In Search of the Defensive Function of Sexual Prejudice:
Exploring Antigay Bias Through Shorter and
Longer Lead Startle Eye Blink

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To explore the theory that some men experience antigay bias because of a defensive reaction to uncertainties surrounding their own sexuality (cf. Herek, 1987), we conducted a study (n = 132 men) in which we physiologically measured the affective underpinnings of antigay bias while individuals with different levels of self-reported bias viewed sexually explicit material. Those higher in antigay bias exhibited less positive affect than did others, but did not appear to experience a defensive reaction. Given these results, combined with those of our previous studies, we conclude that evidence for the existence of a group of men who exhibit antigay bias because of a hidden or unconscious attraction toward men is difficult to demonstrate using current methodology.

Antigay bias is a well documented social problem among men, but research into the correlates and determinants of this social phenomenon is diverse, scattered, and, at times, contradictory. The bulk of research in this area has found antigay bias (formerly known as homophobia) to be, for the most part, a male phenomenon (cf. Kite & Whitley, 1996). Men, compared to women, report more discomfort around gays and less willingness to grant human rights, and foster less of a belief that homosexuality has a genetic basis (Johnson, Brems, & Alford-Keating, 1997).

Clearly, antigay bias is, in many ways, similar to other forms of prejudice in that the same types of people who express racist and sexist attitudes also express sexual prejudice (Cunningham, Nezlek, & Banaji, 2004). But there is also a sexual element present in the expression of antigay bias (i.e., sexual

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conservatism, erotophobia) that distinguishes it from others. It is perhaps this sexual element that accounts for the strong and reliable sex difference in the expression of this form of prejudice (Mahaffey, Bryan, & Hutchison, 2005b).

The reasons for exacerbated antigay bias among men have been argued from a number of theoretical perspectives, ranging from Freudianism to sociocultural development to sex-role stereotyping. But the most contentious explanation is probably the purported homoerotic element of antigay bias, wherein antigay bias is seen as a defense against a man’s own hidden, and perhaps unconscious, desires for other men. For example, according to Connell (1995), “Gay men have noticed a fascination with homosexuality on the part of straight men. Some have seen homophobia as the expression of a secret desire, driven out of consciousness and converted into hatred” (p. 40).

These ideas are best described in the work of Herek (1987), who applied four commonly theorized functions of prejudice to explain differing motivations for negative feelings toward individuals based on their sexual orientation. More generally, the emphasis on function builds on the notion that our attitudes serve a psychological benefit and that the type of benefit varies among people and situations (Katz, 1960; Smith, Bruner, & White, 1956). The first of Herek’s four functions is a value-expressive function, wherein individuals espouse prejudicial attitudes because it is consistent with their religious or moral beliefs. A second function is social-expressive, and describes situations in which one displays sexual prejudice in order to be consistent with the norms of one’s social group. A third function is experiential, wherein individuals might dislike all homosexuals because they have never met a homosexual person, or perhaps because they had a bad experience with one homosexual individual and have generalized the feelings associated with that experience to the entire group. The fourth function of sexual prejudice is a defensive function, whereby one is threatened by homosexuality based on fears and uncertainty about one’s own sexuality or gender conformity (Herek, 1987, 2000). While research has shown a defensive element in other forms of prejudice (cf. Eagly & Chaiken, 1993), this function takes on a new element when it is applied to sexual anxieties. It is based on a fear that one might have homosexual tendencies oneself, thereby posing a need to defend oneself against those tendencies.

This fourth function is perhaps the one that distinguishes sexual prejudice from other forms of prejudice; that is most closely aligned with beliefs in a homoerotic component of antigay bias; and that, in fact, some researchers use as the sole definition of antigay bias. For example, Lock and Kleis (1998) defined antigay attitudes as “defensive attempts to manage internal anxieties . . . representing unresolved psychosexual issues from childhood development” (p. 425). Interestingly, it is also this fourth function that has been
associated with the perpetration of violence toward homosexuals (Herek, 1991). Certainly there are other prejudices that have been theorized to include a defensive component. For example terror management theory posits that ageism is a defensive response to having our own mortality made salient (cf. Martens, Goldenberg, & Greenberg, 2005), but antigay bias includes a defensive response specifically related to sexuality.

