings to a gay interviewer. It is important to note that these participants reported that they first thought that sexual orientation might have been a focus of the current study once the interview was complete and they were asked to evaluate each interviewer. Additionally, the overt discrimination scores of these participants were not significantly different from the larger sample.

One unexpected finding was that negativity toward gay men, as measured via brow activity when viewing images of gay couples kissing was associated with less covert behaviour when sexual conservatism was partialled out. Thus, those who displayed greater negativity toward gay images were less likely to engage in covert discrimination. As this is the only known study to investigate this relationship, it is recommended that future research be conducted in this area in order to determine whether this finding can be replicated.

In contrast, brow activity when viewing images of gay couples kissing was the best predictor of overt behaviour. Interestingly, brow activity was the only variable that was

associated with overt behaviour, which suggests that negativity toward outgroup members is associated with behaviours that people have greater control over. This stands out against the finding that negativity toward images of couples kissing was associated with less covert discrimination. It may be that negativity is a more blatant form of bias and therefore, those who display greater negative affect will be inclined to engage in more overt rather than covert behaviours. However, given that the mean differences in overt ratings were very small (1.22% difference), participants may not have believed they were giving a noticeably lower rating to the gay interviewer.

The finding that all participants except those with extremely low modern homonegativity scores rated images of gay couples less favourably than images of heterosexual couples is in contrast to the lack of overt discrimination. It appears that those high in modern homonegativity willingly admitted that they did not like viewing images of gay couples, although they were unwilling to overtly discriminate against a gay man with whom they had contact. Although it was not assessed in the current study, it is likely that participants did not want to be viewed as prejudiced in their ratings of interviewers with whom they had personal contact, but did not consider giving lower ratings to images of gay couples to be prejudiced. As well, it is possible that individuals considered giving a neutral rating to images to be non-prejudiced. The average rating of gay images was 5, so participants reported neither liking nor disliking the gay images, perhaps in an attempt to demonstrate that sexual orientation did not matter to them.

It is important to reiterate that people may be aware of their affect and cognitions during facial EMG and IAT trials, even though they may not be aware that they automatically produce facial movements or that they respond more quickly to congruent tasks. Although implicit measures of prejudice assess processes that may occur automatically, there is evidence that once

people become aware of these biases, they are able to change them to reduce implicitly measured prejudice as well as covert discrimination (Dovidio, Kawakami, & Gaertner, 2000). Specifically, research has found that low-prejudiced individuals who are made aware of their behavioural biases often experience cognitive dissonance over the discrepancy between their explicitly endorsed beliefs and their actions. This dissonance may serve as a motivation to reduce their discriminatory behaviours, which has been found to correspond to a reduction in implicitly measured prejudice (Devine & Monteith, 1993).

4.8 Limitations and Future Directions

Although the current research produced valuable findings, it is not without limitations. First, the measure of overt behaviour did not force participants to favour one interviewer over another, as is typical of other studies investigating covert behaviour. Thus, participants had the opportunity to provide equivalent ratings to both interviewers. This was a strength in that it allowed participants to be truly equal in their overt behaviour toward each interviewer. However, in reality, people are often not allowed to treat individuals equally, such as when making a hiring decision. The lack of a forced decision calls into question the suitability of this item as a behavioural measure. Without forcing participants to show direct preference for one interviewer over the other, this measure may have been more attitudinal in nature than behavioural. Thus, future studies could include a similar rating system, with a question at the end asking which of the two interviewers they would hire, in so doing, creating a forced choice scenario.

It is important to note that while facial EMG is the measure that was best associated with behaviour in the current study, the IAT, rather than facial EMG, correlated with established measures of homonegativity. Thus, this study provided greater convergent validity for the IAT than facial EMG. It is possible that more detailed measures of covert behaviour, including the

number of smiles, eye blinks, and fidgets, as well other measures of overt behaviour would yield different results. Therefore, while the behavioural measures used in the current study only correlate with facial EMG, future studies should examine how facial EMG and the IAT relate to other behavioural measures.

