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Influence of Value Predispositions, Interpersonal Contact, and Mediated Exposure on  
Public Attitudes toward Homosexuals in Singapore

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INFLUENCE OF VALUE PREDISPOSITIONS, INTERPERSONAL CONTACT,  
AND MEDIATED EXPOSURE ON PUBLIC ATTITUDES TOWARD HOMOSEXUALS  
IN SINGAPORE

**Abstract**

This national survey tracks changes in Singaporeans' attitudes toward lesbians and gay men (ATLG) and examines value predispositions, interpersonal contact, and mediated exposure as predictors of ATLG and acceptance of homosexuals. The study replicates and extends research done previously and addresses temporal shifts in values and views. Findings indicate that the relatively small positive change in ATLG from 2005 to 2010 was mainly due to values and demographic factors. The addition of several new predictive variables increased the variance explained for why people hold certain ATLG and their acceptance. Conformity to norms, intrinsic religiosity, Western orientation, interpersonal contact, and mediated exposure were significantly associated with both ATLG and acceptance of homosexuals. Perception of homosexuality as a choice was significantly associated with ATLG but not with acceptance of homosexuals. Asian orientation and extrinsic religiosity showed no significant association with either dependent variable. The findings are discussed in the context of a multi-cultural Asian society and future directions for research.

**Keywords:** attitudes, acceptance, homosexuality, public opinion, religiosity, Singapore

INFLUENCE OF VALUE PREDISPOSITIONS, INTERPERSONAL CONTACT,  
AND MEDIATED EXPOSURE ON PUBLIC ATTITUDES TOWARD HOMOSEXUALS  
IN SINGAPORE

Singapore is a highly Westernized Asian country with one of the most developed economies in Asia (Wilson, 2000). Though Singapore is an electoral democracy, it maintains tight controls over public expression (Mutalib, 2000; Zakaria, 2003). In recent years, however, controversial topics such as homosexuality have generated public discourse. For instance, a heated public debate was triggered in 2007 when Members of Parliament discussed whether section 377A of the Penal Code (which criminalizes sex between two men) should be repealed (Basu, 2007). Chua (2003) has argued that attitudes toward gay men and lesbians are one of the “leading indicators of Singapore’s socio-political climate.” Others contend that changes in Singapore’s socio-political climate may be harbingers of developments in other Asian countries (Detenber, Cenite, Zhou, & Malik, 2009). Recent international public opinion data shows generally higher rates of acceptance of homosexuality in Western nations than in Asia (Pew, 2007). However, with exposure to increasing diversity of cultural influences through globalization, one might expect volatility of public opinion on such controversial issues, especially in a diverse and well-connected nation like Singapore.

Although Detenber et al. (2007) were the first to provide representative and methodologically robust data on Singaporeans’ attitudes toward gay men and lesbians, there has been a paucity of empirically grounded research done to gauge and track attitudinal changes toward lesbians and gay men in Asia. With the rapid development that is occurring

across much of Asia, longitudinal research becomes increasingly important. Furthermore, though previous studies have examined conformity to norms and religiosity as predictors of attitudes toward gay men and lesbians (e.g., Detenber et al., 2007; Morrison, Parriag, & Morrison, 1999), no research has examined other types of value predispositions, perceptions, and experiences as predictors of attitudes toward gay men and lesbians and acceptance of homosexuals in Asia.

Hence, this study provides a more thorough examination of public opinion on attitudes toward homosexuals by examining (a) the shift (if any) in Singaporeans' attitudes toward gay men and lesbians since Detenber et al.'s (2007) study was conducted, (b) the additional predictors—Western and Asian orientation, homosexuality as a choice, interpersonal contact, and mediated exposure as predictors of attitudes toward gay men and lesbians and acceptance of homosexuals, and (c) whether interpersonal contact moderates the influence of mediated exposure on attitudes toward gay men and lesbians and acceptance of homosexuals.

### **Attitudes toward Lesbians and Gay Men (ATLG)**

Gay men and lesbians have often been subjects of discrimination and prejudice (D'Augelli & Rose, 1990; Tsang, 1994). Numerous studies have shown that people in many nations hold negative attitudes toward lesbians and gay men, though recent data show gay-accepting majorities in some Western countries (e.g., Abraham & Abraham, 1998; Herek & Capitiano, 1995; Lieblich & Friedman, 1985; Pew, 2007; Steffens & Wagner, 2004). Although there has been little research in Asia on public opinion and homosexuality, studies suggest that people in Asian countries have tended to hold negative attitudes toward

lesbians and gay men (Abraham & Abraham, 1998; Pew, 2007; Widmer, Treas, & Newcomb, 1998; Wong & Tang, 2004). In Singapore, Detenber et al. (2007) conducted a nationally representative survey and found that the majority of citizens and permanent residents (68.6%) had negative attitudes toward gay men and lesbians.