Given the status of the sexuality-driven defensive function as a relatively distinctive feature of antigay bias and of its relationship to prior theorizing about the origins of antigay bias, particularly among men, there has been great theoretical interest in this phenomenon, although little empirical evidence has been generated. One problem with defensive motivations, as they are generally defined, is the assumption that such motivations are unconscious (Herek, 1991), and thus are difficult to measure. Some researchers have opted to measure antigay bias physiologically, and this approach shows promise. Shields and Harriman (1984) measured heart rate while participants viewed sexual slides. A cardiac defensive response (i.e., increased heart rate) was observed in some homophobic participants, yet did not occur in any of the non-homophobic participants. Adams, Wright, and Lohr (1996) measured penile tumescence in homophobic and non-homophobic male participants using penile plethysmography. Sexual arousal was measured while participants watched erotic videos of sex between a man and a woman, sex between two women, and sex between two men. In this study, while all participants displayed objective sexual arousal to the heterosexual and lesbian films, significantly more of the homophobic men, as compared to the non-homophobic men, displayed objective sexual arousal when viewing gay male erotic videos (Adams et al., 1996). These findings are especially intriguing because they provide support for the idea that the defensive function of sexual prejudice may be related to sexual identity uncertainty or confusion.

Antigay bias, similar to other types of prejudice, consists of three components: cognitive, behavioral, and affective (Van de Ven, Bornholt, & Bailey, 1996). The cognitive component and, to a lesser degree, the behavioral component have been the focus of the majority of studies, and these components are typically studied using self-report methods. Participants tend to willingly self-report unsupportive social and political attitudes toward those who are homosexual (i.e., cognitive component); and, to some extent, participants will self-disclose previous gay-bashing experiences or will display prejudice toward homosexual individuals (i.e., behavioral component). However, affective responses are somewhat less tangible, as they are not always conscious events (cf. Clore, LeDoux, Zajonc, Davidson, & Ekman, 1994); thus, individuals might not always be fully aware of the type and intensity of affect that they may experience when face to face with a homo-
sexual individual. Since affective responses may be difficult to report accurately in an explicit way, it makes sense that researchers have begun to measure affect using social neuroscience methodology.

In addition to other neuroscientific methods (e.g., fMRI, EEG, ERP, EMG), several studies over the previous decade have confirmed that the acoustic startle response (i.e., startle eye blink) can be a useful measure of attitudes in experimental settings. Specifically, startle eye blink has been used to successfully detect positive and negative affective responses (Amodio, Harmon-Jones, & Devine, 2003; Blascovich, 2000; Lang, 1995; Mahaffey et al., 2005a, 2005b). Eye-blink magnitude is facilitated when an individual is in a negative affective state, but is inhibited when the individual is in a positive affective state. This pattern has been attributable to a motivational priming effect in which the defensive startle eye-blink response is increased when elicited in a negative affective state, but decreased when elicited in a positive affective state (Lang, 1995; Lang, Bradley, & Cuthbert, 1990).

One line of research that has been informative is our recent work in which we have found startle eye blink to be a reliable measure of the affective component of antigay bias (Mahaffey et al., 2005a, 2005b). In these studies, we established a significant relationship between explicit self-reported antigay bias and implicit antigay bias using startle eye blink in men, such that the more self-reported disturbance a male participant expressed at the thought of social contact with a gay man, the greater was his startle magnitude (i.e., less positive affect) toward photographs of nude men and nude gay couples. Women showed no such relationship between their self-reports of antigay bias and reactions to images of lesbian couples.

In an attempt to expand this line of research further to identify men who feel threatened by gay men based on their own sexual identity uncertainties, we preselected male participants based on their scores on an explicit measure of antigay bias for the present study. In our prior studies using simple convenience sampling, we rarely had many participants who fell into the high antigay bias group, and we did not observe a defensive function in our participants. We hypothesized, based on the theory of the defensive function, that to the degree that the defensive function exists as an individual-difference variable, it might be these high-bias individuals who would be most prone to it. Thus, in the current study, we prescreened participants on their degrees of anti-gay bias, and then specifically recruited approximately equal numbers of men who fell into a high, moderate, or low antigay bias group.