Another potential limitation of the current study is that interviewers were not trained to rate participants on covert discrimination. As covert discriminatory behaviour was noted in the current study, a factor of interest would be to measure whether the interviewers were aware of such behaviours. It is argued that covert behaviour is harmful as targets are aware that people behave in a less friendly manner toward them than toward others (Morrison, 2007). Past research has found that when trained, interviewers have given similar ratings of covert behaviour as independent coders (Dasgupta & Rivera, 2006). Thus, future studies should include interviewer ratings of participant behaviour.

As this study was largely exploratory in nature, only heterosexual men's cognition, affect, and behaviour toward gay men were assessed. However, heterosexual men are not the only perpetrators of homonegativity, nor are gay men the sole targets. Thus, future research should examine both heterosexual men's and women's cognition, affect, and behaviour toward gay men and lesbian women.

The use of a feeling thermometer as an explicit measure of affect may have been a limitation. Although feeling thermometers have been found to be reliable and valid (e.g., Haddock et al., 1993), they are still considered less reliable than multiple-item measures (Herek, 2002). As well, the feeling thermometers in the current study measured one's global affect toward gay men, which may have differed from affect experienced when viewing pictures of gay men engaging in physical affection. To date, the most commonly used multi-item affective

measure of homonegativity is the Index of Homophobia (Hudson & Ricketts, 1980). However, this measure is also reflective of old-fashioned homonegativity. Thus, future research should strive to develop explicit affective measures reflective of modern homonegativity.

The current study only measured two emotions via facial EMG; positivity and negativity. Although these are the two most reliable and valid emotions measured via facial EMG, placement of electrodes on other muscle regions can measure other emotions, such as disgust. As disgust is a primary emotion associated with homonegativity (Olatunji, in press), measuring this emotion using facial EMG is something that should be undertaken in future studies.

To further investigate the affective and cognitive nature of homonegativity, future research may include neuroimaging methodologies, such as functional magnetic resonance imaging (fMRI). Recently, social cognitive researchers have utilized fMRI to examine areas of the brain that are activated when viewing images of people of different ethnicities (Eberhardt, 2005). Interestingly, both amygdala and prefrontal cortex activation have been noted when White participants view images of Black individuals, suggesting both affect and cognition are triggered. However, no known studies have investigated brain activity associated with homonegativity. Such studies would allow for a better understanding of the cognitive and affective processes associated with prejudice through activation of different areas of the brain.

Finally, pending additional research in the area, facial EMG has the potential to be used in applied settings. Some diversity training programs have utilized the IAT in order to help people become aware of prejudiced attitudes (Critical Measures, 2008). However, the current research suggests that facial EMG is a better predictor of both covert and overt behaviour. Therefore, if future studies also determine that facial EMG is a superior predictor of behaviour, programs designed to reduce prejudice and discrimination may utilize facial EMG as well as the

IAT as tools to help motivate those who explicitly endorse non-prejudiced attitudes to truly examine their attitudes and behaviour. Rather than merely learning how to alter their explicit responses and overt behaviours to appear less prejudiced, individuals will be challenged to question their prejudiced attitudes. Moreover, use of facial EMG would encourage people to challenge these beliefs at the affective level, which is a core component of prejudice (Tropp & Pettigrew, 2005).

4.9 Conclusion

The findings of the current study suggest that facial EMG may be a useful predictor of homonegative behaviour. While more research needs to be conducted, if the current findings are replicated, it would suggest that facial EMG is the technique that best predicts covert and overt discrimination. Interestingly, greater positivity toward heterosexual images was associated with covert discrimination, while greater negativity when viewing gay images was associated with overt discrimination. The finding that the IAT was not predictive of covert or overt behaviour calls into question the suitability of this measure. This finding supports other research that questions whether the IAT actually measures personally endorsed attitudes (Fazio & Olson, 2003; Karpinski & Hilton, 2001). Ultimately, people are concerned with prejudiced attitudes due to their relationship with discriminatory behaviour. Therefore, in assessing prejudice, it is important to use measures that reliably predict discrimination. Based on the current results, facial EMG appears to be superior to the IAT in its ability to detect prejudiced attitudes associated with discrimination. As well, facial EMG was found to be a better predictor of behaviour than cognitive and affective explicit measures.