In recent decades, there has been a favourable shift in attitudes toward this minority group in many societies (Altmeyer, 2002; Liebhold, 2000; Steffens & Wagner, 2004). In many cases, this shift can be attributed to demographic and societal changes, in particular the influence of education. That is, better educated and younger people tend to have more favourable attitudes toward and be more accepting of gay men and lesbians, as education enables individuals to be exposed to multiple, and often dissimilar viewpoints, and encourages individuals to embrace social tolerance (Anderson & Fetner, 2009; Bobo & Licari, 1989; Lewis & Gossett, 2008). Although the median age in Singapore has not changed significantly in the past decade (Singapore Department of Statistics, 2011), successive cohorts tend to be better educated, and thus potentially more favourable in their views of homosexuality.

In addition to demographic changes, Singapore has seen greater openness in public debates related to homosexuality. During the 377A debate, supporters of gay rights harnessed the Internet to create an online petition, a *Facebook* group, and a *Youtube* video urging citizens to support the repealing of section 377A (Detenber et al., 2009). More recently, a group of conservative Christian women faced public criticism for taking over the leadership of a non-profit organization because the group charged that the organization promoted homosexuality through their sexuality education program (Chan & Ee, 2009). Furthermore, the first ever public event for gay and lesbian visibility, “Pink Dot,” was

staged successfully without legal restrictions (Tan, 2009). Portrayals of homosexuality in the mass media have been made available to adult audiences with fewer restrictions than in the past, and the authorities have not regulated such content online with a heavy hand (Ng, 2010). According to the tenets of the communication mediation model, media outlets monitor the social environment and provide timely updates about the daily goings-on in society and topics for public discourse. As such, research has shown that mediated exposure can lead to greater public discourse on social issues (Shah, Cho, Eveland, & Kwak, 2005). With greater openness, more information on homosexuality was made available to the public, referenced and exchanged. At the same time, a diversity of viewpoints was presented. Greater openness about a previously taboo topic is likely to lead to changes in factual knowledge that enables individuals to dispel fallacies and negative stereotypes, which in turn, result in positive changes in attitudes. For example, in other nations, positive shifts in attitudes toward gay men and lesbians have been associated with greater openness—which has included more public debate, greater visibility of sexual minorities, and increased media portrayals (Gross, 2001). The changing tenor of public discourse on equal rights for homosexuals could lead to a gradual but systematic reduction in conformity to previously held societal norms on this topic. Given this greater public openness on such issues in Singapore, we predict that Singaporeans' attitudes toward gay men and lesbians have become more favourable since Detenber et al.'s (2007) study was conducted in 2005:

*H1:* There will be a positive shift in Singaporeans' attitudes toward gay men and lesbians from 2005 to 2010.

### **Acceptance of Homosexuals**

In addition to using Herek's (1988) ATLG scale, this study will also examine acceptance of homosexuals as a dependent variable. Although Herek's (1988) ATLG scale is well established, scholars have argued that "its emphasis on abstract values fails to situate the emergence of homophobia within face-to-face interactions" (Swank & Raiz, 2007, p. 264). By contrast, acceptance of homosexuals has been operationalized in a previous study in an Asian context (Hong Kong) as "willingness to accept" various categories of gay and lesbian personal contacts, e.g., a gay co-worker or family member (Hong Kong Home Affairs Bureau's (2006). By gauging both acceptance and general attitudes toward lesbians and gay men, this study will overcome one of the limitations of previous research and contribute to our understanding of how the two concepts are related, and different.

Acceptance is conceptually distinct from attitudes. While attitudes can be privately held (Scheier, 1980), degree of acceptance suggests an outward expression of favourable or unfavourable behaviour toward a gay or lesbian personal contact (Hinrichs & Rosenberg, 2002; Swank & Raiz, 2007). For example, it is possible for people to hold negative attitudes toward gay men and lesbians but display willingness to interact with them or accept them in certain social roles in order to abide by the law or prevailing social norms. Acceptance has been conceptualized to include tolerance, i.e., withstanding or "putting up with" a stimulus (e.g., a member of a group), as well as willingly embracing it or having empathy for it (Rasoal et al, 2011; Williams & Lyn, 2001).