Another improvement in this study, as compared to our prior work, is that in the present study, participants received the startle probe at two different lead times. This allowed us to index affective responses that occur more quickly (shorter lead time) and affective responses that occur after there
is more time for cognitive processing (longer lead time). Note that in none of our work prior to this study have we actually tapped the sexual arousal theoretically associated with the defensive function of sexual prejudice. We have established a connection between moderate antigay bias and less positive affect toward nude men and gay couples, which is important and innovative, but the defensive function still remains elusive. In terms of startle response, sexual arousal and positive affect produce a similar response level, which is to say that both are associated with inhibited startle, compared to neutral and negative affect (Giargiari, Mahaffey, Craighead, & Hutchison, 2005; Koukounas & McCabe, 2001).

If the defensive function is truly associated with internal conflict regarding sexuality, and perhaps even a sexual attraction to the same sex, then we would expect that initial affect when viewing a same-sex male couple would be more positive (as reflected in responses at short lead intervals), while subsequent processes that occur after additional cognitive processing will be less positive (as reflected in responses at long lead intervals). Further, if the defensive function is only present in men with high antigay bias, then we would expect this immediate (shorter lead) versus delayed (longer lead) effect to also only manifest in highly antigay-biased men.

Finally, consistent with the work of Adams et al. (1996), we predict that for lesbian and heterosexual stimuli, self-reported sexual arousal should be consistent with physiological affective response for all participants. But for homosexual stimuli, we expect consistency between self-reported and physiological responses for low- and moderate-bias men (e.g., higher sexual arousal will be related to lower/more positive startle response), but inconsistency between self-reported and physiological responses for high-bias men (e.g., they will report no sexual arousal, but will demonstrate more positive physiological responses).

Method

Participants

Participants were 132 male introductory psychology students who were preselected based on their responses to a self-report of antigay bias during our psychology department’s pretesting session. Based on the lower, middle, and upper thirds of the observed distribution of pretest scores, participants were chosen to form the following three categories: (a) low antigay bias men; (b) moderate antigay bias men; and (c) high antigay bias men. Participants reporting a homosexual orientation (i.e., a response of 3 or greater) according to a Kinsey-type scale (Kinsey, Pomeroy, & Martin, 1948) were not eligible.
for the study. Of these participants, 28 were eventually excluded from the analyses as a result of not displaying a startle response at a level above that which is distinguishable from random noise \((n = 22)\) or displaying startle means in excess of 3 standard deviations above the mean \((n = 6)\). The final sample included 104 participants (low antigay bias men, \(n = 40\); moderate antigay bias men, \(n = 37\); high antigay bias men, \(n = 27\)). The racial and ethnic composition of our sample was 83% Caucasian, 6% Hispanic/Latino/a, 5% Asian American, 2% African American, and 2% Native American. The mean age of participants was 19 years, and all participants were over the age of 18 years.

Materials

Materials for the pretesting portion of the study consisted of an online questionnaire. This included the Social Distance Measure of Homophobia (Gentry, 1986) and a Kinsey-type scale of sexual orientation (Kinsey et al., 1948).

Our adaptation of the Social Distance Measure of Homophobia (Gentry, 1986) consists of two subscales: Social Distance to a Gay Man and Social Distance to a Lesbian. Only the version with gay men as the target was used here. This scale measures the social distance with which one is comfortable between oneself and a gay man, and was developed to assess affective reactions toward homosexual men. This measure has demonstrated excellent validity as a predictor of affective startle responses (as compared to other standard measures of sexual prejudice) and reliability over 10 studies in our laboratory (alphas ranged from .93 to .94). The Social Distance to a Gay Man measure contains eight items, such as “I would be uncomfortable at a party where a gay man was present,” and “It would bother me to live in the same house as a gay man.” Participants were asked to respond to each of the eight attitude statements with a Yes/No response set. Those who responded to all eight items with a No response were assigned to the low antigay bias group; those who responded with at least one but not more than three Yes responses were assigned to the moderate antigay bias group; and those who gave at least four Yes responses during pretesting were assigned to the high antigay bias group.