CHAPTER FIVE – REFERENCES

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Table 1: Explicit Variables from Phase I ($N = 171$)

Variable	<i>M</i>	<i>SD</i>	Actual Range	Possible Range	α	95% CI
MHS	32.13	10.25	12-57	12-60	.90	.88 - .92
SOS	55.76	11.51	21-98	21-105	.87	.83 - .89
MC-SDS	17.98	2.60	13-24	13-26	.60	.50 - .68
FT	62.01	28.56	0-100	0-100	-----	-----

Note: MHS = Modern Homonegativity Scale; SOS = Sexual Opinion Survey; MC-SDS = Marlowe-Crowne Social Desirability Scale (Form C); FT = Feeling Thermometer

Table 2: Correlations from Phase I ($N = 171$)

Variable	SOS	MC-SDS	FT
MHS	.55**	.01	-.69**
SOS	-----	.22**	-.50**
MC-SDS		-----	.02
FT			-----

Note: * $p < .05$, ** $p < .01$

Table 3: Correlations from Phases II and III ($N = 54$)

Variable	MHS	FT	GayRating	<i>D</i>	Brow	Cheek	Covert	Overt	BrowKiss
MHS	-----	-.76**	-.63**	.42**	-.10	.14	.27*	-.02	-.05
FT	-.63**	-----	.66**	-.35**	.11	.15	-.09	-.02	-.10
GayRating	-.45**	.51**	-----	-.29*	.13	.06	-.15	-.16	-.10
<i>D</i>	.29*	-.21+	-.16	-----	-.07	-.03	.03	.07	-.06
Brow	.01	.02	.05	-.01	-----	-.27*	-.04	.24*	.18
Cheek	.04	.25*	.13	-.06	-.26	-----	.33**	-.03	-.19
Covert	.06	.13	.05	-.10	.01	.31*	-----	.13	-.26*
Overt	-.03	-.01	-.19	.07	.24	-.03	.14	-----	.33**
BrowKiss	-.04	-.14	-.13	-.05	.18	-.19	-.27*	.33**	-----

Note: * $p < .05$, ** $p < .01$, + $p = .06$ (1-tailed significance)

Note: GayRating = rating given to images of gay couples; *D* = IAT score; Brow = brow activity measured by facial EMG; Cheek = cheek activity measured by facial EMG; Covert = covert behaviour; Overt = overt behaviour; BrowKiss = brow activity recorded by facial EMG for images of couples kissing

Below Diagonal – Partial correlations controlling for sexual conservatism

APPENDIX A

Interview Protocol (Interviewer S)

When in the Observation Lab:

If first interviewer: The first confederate (hereafter called Interviewer 1) will instruct the participant to sit in a chair adjacent to him or her. The interviewer and participant will be separated by a table.

(To participant): We are interested in assessing students' opinions about various services provided by the University. It is anticipated that the data we gather may be useful in improving the quality of services offered to students.

If second interviewer: (Introduce yourself). I will be asking similar questions to the first interviewer regarding campus services.

Question 1: My first question will be about the writing center. This is a service where English majors will review any essays or papers for you. I have found this service to be very helpful for a person like me. Have you ever used the writing center?

(if yes)

Did you find the feedback that you got to be helpful?

Do you feel that your writing skills have improved as a result of using the writing center?

Do you think that anything about the writing center could be improved?

(if no)

Have you ever considered using this service?

Do you think that you will use the writing center in the future?

Why or why not?

Question 2: Do you use the PAC (Physical Activity Complex) facilities on campus?

(If yes):

How often do you use the PAC?

What do you like about the PAC?

Are there any ways in which you think PAC could be improved? Please explain.

(If no):

Is there anything that would make you more interested in using PAC?

Do you think that you will use the PAC in the future? Why or why not?

Question 3: What do you think about the online registration system? Could you tell me what you like and dislike about it?

Were you able to register in all the classes that you wanted?

Do you think that the online registration system can be improved? If so, do you have any suggestions?

If First Interviewer: That concludes the questions that I will be asking. Thank you very much for your time. Now I will go get the second interviewer who will ask you a few more questions.

If Second Interviewer: That concludes the interview. Now, I would like to give you two forms to complete regarding how well you think that both myself and the other interviewer did. I am going to leave the room to give you some privacy while you complete this and, once you're done, then just place your completed forms in this box. I also understand that once you are finished another researcher will come and get you and escort you upstairs. So, once you're finished, you can just stay there. Thank you once again for your time.