Empirical research has provided evidence for the distinctness of attitudes and acceptance (i.e., indicating discriminant validity). Some studies have shown that

significant predictors of Herek's (1988) ATLG scale may not necessarily covary with acceptance of homosexual personal contacts (e.g., Hinrichs & Rosenberg, 2002). Although they are conceptually and operationally distinct, ATLG and acceptance are most likely to be positively associated. By examining them separately, the present study will provide a more comprehensive understanding of factors that predict attitudes toward gay men and lesbians.

The distinction between attitudes and acceptance seems evident when secular and religious authorities advocate acceptance as a social good, regardless of personal beliefs or feelings. For example, in 2003 when then Prime Minister Goh Chok Tong announced that the civil service was employing gay men and lesbians, he stressed that homosexual acts would continue to remain illegal but nonetheless urged Singaporeans to accept homosexuals as fellow colleagues (Elegant, 2003). In many ways this is analogous to certain religious doctrines, which exhort followers to "love the sinner but not the sin" (Feenan, 2006).

### **Factors Influencing ATLG and Acceptance**

#### ***Conformity to Norms***

Social norms are instrumental in shaping attitudes, beliefs, and values. Norms are reinforced through repeated interpersonal interactions and serve as a form of tacit control over members of a group (Singer, 1981). Conformity to norms has been described as a core Asian value (Kim, Atkinson, & Yang, 1999) and identified as a key characteristic of Singapore culture (Chew, 1994; Jones, 1994). Chew (1994) argues that draconian legal sanctions imposed by the Singapore Government on freedom of expression have

engendered a compliant populace that adheres staunchly to societal norms and routinely defers to the Government's viewpoints on contentious issues.

Homosexuality is widely perceived as a deviation from social norms (Matteson, 1997) and regarded by the Singapore Government as something that has the potential to undermine the conventional family structure (Clammer, 1997). In many traditional societies where heterosexuality is the norm, so too are negative attitudes toward lesbians and gays and rejection of them in various social roles. Thus, following Detenber et al. (2007), we predict that:

*H2: Conformity to norms will be negatively associated with (a) attitudes toward gay men and lesbians (ATLG) and (b) acceptance of homosexuals.*

### ***Religiosity and Religion***

Extant research has shown that religiosity is associated with prejudicial attitudes toward minority groups such as homosexuals (Altemeyer, 1996; Altemeyer & Hunsberger, 1992; Batson & Burris, 1994; Detenber et al., 2007). According to Allport and Ross (1967), the religiosity construct comprises two dimensions, intrinsic and extrinsic religiosity. Extrinsic religiosity has been conceptualized as the extent to which one sees religion as a means of fulfilling one's interests and forging social ties. However, intrinsic religiosity is defined as the degree to which people regard religion as the key motivator in their lives (Allport & Ross, 1967; Herek, 1987). People who are intrinsically religious use their religious belief systems as a guiding principle in their lives (i.e., they live their religion). By contrast, people who are extrinsically motivated use their religion primarily to enjoy camaraderie with other like-minded believers and to expand their social networks.

Intrinsic religiosity has consistently been a stronger predictor of negative attitudes toward lesbians and gay men than extrinsic religiosity (Detenber et al., 2007; Herek, 1987; Kirkpatrick, 1993). It is plausible that people who are intrinsically religious are more willing to express negative attitudes toward gay men and lesbian women and be less accepting of homosexuals because such attitudes and a lack of acceptance are congruent with their religious teachings (Batson, Schoenrade, & Ventis, 1993). Hence, the following hypothesis and research question are proposed:

*H3*: Intrinsic religiosity will be negatively associated with (a) ATLG and (b) acceptance of homosexuals.

*RQ1*: How will extrinsic religiosity be related with (a) ATLG and (b) acceptance of homosexuals?

To date, few studies have examined whether the major religious groups differ with regard to their attitudes toward gay men and lesbians and levels of acceptance of homosexuals. Detenber et al. (2007) demonstrated that Christians and Muslims held significantly more negative attitudes toward gay men and lesbians than did Buddhists and atheists. Although monotheistic religions such as Christianity and Islam frown upon homosexuality (Fulton, Gorsuch, & Maynard, 1999; Helie, 2004), polytheistic religions such as Buddhism seem to be equivocal about the nature of homosexuality (Cabezon, 1993). Hence, we propose the following research question:

*RQ2*: Do different religions in Singapore have different (a) attitudes toward gay men and lesbians and (b) acceptance levels of homosexuals?