Demographic information, including age and ethnicity, is routinely collected during pretesting. We added a Kinsey-type scale of sexual orientation (Kinsey et al., 1948) to the demographics section in order to exclude homosexual individuals from analyses. This is a single-item, Likert-type scale assessing sexual orientation and ranging from 0 (entirely heterosexual) to 6 (entirely homosexual).
Photographic stimuli consisted of eight affectively neutral stimuli (e.g., electrical outlet) and eight affectively positive stimuli (e.g., puppies) drawn from the International Affective Picture System (IAPS; Center for the Psychophysiological Study of Emotion and Attention, 1994). Each picture was chosen based on its published normative data for men. In addition, there were eight photographs of gay male couples, eight photographs of lesbian couples, and eight photographs of heterosexual couples, taken from the public domain. The individuals shown in the photographs were either nude or seminude and were romantically or sexually engaged in some way (e.g., kissing, fondling), though none depicted explicit sexual acts. All sexual stimuli depicted Caucasian couples so that ethnicity of the stimuli would not act as a confound. All photographic stimuli have been used in our previous studies, and each category has shown excellent internal consistency ($\alpha$ ranged from .92 to .98).

**Design**

The present study is a 3 (Preexisting Antigay Bias Attitude: low, moderate, or high) $\times$ 3 (Stimulus Type: gay male, lesbian, or heterosexual) $\times$ 2 (Startle Lead Time: short lead vs. longer lead) mixed design. Pre-existing attitude is a between-subjects variable. Stimulus type is a within-subjects variable, with neutral used as a covariate to remove individual differences, and positive used as filler. Startle lead time is a within-subjects variable. Shorter lead consists of noise presented 800 ms after presentation of a picture, while longer lead consists of noise presented 4000 ms after presentation of a picture.

**Procedure**

Participants each attended an individual experimental session lasting approximately 1 hr. Consistent with our previous studies, the experimenter described the study to the participant as a method of assessing feelings about pictures by observing brainwaves. The experimenter explained all questionnaires and physiological measures and answered any questions. The experimenter and the consent form also let participants know that they would be viewing sexual images, and that if this made them uncomfortable, they could decline to participate at any time. Participants read and signed IRB-approved informed-consent documents.

Participants were then taken into a private room and were monitored for startle response via two 4 mm Ag–Ag Cl surface electrodes placed under the
left lower eyelid, 20 mm apart, over the orbicularis oculi muscle, while a
ground electrode was placed on the forehead. The skin beneath the facial
electrodes was cleaned with an alcohol-saturated cotton swab immediately
prior to electrode placement in order to lower impedance levels.

The startle-eliciting stimulus was a 105 dB, broadband noise that was
50 ms in duration. All auditory stimuli were administered to participants via
headphones connected to an amplifier that was connected to an iMac®
computer, which played the noise file. The experimental sequence was
generated by a Psycscope presentation on an iMac computer. Participants
were instructed to observe a computer screen for the presentation of the
photographs.

To control for the effects of habituation across trial types, the order of
presentation was randomized for each participant. Participants viewed each
new slide for 5000 ms, and the startle probe occurred at 4000 ms after slide
onset for half of the sexual and neutral stimuli, and at 800 ms for half of the
sexual and neutral stimuli. This timing was carefully chosen to allow for
affective reactions at both leads, as 800 ms is the earliest that affective dif-
ferences in startle modulation can be detected (Codispoti, Bradley, & Lang,
2001). In addition, one startle probe was administered during a blank screen
before any pictures were presented, but was not measured. This probe was
presented in order to eliminate from analyses the extreme response usually
associated with the first probe.

Positively valenced stimuli were paired with silence in order to make the
startle probes appear more random to participants. Between each slide, the
computer screen remained blank for a randomly generated variable interval,
ranging from 18 to 22 s, in order to clear any emotion associated with the
previous image. Presentation of the slides was automated, and the partici-
pants were unable to modify the presentation pace. The EMG signal was
sampled at 1000 Hz and was filtered with a bandwidth of 28 to 500 Hz.