APPENDIX B

Interview Protocol (Interviewer G)

When in the Observation Lab:

If first interviewer: The first confederate (hereafter called Interviewer 1) will instruct the participant to sit in a chair adjacent to him or her. The interviewer and participant will be separated by a table.

(To participant): We are interested in assessing students' opinions about various services provided by the University. It is anticipated that the data we gather may be useful in improving the quality of services offered to students.

If second interviewer: (Introduce yourself). I will be asking similar questions to the first interviewer regarding campus services.

Question 1: My first question will be about campus organizations. Many students find the various organizations on campus to be sources of friendship and support. Personally, I have found the Gay and Lesbian Pride Center on campus to be a very supportive environment for me. Have you ever been there? If not, have you joined any other campus organizations?

(if yes):

Which organization is that?

What are some of the positive aspects of being a member of that organization?

Are there any drawbacks to being a member of that organization?

(if no):

Have you ever considered joining a campus organization? Why or why not?

Do you have any ideas for campus organizations that are currently not in existence?

Question 2: I would like to know if you buy food on campus.

(If yes):

What you think of the food services on campus?

Do you have any favourite places to eat on campus?

(If yes):

What do you like about this place? Why is it your favourite?

How do you think food services could be improved?

Ideally, what would you like to see from food services?

(ask to elaborate if necessary)

(If no):

Why do you not buy food on campus?

What changes to food services would make you more interested in buying food on campus?

Question 2: Do you drive a car to campus?

(If yes):

Where do you find yourself parking?

Do you have a parking pass or do you use the meters?

Do you think the parking pass (or meters) provide reasonable value?

Do you think the parking on campus is adequate?

(If no):

How do you travel to campus? Do you walk, bike, take the bus, etc.?

If First Interviewer: That concludes the questions that I will be asking. Thank you very much for your time. Now I will go get the second interviewer who will ask you a few more questions.

If Second Interviewer: That concludes the interview. Now, I would like to give you two forms to complete regarding how well you think that both myself and the other interviewer did. I am going to leave the room to give you some privacy while you complete this and, once you're done, then just place your completed forms in this box. I also understand that once you are finished another researcher will come and get you and escort you upstairs. So, once you're finished, you can just stay there. Thank you once again for your time.

APPENDIX C

Post-Experimental Inquiry

- 1) Thinking about the study, what was the purpose of rating the images you were shown?
- 2) How did you decide how to rate each image?
- 3) Do you think the experimenter might have expected that you would rate some images in a certain way? Please explain.
- 4) What did you think the Facial EMG study was investigating?
- 5) What do you think the IAT was investigating?
- 6) During the computer tasks, what did you think the true purpose of the study was?
- 7) Did you see any relation between the computer tasks and the online survey that you completed earlier? Please explain.

Now, we are going to move back a bit in time and discuss your experience being interviewed.

- 1) What did you think the face-to-face interview conducted downstairs was investigating?
- 2) During the interview, do you feel that the experimenter might have expected you to behave differently toward one interviewer than the other? Please explain.
- 3) During the interview, do you feel that you behaved differently toward one interviewer than the other? Please explain.
- 4) During the interview, were you aware of each interviewer's race? If so, what were their ethnicities?
- 5) During the interview, were you aware of each interviewer's age? If so, about how old did you think they were?
- 6) During the interviews, were you aware of each interviewer's sexual orientation? If so, what were their sexual orientations?
- 7) Did you perceive the computer tasks (facial EMG and IAT) and the interview to be related in any way? If yes, what was the element (or elements) linking them?
- 8) During this study, what suspicions did you have about the purpose of the study? (*If they had suspicions, clarify whether these occurred during or after the interviews*).

To complete after debriefing:

Nathan's Evaluation: Do you feel that the participant was aware of the purpose of the study at the interview phase? Specifically, during the interview, were they aware that we were investigating subtle behaviour toward gay men?