### ***Asian and Western Orientation***

Some researchers believe that people are bicultural and often have to “negotiate their dual cultural identities” (Benet-Martinez et al., 2002, p. 494). Singapore is a good example of a society comprised of bicultural individuals. Although traditional Asian values are reflected in the national ideology (Hill, 2000), Singaporeans are accustomed to Western mores because Singapore was a British colony for over a century before becoming independent in 1965 (Quah, 1995). Furthermore, Singaporeans are frequently inundated by Western cultural products such as English-language television programs and films (Weber, 2003).

To date, there has been little research on how bicultural individuals who are extensively exposed to both Asian and Western cultures negotiate these two orientations. Cross-cultural psychologists have suggested that it is possible for individuals to be acquainted with more than one such orientation, even if these orientations appear to be diametrically opposed (Benet-Martinez et al., 2002; Hong, Morris, Chiu, & Benet-Martinez, 2000). By most accounts, the Asian perspective of self is distinctly different from the Western perspective of self. The Western orientation emphasizes individuality and diversity whereas the Asian orientation views self primarily in relation to others and places importance on societal rather than personal interests (Kwan, Bond, & Singelis, 1997; Markus & Kitayama, 1991, 1994, 1998).

Given that homosexuals are often regarded as socially deviant (Clammer, 1997) and those with higher levels of Western orientation are more accommodating of deviant behaviour (Triandis, Bontempo, Villareal, Asai, & Lucca, 1988), it is likely that Western orientation will be positively associated with favourable attitudes toward homosexuals and acceptance of homosexuals. Conversely, since traditional societies generally disapprove of

homosexuality (e.g., Detenber et al., 2007; Herek & Capitiano, 1995; Widmer, Treas, & Newcomb, 1998), and those with higher levels of Asian orientation are likely to endorse adherence to the status quo (e.g., Markus & Kitayama, 1991). Thus, we hypothesize that:

*H4:* Western orientation will be positively associated with (a) ATLG and (b) acceptance of homosexuals.

*H5:* Asian orientation will be negatively associated with (a) ATLG and (b) acceptance of homosexuals.

### ***Homosexuality as a Choice***

According to attribution theory, peoples' attitudes and behaviours toward individuals or groups of people are influenced by inferences made about reasons behind other peoples' behaviours (Heider, 1944, 1958). In particular, one important aspect of attribution theory is controllability. Attributions of controllability can influence peoples' attitudes and behaviours toward stigmatized minority groups. Weiner, Perry and Magnusson (1988) have used attribution theory to examine factors influencing perceptions of stigmatized minorities. They theorized that those stigmatized as a result of what are perceived as personal choices will be judged more harshly than those who are stigmatized because of factors that are not within their control.

Studies have tried to determine the exact causes of homosexuality, but no consensus has been reached on this contentious issue (Haider-Markel & Joslyn, 2008; Tygart, 2000). Some individuals attribute homosexuality to lifestyle choices while others believe homosexuality has biological origins. Gay rights advocates have often adopted the argument that homosexuality is immutable, because homosexuality has been legally

penalized and morally condemned, and legal and ethical systems tend to reduce responsibility for actions or identities that are not choices (Halley, 1989). The perception that homosexuality is a lifestyle choice carries the implication that homosexuality is within one's volitional control and as such, a person who identifies as gay or lesbian can make a conscious effort to change (Whitley, 1990). By contrast, the notion that homosexuality is inborn carries the implication that sexual orientation is not within one's control (Haider-Markel & Joslyn, 2008). Many studies have shown that people who perceive homosexuality to be a choice tend to hold antigay attitudes and are less accepting of homosexuals (e.g., Haider-Markel & Joslyn, 2008; Sakalli, 2002; Tygart, 2000; Whitley, 1990). Hence, we hypothesize the following:

*H6: Viewing homosexuality as a choice will be negatively associated with (a) ATLG and (b) acceptance of homosexuals.*

### ***Interpersonal Contact***

The contact hypothesis posits that prejudice can be reduced through egalitarian social interactions between members of the majority and a minority group (Allport, 1954). Allport's (1954) contact hypothesis has often been used as a theoretical framework to examine peoples' perceptions of members from marginalized minority groups (for a review, see Pettigrew & Tropp, 2006). According to Rothbart and John (1985), attitude change through contact is "an example of the general cognitive process by which attributes of category members modify category attributes" (p. 82). Therefore, people are likely to change their attitudes toward a stigmatized minority group through frequent interactions with specific individuals from the group (Pettigrew, 1998).