After acquisition of the startle data in response to all 40 slides, partici-
pants then viewed the same 40 slides again in the same order while responding
to questions about each photograph. Participants answered three questions
on Likert-type scales. The first question, about sexual desire, asks “How
strong is your sexual desire right now?” Responses were rated on a 9-point
scale ranging from 1 (I have no sexual desire now) to 9 (I have strong sexual
desire now). The second question, about affective valence toward the photo-
graphs, asks “How happy are you right now?” Responses were rated on a
9-point scale ranging from 1 (very unhappy, sad, annoyed) to 9 (very happy,
pleased). Third, participants were asked about their levels of physical arousal
while viewing each photograph. This question was worded, “How excited are
you right now?” and was rated on a 9-point scale ranging from 1 (very calm,
relaxed) to 9 (very excited, agitated).
Results

This study was a mixed design. It was within-subjects with respect to presentation of stimuli (gay couples, lesbian couples, heterosexual couples, and neutral images) and startle lead time (shorter lead and longer lead) and between-subjects with respect to pre-existing attitudes (high, moderate, or low antigay bias). We primarily relied on ANOVA to test our hypotheses and included $\eta^2$ as a measure of effect size. Note that according to Cohen’s (1988) guidelines, $\eta^2$’s of .01, .09, and .25 represent small, moderate, and large effect sizes, respectively. In order to ensure that we had not sacrificed statistical power by making distinct pre-existing attitude categories from pretesting responses to the continuous social distance scale, all analyses were also repeated using antigay bias as a continuous variable, and the pattern of results was unchanged. Therefore, all analyses reported herein were conducted with pre-existing attitude as a categorical variable.

Stimulus Validity

We first sought to establish the discriminant and convergent validity of our stimuli. For example, we would expect participants to react differently to neutral stimuli, as opposed to all forms of sexual stimuli (i.e., discriminant validity). On the other hand, we would expect the responses to sexual stimuli to be similar in nature, consistent with the startle literature, such that all three should elicit a more positive affective reaction than neutral stimuli (i.e., convergent validity). The mean startle magnitude toward each stimulus type in each of the two lead conditions is presented in Table 1. Startle magnitude toward each of the four photographs presented at short lead and each of the four photographs presented at long lead within each of the four categories of visual stimuli were averaged within participants. Convergent and discriminant validity of our stimuli were assessed with a 4 (Stimulus Type) × 2 (Lead Time) within-subjects repeated-measures ANOVA to test for overall differences between stimulus types with respect to startle magnitude. There was a significant main effect of stimulus type at both lead times. Consistent with our previous studies and with previous research in this area (e.g., Lang, 1995; Mahaffey et al., 2005a, 2005b), generally speaking, neutral stimuli elicited the highest startle magnitude, representing relatively less positive affect; followed by gay male stimuli; followed by heterosexual stimuli; and finally lesbian stimuli, representing the most positive affect. It is important to note that for our sample as a whole, all sexual stimuli were viewed as more positive than were neutral stimuli. Thus, we are dealing with varying levels of positive affect (see Table 1).
Discriminant validity of lead time was also assessed with a 4 (Stimulus Type) ¥ 2 (Lead Time) within-subjects repeated-measures ANOVA to test for differences between short lead presentation and long lead presentation for each type of stimuli with respect to startle magnitude. There was a significant effect of lead time for all four stimulus categories—gay male stimuli, $F(1, 106) = 4.02, p < .05, \eta^2 = .04$; lesbian stimuli, $F(1, 101) = 21.85, p < .01$.