APPENDIX D

Behavioural Interview Coding Sheet

For First Interviewer

Item	None										Very Much
Eye Contact	1	2	3	4	5	6	7	8	9	10	11
Amount of smiles	1	2	3	4	5	6	7	8	9	10	11
Forward body lean	1	2	3	4	5	6	7	8	9	10	11
Overall comfort	1	2	3	4	5	6	7	8	9	10	11
Friendliness	1	2	3	4	5	6	7	8	9	10	11
Interest in Interaction	1	2	3	4	5	6	7	8	9	10	11

For Second Interviewer

Item	None										Very Much
Eye Contact	1	2	3	4	5	6	7	8	9	10	11
Amount of smiles	1	2	3	4	5	6	7	8	9	10	11
Forward body lean	1	2	3	4	5	6	7	8	9	10	11
Overall comfort	1	2	3	4	5	6	7	8	9	10	11
Friendliness	1	2	3	4	5	6	7	8	9	10	11
Interest in Interaction	1	2	3	4	5	6	7	8	9	10	11

Coder's Initials _____

APPENDIX E

Participant Feedback Sheet

Please answer all questions to the best of your ability. We are asking how you feel the interviewer performed on a variety of criteria. These comments will be given to the interviewers in the form of constructive feedback. Please circle the response option that best corresponds to you opinion.

1.) The interviewer conducted himself in a professional manner.

Strongly Disagree											Strongly Agree
0	1	2	3	4	5	6	7	8	9	10	

2.) The interviewer spoke clearly.

Strongly Disagree											Strongly Agree
0	1	2	3	4	5	6	7	8	9	10	

3.) I found the interviewer to be likeable.

Strongly Disagree											Strongly Agree
0	1	2	3	4	5	6	7	8	9	10	

4.) I found the interviewer to be sincere.

Strongly Disagree											Strongly Agree
0	1	2	3	4	5	6	7	8	9	10	

5.) On a scale from 1 to 10, I found the quality of the interview to be:

Very Bad											Very Good
0	1	2	3	4	5	6	7	8	9	10	

Predicting Homonegative Behaviour

6.) My interest in the interview questions was:

Very Low											Very High
0	1	2	3	4	5	6	7	8	9	10	

7.) I found the interviewer to be:

Very Unattractive											Very Attractive
0	1	2	3	4	5	6	7	8	9	10	

8.) How similar to yourself did you find the interviewer?

Very Dissimilar											Very Similar
0	1	2	3	4	5	6	7	8	9	10	

9.) If I were running a company, I would hire the interviewer to work for me.

Strongly Disagree											Strongly Agree
0	1	2	3	4	5	6	7	8	9	10	

10) Based on my ratings, I feel that this interviewer should conduct interviews in the future.

Strongly Disagree											Strongly Agree
0	1	2	3	4	5	6	7	8	9	10	

Thank you! Now, please deposit your questionnaire in the box.

APPENDIX F

Facial EMG Raw Data Analysis

1. A High Pass filter with a 0.5 Hz frequency was applied to remove data with a frequency below 0.5 Hz.
2. Data was integrated in order to smooth the waveform. The *average over samples* option was selected and the sample number set to 20 based on recommendations from Biopac technical support staff. The *rectify* option was selected in order to normalize the EMG signal. Biopac support staff recommended the following values: Input Units = 1, 0; Scale Value = 50, 0.
3. The waveform that illustrated when a new image was presented was duplicated and transformed to show absolute values. This allowed for computation of EMG scores for each image.
4. Peaks were found for zygomaticus and corrugator activity for each image using the *find peak* option. These peaks were then entered into SPSS for analysis.

APPENDIX G

IAT Scoring Algorithm

1. Trials with values above 10,000 ms were deleted. For the current study, only one trial was greater than this time limit.
2. For trials with errors, the latency for all repetitions of that trial was summed. If this was greater than 10,000 ms, that trial was deleted. However, for the current study, no trials met were greater than that time limit.
3. Participants who had a latency of less than 300 ms for more than 10% of trials were deleted. For the current study, no participants met this criteria
4. Means for Block 3, Block 4, Block 6, and Block 7 were computed.
5. The inclusive standard deviation for Blocks 3 and 6 and for Blocks 4 and 7 were computed.
6. The mean of Block 3 was subtracted from the mean of Block 6. The mean of Block 4 was subtracted from the mean of Block 7.
7. Each difference score was divided by its respective inclusive standard deviation. This resulted in one score for Blocks 3 and 6 and another score for Blocks 4 and 7.
8. The mean of the two previously mentioned scores was calculated to achieve *D*.