Many studies have shown that heterosexuals who have gay or lesbian personal contacts are likely to express favourable attitudes toward gay men and lesbians (Gentry, 1987; Herek, 1988; Herek & Glunt, 1993; Millham, San Miguel, & Kellogg, 1976; Schneider & Lewis, 1984; Weis & Dain, 1979). In particular, Herek and Glunt (1993) found that contact “predicted attitudes toward gay men better than did any other demographic or social psychological variable” (p. 239). For example, studies have found that people who had two or three homosexual personal contacts had significantly more positive attitudes than those who only had one homosexual personal contact (Herek & Capitanio, 1995, 1996; Herek & Glunt, 1993). Lewis (2011) summarized that different studies have different ways of measuring interpersonal contact with gays and lesbians, yielding different findings. That is, sometimes the difference in attitudes is between none and one, one and two, or a few versus many. However, the overall trend is clear: people who had some homosexual personal contacts had significantly more positive attitudes than those with no homosexual personal contact, and people with more homosexual personal contact had significantly more positive attitudes than those with a little personal contact. Similarly, greater interpersonal contact is likely to affect acceptance.

*H7: Interpersonal contact will be positively associated with (a) ATLG and (b) greater acceptance of homosexuals.*

### ***Mediated Exposure to Homosexual Content***

In addition to interpersonal contact, recent research has indicated that it is possible for the media to influence attitudes toward gay men and lesbians and acceptance of homosexuals. Scholars have shown that the media can play an instrumental role in

influencing peoples' perceptions of minority groups (Rothbart & John, 1985). This is in line with the parasocial contact hypothesis (PCH) which postulates that exposure to positive portrayals of minority group members will be associated with a decrease in prejudicial attitudes (Schiappa, Greg, & Hewes, 2005, 2006).

Research indicates that viewers reduce uncertainty about real-life social behaviour through vicarious experiences involved in television viewing (Perse & Rubin, 1989). Parasocial interaction could potentially serve as a functional alternative for people who have little contact with members from stigmatized minority groups (Horton & Wohl, 1956). Research suggests that the manner in which intergroup relationships develop can be replicated with mediated exposure. A person can establish a strong rapport with real or fictitious personas solely via mediated exposure (Pettigrew, 1998). Such parasocial relationships could lead to the formation of positive attitudes about marginalized minority group members as the "common humanity of both groups is recognized, and perceived differences reduced" (Schiappa et al., 2005, p. 100).

Indeed, studies have shown that exposure to media portrayals of gay and lesbian characters is significantly associated with a decrease in prejudice among certain groups of people (Levina, Waldo, & Fitzgerald, 2000; Mazur & Emmers-Sommer, 2002; Schiappa et al., 2005, 2006). Although none of these studies used probability sampling, we expect the relationship to hold true for the general population.

*H8: Mediated exposure to homosexual content will be positively associated with (a) ATLG and (b) greater acceptance of homosexuals.*

### ***Additive Influence of Interpersonal Contact and Mediated Exposure***

Previous research suggests that the media exerts the strongest influence on beliefs and attitudes toward “groups and phenomena about which there is little first-hand opportunity for learning” (Gross, 1991, p. 22). In general, scholars contend that mediated exposure will have the strongest effect on people who have little or no personal contact with minority group members (Armstrong, Neuendorf, & Brentar, 1992; Mastro, Behm-Morawitz, & Ortiz, 2007; Schiappa et al., 2005, 2006). Studies have shown that positive media portrayals of gay men and lesbians are likely to be most efficacious in reducing prejudice amongst people who have no interpersonal contact with gay men and lesbians (Schiappa et al., 2005, 2006). As such, it is plausible that the effects of mediated exposure will be moderated by the amount of interpersonal contact with gay men and lesbians and the effect will be stronger among those with no or few interpersonal contacts. Hence, we postulate that:

*H9: The effect of mediated exposure on homosexual content on (a) ATLG and (b) acceptance of homosexuals will be stronger among those with no or a few interpersonal contacts as compared to many interpersonal contacts.*

### **Methods**

The data for this study came from a nationally representative survey of 959 Singapore citizens and permanent residents, aged 18 or older. Using a Computer Assisted Telephone Interview (CATI) system, university undergraduates were trained to conduct the telephone interviews over a span of two weeks from late January to early February 2010. Respondents were given the choice of answering in English (81.2%), Mandarin (18.1%), or Malay (.6%)—the three most commonly spoken languages in Singapore. Each interview

took an average of 16.2 minutes to complete. Random-digit dialling was used to ensure that residential households with unlisted numbers were reached. Other than ineligible numbers (e.g., disconnected numbers, business numbers, etc), each randomly generated telephone number was attempted at least three times.