Table 1

<table>
<thead>
<tr>
<th>Stimulus type</th>
<th>Pre-existing attitude</th>
<th>800 ms</th>
<th>4000 ms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Neutral</td>
<td>Low bias</td>
<td>0.58</td>
<td>0.39</td>
</tr>
<tr>
<td></td>
<td>Moderate bias</td>
<td>0.65</td>
<td>0.53</td>
</tr>
<tr>
<td></td>
<td>High bias</td>
<td>0.61</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>0.62</td>
<td>0.47</td>
</tr>
<tr>
<td>Gay Male</td>
<td>Low bias</td>
<td>0.52</td>
<td>0.30</td>
</tr>
<tr>
<td></td>
<td>Moderate bias</td>
<td>0.64</td>
<td>0.49</td>
</tr>
<tr>
<td></td>
<td>High bias</td>
<td>0.67</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>0.60</td>
<td>0.47</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>Low bias</td>
<td>0.50</td>
<td>0.37</td>
</tr>
<tr>
<td></td>
<td>Moderate bias</td>
<td>0.60</td>
<td>0.52</td>
</tr>
<tr>
<td></td>
<td>High bias</td>
<td>0.64</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>0.57</td>
<td>0.49</td>
</tr>
<tr>
<td>Lesbian</td>
<td>Low bias</td>
<td>0.49</td>
<td>0.31</td>
</tr>
<tr>
<td></td>
<td>Moderate bias</td>
<td>0.58</td>
<td>0.41</td>
</tr>
<tr>
<td></td>
<td>High bias</td>
<td>0.58</td>
<td>0.62</td>
</tr>
<tr>
<td></td>
<td>Combined</td>
<td>0.54</td>
<td>0.44</td>
</tr>
</tbody>
</table>

Note. In the Combined line within each lead type, means not sharing the same subscript are significantly different at $p < .05$. 

Discriminant validity of lead time was also assessed with a 4 (Stimulus Type) ¥ 2 (Lead Time) within-subjects repeated-measures ANOVA to test for differences between short lead presentation and long lead presentation for each type of stimuli with respect to startle magnitude. There was a significant effect of lead time for all four stimulus categories—gay male stimuli, $F(1, 106) = 4.02, p < .05, \eta^2 = .04$; lesbian stimuli, $F(1, 101) = 21.85, p < .01$, 


η² = .17; heterosexual stimuli, $F(1, 105) = 3.90, p = .05, \eta^2 = .04$; neutral stimuli, $F(1, 106) = 5.93, p < .05, \eta^2 = .07$—such that long leads were always associated with larger startles than were short leads, suggestive of less positive affect at the long lead interval.

Effects of Pre-Existing Attitudes on Acoustic Startle Response

To minimize the influence of individual differences in overall startle reflex, the mean response in each of the sexual stimuli categories was divided by that participant’s response to neutral stimuli for the respective lead time (cf. Hutchison & Swift, 1999), and these products served as the criterion variables in all ANOVAs. To test our main hypotheses, three mixed-model ANOVAs were estimated with pre-existing attitudes (low, moderate, or high antigay bias) serving as the between-subjects variable and lead time (short vs. long) of each stimulus type as a within-subjects variable in each analysis.

There was no significant main effect of lead time ($p = .70$), nor an interaction between lead time and pre-existing attitudes ($p = .43$) in startle response toward heterosexual images. There was no significant main effect of lead time ($p = .32$), nor an interaction between lead time and pre-existing attitudes in startle response toward lesbian images ($p = .09$).

With regard to our hypotheses involving gay male stimuli, there was no significant main effect of lead time with respect to gay male stimuli. But as predicted, we found an interaction between lead time and pre-existing attitudes such that startle response toward gay male stimuli varied between the two lead times, depending on level of pre-existing attitude, $F(3, 103) = 3.43, p < .05, \eta^2 = .03$. Specifically, as can be seen in Figure 1, there was a significant effect of lead time in the high antigay bias group ($p < .01$), but no effect of lead time in the other two groups ($p = .39$ and .65 for the low and moderate antigay bias groups, respectively). Low, moderate, and high antigay bias men showed similarly positive physiological responses to gay male stimuli at short lead; while at long lead, those with stronger negative pre-existing attitudes toward gay men were less positive than were the other two groups.

Subjective Sexual Desire

We first established the validity of our subjective sexual desire measures. Mean responses toward each stimulus type are presented in Table 2. A
mixed-model repeated-measures ANOVA was used to test for overall within-subjects and between-group differences between types of stimuli with respect to subjective sexual desire. There was a significant main effect of stimulus type, $F(3, 99) = 472.19, p < .001, \eta^2 = .80$, such that lesbian stimuli elicited the

![Figure 1](image-url)  

*Figure 1.* Men’s acoustic startle response while viewing gay male stimuli at short and long leads accounting for individual differences in startle response (measured in volts) between pre-existing attitudes. Higher startle magnitude indicates a less positive response.