The youngest male/oldest female technique was used to randomize within each household. Interviewers were instructed to ask if they could speak with “the youngest male aged 18 or older” who was at home. If there were no eligible men at home, interviewers proceeded to ask if they could speak with the oldest female in the household. This method has yielded representative samples in previous studies (e.g., Kennedy, 1993; Ho, in press; Willnat, Lee, & Detenber, 2002). The final response rate was 36.6%,<sup>1</sup> calculated based on AAPOR Formula 3 (AAPOR, 2009). For dichotomous measures the margin of error is +/- 3.2% at a confidence level of 95%.

After cleaning the data, our initial sample of 959 individuals was reduced to 924,<sup>2</sup> 44.9% of whom were males. In terms of race, the majority of our sample was Chinese (74.6%), followed by Malays (10.4%) and Indians (9.5%). Singapore citizens comprised 87% of our respondents, while 13% were Singapore Permanent Residents (PRs), reflecting the same proportion as the general population. Respondents had an average age of 37.9 years ( $SD = 14.6$ ) and a median age of 38 years; and a median monthly household income of S\$3,500. With regard to education levels, 6.7% had no formal education or only primary school qualifications, 44.5% had some secondary, secondary, or upper secondary school qualifications, and 48.7% had diploma or degree qualifications. In terms of religiosity, 21.6% of our respondents were Christians, 27.2% were Buddhists, 4.5% were Taoists, 12.0% were Muslims, 6.4% were Hindus, and 24.0% were freethinkers or held no religious

beliefs. Slightly more than half of the respondents were married (54.5%) while 43.5% were single.<sup>3</sup>

### ***Dependent Variable Measures***

*Attitude toward lesbians and gay men* was measured using the six item ATLG-S scale by Herek (1994). Respondents indicated on a five-point scale (1 = “strongly agree,” 5 = “strongly disagree”) the extent to which they agreed with statements such as “Sex between two men is just plain wrong,” and “You think lesbians are disgusting.” The six items were averaged and recoded so that higher scores indicate more favourable attitudes ( $M = 2.65$ ,  $SD = .73$ , Cronbach’s  $\alpha = .82$ ). The complete list of items used in the survey and Cronbach’s alphas can be seen in the Appendix.

*Acceptance of homosexuals* was measured using five items that were modified from the Hong Kong Home Affairs Bureau’s (2006) survey on public attitudes toward homosexuals (e.g., “To what degree would you accept or not accept each of the following, a homosexual teacher?”). These five items were measured on a five point Likert scale (1 = “very acceptable”, 5 = “very unacceptable”), and averaged to create a composite measure, with higher scores indicating greater acceptance ( $M = 2.98$ ,  $SD = .83$ , Cronbach’s  $\alpha = .90$ ).

Given that the two main criteria are very likely to be related even though they are conceptually distinct, an exploratory factor analysis using the principal axis factoring extraction method was conducted with the composite measures for ATLG and acceptance of homosexuals to see the extent to which they represented two distinct dimensions. We extracted only meaningful factors with eigenvalues that were greater than 1.00. Two factors emerged: (a) the five items measuring acceptance of homosexuals formed one factor with

an eigenvalue of 5.29, which explained 44.44% of the variance, and (b) the six items measuring ATLG formed a second factor with an eigenvalue of 1.60, which explained an additional 10.68% of the variance (55.12% of total variance explained). These findings provide further justification for examining the two concepts, acceptance and attitudes, separately in our study.

### ***Independent Variable Measures***

*Conformity to norms* was measured using four items adapted from Kim, Atkinson, and Yang's (1999) Asian values scale. Respondents were asked to indicate on a 5-point agreement scale the extent to which they agree with statements such as "A person need not follow the norms of family and society," and "Following expectations of family and society is important". After dropping one item from the scale, the remaining three items were averaged to create a composite scale, with higher scores indicating higher level of conformity to norms ( $M = 3.30$ ,  $SD = .69$ , Cronbach's  $\alpha = .60$ ).

*Asian orientation* was measured using three questions in which respondents indicated on a 5-point agreement scale the extent to which they agreed with statements like "You identify with Asian culture." The items were averaged to create a composite scale, in which higher scores indicate greater Asian orientation ( $M = .3.89$ ,  $SD = .50$ , Cronbach's  $\alpha = .67$ ).

*Western orientation* was measured using three questions in which respondents indicated on a 5-point agreement scale the extent to which they agreed with statements such as "You have a Western way of seeing things." The items were averaged to create a

composite scale, with higher scores indicating greater Western orientation ( $M = 3.08$ ,  $SD = .67$ , Cronbach's  $\alpha = .64$ ).

*Intrinsic and extrinsic religiosity* were measured using the respective subscales of Gorsuch and Macpherson's revised universal I-E scale (1989). Only respondents who said that they had a religion or held some religious beliefs were asked to indicate on a 5-point agreement scale the extent to which they agreed with statements like "You enjoy reading about your religion," and "Your whole approach to life is based on your religion" for intrinsic religiosity (eight items). The items were averaged to create a composite scale, with higher scores indicating higher levels of intrinsic religiosity ( $M = 3.03$ ,  $SD = .62$ , Cronbach's  $\alpha = .78$ ). For extrinsic religiosity, respondents were asked the extent to which they agreed with statements such as "Prayer is for peace and happiness," and "You go to the place of worship mostly to spend time with your friends." The six items were averaged to create a composite scale, in which higher scores indicate higher levels of extrinsic religiosity ( $M = 3.05$ ,  $SD = .55$ , Cronbach's  $\alpha = .67$ ).

*Homosexuality as a choice* was measured using a single item from a study by Horvath and Ryan (2003), in which respondents indicate on a five-point agreement scale the extent to which they agree with the statement that "Homosexuality is not a choice" ( $M = 3.11$ ,  $SD = .69$ ).

*Mediated exposure to homosexual content.* Respondents were asked two questions about the number of films and television programs with gay or lesbian characters they had watched in the past year. The total number of films and television programs watched was then recoded into three categories, that is, 1 = "none," 2 = "a few (1 – 4 films/TV programs)," and 3 = "many (5 and more films/TV programs)" ( $M = 1.73$ ,  $SD = .79$ ). For

convenience, we will refer to this measure as “mediated exposure” in the subsequent parts of the manuscript.

*Interpersonal contact.* To assess interpersonal contact, respondents were asked if they had any family members, relatives, close friends or acquaintances who were homosexual. Those who gave affirmative responses were then asked how many gay men and lesbian women they knew personally. The total number of lesbian and/or gay contacts was then categorized into three groups, that is, 1 = “none,” 2 = “a few (1 – 3 contacts),” and 3 = “many (4 and more contact)” ( $M = 1.70$ ,  $SD = .84$ ).

*Control variables.* Lastly, a standard set of demographic variables including gender, age, income, race, educational level, and marital status were included as control variables.

All these questions were randomized within blocks to guard against potential question-order biases.

## Results

Our results indicate that 64.5% of respondents held negative attitudes toward gays and lesbians, 10.2% were neutral, and 25.3% expressed positive attitudes. With regard to acceptance of homosexuals, 44.9% of respondents found them unacceptable, 14.7% were neutral, and 40.4% were accepting. ATLG and acceptance of homosexuals were found to be moderately correlated ( $r(924) = .57$ ,  $p < .001$ ).

We performed an independent sample *t*-test to determine if there have been any changes in the attitudes of Singaporeans toward lesbians and gay men since the 2005 survey (Detenber et al., 2007). For this analysis, the data from both surveys in 2005 and 2010 were combined, and the results indicate that overall the attitudes of Singaporeans had

become less negative ( $M = 2.65$ ,  $SD = .73$ ) than five years ago ( $M = 2.59$ ,  $SD = .68$ ;  $t(1,926) = -1.85$ ,  $p < .05$ ).

This simple over-time change in ATLG is small but significant. In order to get a sense of how robust the difference was, an ANCOVA using the combined data was run with the year of the survey entered as the independent variable and the demographics and values variables entered as covariates. The findings reveal that each of the covariates except for gender was significantly related to ATLG, and together they accounted for nearly all of the difference from 2005 to 2010. Furthermore, after partialling out their influence there was no significant difference in Singaporeans' attitudes in the 2005 survey and in the current study ( $F(1, 1,620) = .13$ ,  $p = .72$ ).<sup>4</sup> The individual effect size of the covariates was generally small, with the exception of intrinsic religiosity (partial eta-squared ( $\eta_p^2$ ) = .109). The effect sizes of conformity to norms and marital status were .016 and .015, respectively, and the effect size of the rest of the covariates was smaller than .01.<sup>5</sup> The results suggest that *H1* receives only qualified support.