**Table 2**

*Mean Subjective Sexual Desire for Each Stimulus Category Among High-Bias Men*

<table>
<thead>
<tr>
<th>Stimulus type</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neutral</td>
<td>1.86</td>
<td>1.33</td>
</tr>
<tr>
<td>Gay male</td>
<td>1.54</td>
<td>1.14</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>5.66</td>
<td>1.97</td>
</tr>
<tr>
<td>Lesbian</td>
<td>6.37</td>
<td>2.10</td>
</tr>
</tbody>
</table>

*Note.* This item was worded “How strong is your sexual desire right now?” Responses were rated on a 9-point scale ranging from 1 (*I have no sexual desire now*) to 9 (*I have strong sexual desire now*).
greatest self-reported sexual desire; followed by heterosexual stimuli; followed by neutral stimuli; and finally gay male stimuli. It is of note that while physiological responses showed that all sexual stimuli were viewed as more positive than neutral, subjective responses placed gay male stimuli as less desirable than neutral, $F(1, 101) = 13.99, p < .001, \eta^2 = .11$. As would be expected, there were no significant differences between subjective sexual desire toward stimuli as a function of lead time of startle presentation ($ps = .58$ to .87).

To test our hypothesis regarding the relationship of participants’ explicit responses toward the gay male stimuli and their less controlled responses to those stimuli, we correlated subjective sexual desire and objective physiological responses (degree of positive affect measured by startle response) to gay male stimuli at both lead times within pre-existing attitude condition (see Table 3). Because larger startle response is related to more negative affect, a negative correlation indicates that more positive physiological affect is related to greater self-reported sexual desire toward those images (i.e., consistency between self-reported and physiological responses). Positive correlations indicate that more positive physiological affect is related to lower self-reported sexual desire toward those images (i.e., inconsistency between self-reported and physiological responses). Recall that an inconsistency between self-reported arousal and a physiological measure of arousal was the finding that led Adams et al. (1996) to conclude that a defensive reaction was at work.

As a result of the small sample sizes within each pre-existing attitude group, the relationships are nonsignificant, so we discuss them in terms of

<table>
<thead>
<tr>
<th></th>
<th>800 ms</th>
<th>4000 ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low bias</td>
<td>-.13</td>
<td>-.12</td>
</tr>
<tr>
<td>Moderate bias</td>
<td>.28</td>
<td>-.03</td>
</tr>
<tr>
<td>High bias</td>
<td>-.14</td>
<td>.22</td>
</tr>
</tbody>
</table>

Note. Positive correlations indicate that more positive physiological affect is related to lower self-reported sexual desire toward those images. Negative correlations indicate that more positive physiological affect is related to greater self-reported sexual desire toward those images.
Cohen’s (1988) guidelines for Pearson’s $r$, where $r$s of .10, .30, and .50 represent small, moderate, and large effects, respectively. For the low antigay bias group, there were small effects in the expected direction at both short lead and long lead.

For the moderate antigay bias group, the correlation at long lead was virtually zero. Interestingly though, at short lead, there was a positive correlation of moderate size, indicating a defensive reaction among moderate antigay bias men in the short-lead condition, a situation we expected to see for high antigay bias men.

For the high antigay bias group, the correlation at short lead between startle response and self-reported sexual desire was negative with a small effect size, while the correlation was in the opposite direction and of small to moderate size at long lead. Again, this positive relationship is suggestive of a defensive response among high antigay bias men, but in the long-lead condition, as opposed to the short-lead condition, as originally predicted. In conclusion, there is some scattered evidence for potential incongruence between self-reported sexual desire and objectively measured positive affect.

Discussion

The intent of the current study was to replicate and extend our previous findings using startle eye blink to observe affective reactions toward gay men. We expanded on what we have done previously by preselecting participants at three distinct levels of self-reported antigay bias, by testing two different lead times, and by comparing self-reported to ostensibly more objective assessments of affective response to gay men in order to investigate Herek’s (1987) defensive function of sexual prejudice.

Throughout the analyses, it is predominantly the high antigay bias group that stands out as the group that is different from the others, and pre-existing attitudes are significantly related to differences in physiological reactions to gay men in this study. Although those with high pre-existing antigay bias did show the most change from short lead to long lead, as predicted, they did not react as positively at the short lead as would be predicted if the defensive function were indeed operating. In fact, all three groups had practically identical startle responses to gay male stimuli at the short lead when accounting for individual differences in the startle response. What was significantly different was a less positive response among high antigay bias men toward gay male stimuli at the long lead, arguably after more conscious cognitive processing had taken place.

We can infer from the current results that these highly biased men are cognitively aware of their negative emotions toward gay men and actually do
not experience feelings that are any more positive or negative than others experience toward homoerotic images at a more automatic level. However, the fact that these participants show a significant change from short lead to long lead, when the others do not, tells us that they do experience a change in affect after cognitive processing when confronted with images of gay men that those who are less biased do not experience.

When we compare the startle responses of these men to their subjective feelings of sexual desire regarding the stimuli, we do find some interesting patterns and relationships between self-reported sexual desire and startle toward gay male stimuli, although they are of only small to moderate effect size. If the defensive function were present in these men, we would expect to see a correlation between these two types of responses, such that they would have strongly asserted their lack of sexual desire toward the images, while their less conscious startle response, specifically at short lead, would have shown otherwise. This did not happen with the high-bias men at short lead where it was predicted, but there is evidence to suggest that this sort of processing may have occurred in the moderate-bias group at short lead instead, as well as among the high-bias group in response to the gay male stimuli at long lead.

These trends show scattered and rather inconsistent support for the defensive function. While we cannot entirely rule it out, based on the current data, the defensive function does not appear to show a strong nor statistically reliable effect on the cognitive or affective reactions of our sample. Given this, as well as the fact that the high-bias group did not vary from the other two groups in their startle responses at short lead as predicted, we conclude that there is only weak, if any, evidence that these men’s strong self-reported discomfort around gay men is masking a hidden attraction toward gay men, as purported by Herek’s (1987) theory of the defensive function.

While we did not show conclusive evidence for the defensive function that has eluded researchers for two decades, high antigay bias men do stand out as different from others with regard to their cognitive and affective responses to gay men, both in terms of their affective physiological responses at long lead, and the correlation of those automatic responses with self-reported sexual desire. It is possible that our effects can be attributed to the mere salience of the attitude object. In this study, the sexual orientation of the targets was made visually salient. If antigay bias is a strongly self-relevant attitude for highly biased men, they may simply spend more time thinking about and thus processing the sexual orientation of those individuals with whom they come in contact. Perhaps their extreme attitudes toward homosexuals stem from constant worry that they will encounter such a person, thus polarizing their attitude.
Conversely, those who experience more moderate or low levels of antigay bias might not spend as much time considering sexual orientation; thus, the attitude is less relevant to the self, and there is decreased salience of the attitude object and more positive affective response. Some theorists have suggested that one must first develop a schema of an attitude object before one’s attitudes can become polarized (Tesser & Leone, 1977). There is, indeed, evidence that an attitude becomes more accessible the more exposure one has to the attitude object (Powell & Fazio, 1984), and there is further evidence to suggest that the repeated expression of one’s attitude may lead to greater attitude extremity (Downing, Judd, & Brauer, 1992).

The generalizability of the current study is, of course, limited in that university freshmen, of mostly Caucasian ethnicity and presumably moderate to high socioeconomic background, comprised our participant population. Since this is a typical limitation of this type of experimental psychological research, our results are at least comparable to most other studies in this area. Our ability to pretest and select participants based on pre-existing attitudes, however, does assist in the generalizability of our findings, since we were able to test participants from all points along the continuum of antigay bias, including genuinely highly biased men. The lack of variability in pre-existing prejudicial attitudes is often a limitation of convenience selection in a university setting.

This set of findings contributes to the literature on antigay bias by bringing us a step further toward determining the underlying reasons for men’s greater extremity, as compared to women’s, in their attitudes toward homosexuals. Across several studies in our laboratory, we can conclude that if the defensive function does exist, it perhaps affects such a small subset of antigay-biased men that it is only detectable through more intrusive methods, such as those used by Adams et al. (1996).

References