To examine the factors associated with ATLG and acceptance of homosexuals, we performed a hierarchical regression analysis for each dependent variable (see Table 1). The independent variables were entered in blocks according to their assumed causal order. Demographic variables of income, education, age, gender, and marital status were entered into Block 1 of the regression model. Conformity to norms, and intrinsic and extrinsic religiosity were entered next into Block 2. Block 3 consisted of orientations which included Western and Asian orientation, and choice. Lastly, interpersonal contact and mediated exposure were entered into Block 4, followed by the interaction between interpersonal contact and mediated exposure in Block 5. The interaction term was constructed by

multiplying the standardized values of the main effect variables and entered into the model as a separate block to prevent multicollinearity problems between the interaction term and its components (Cohen, Cohen, West, & Aiken, 2003).

[Insert Table 1 about here.]

Among the demographics variables, education was the only variable significantly related to ATLG, that is, respondents with higher education levels were more likely to hold positive attitudes toward lesbians and gays. As for the acceptance criterion, it was significantly associated with education and income, such that people with higher education and income levels tend to be more accepting toward homosexuals.

Conformity to norms was negatively related to both ATLG and acceptance of homosexuals, in which those who conform to norms are more likely to have negative attitudes and be less accepting toward gay and lesbians, supporting *H2a* and *H2b*. Intrinsic religiosity was found to be significantly associated with both criteria. In fact, of all variables in the ATLG regression model, intrinsic religiosity had the strongest relationship with the criterion. The findings, which indicate that people with higher levels of intrinsic religiosity tend to hold negative attitudes and be less accepting toward gays and lesbians, support *H3a* and *H3b*. Extrinsic religiosity, however, was not significantly related to either ATLG or acceptance of homosexuals (*RQ1*).

The regression models showed that Western orientation, but not Asian orientation, had a significant relationship with both ATLG and acceptance of homosexuals. That is, respondents who possess higher levels of Western orientation were likely to express more positive attitudes and greater acceptance toward homosexuals. Thus, *H4a* and *H4b* are supported, but not *H5a* and *H5b*. Choice was found to be significantly associated with

ATLG, but was not related to acceptance of homosexuals. Specifically, respondents who said that homosexuality is not a choice tend to hold negative attitudes toward gays and lesbians. Hence, the findings support *H6a* but not *H6b*.

Both interpersonal contact and mediated exposure<sup>6</sup> were positively associated with ATLG and acceptance of homosexuals. That is, people who possess higher interpersonal contact with other homosexuals and watch more films or television shows with homosexual characters were likely to express more positive attitudes and greater acceptance toward gays and lesbians. Interpersonal contact was more strongly related to both criteria than mediated exposure. In fact, interpersonal contact had the strongest association with the acceptance criterion as compared to the other variables. Thus, the findings support *H7a*, *H7b*, *H8a*, and *H8b*.

The interaction between interpersonal contact and mediated exposure was found to have a significant effect on ATLG, but not on acceptance of homosexuals. Therefore, interpersonal contact was a significant moderator of the relationship between mediated exposure and ATLG, but not acceptance.

Subsequent analysis of the interaction effect on ATLG was conducted by performing a two-way ANCOVA test. The analysis revealed that after controlling for income, education, age, gender, marital status, conformity to norms, intrinsic and extrinsic religiosity, Asian and Western orientation, and choice, the interaction effect of interpersonal contact and mediated exposure on ATLG was significant ( $F(4, 744) = 2.43, p < .05, \eta_p^2 = .01$ ). As seen in Figure 1, the plot suggests that among respondents with high mediated exposure, those with higher levels of interpersonal contact had more positive

attitudes toward gays and lesbians. A pairwise comparison using Least Significant Difference test among respondents with high mediated exposure showed that there was a significant difference in the attitudes ( $p < .001$ ) between those with many interpersonal contacts ( $M = 3.12, SE = .08$ ) and with no contact ( $M = 2.61, SE = .10$ ) while the difference between those with many interpersonal contacts ( $M = 3.12, SE = .08$ ) and those with a few contacts ( $M = 2.84, SE = .12$ ) was marginally significant ( $p = .055$ ). In addition, there was no significant difference between those with a few contacts ( $M = 2.84, SE = .12$ ) and no contacts ( $M = 2.61, SE = .10$ ). These results suggest that both *H9a* and *H9b* are not supported.

For ATLG, the overall regression model accounted for 30.8% of the variance. For the acceptance criterion, the overall regression model explained 30.2% of the variance.

[Insert Figure 1 about here.]

The inclusion of intrinsic and extrinsic religiosity variables in the regression model excluded respondents who had no religious beliefs (16.8%) from the analysis as they were not asked the religiosity questions. Hence, we ran a hierarchical regression analysis for ATLG and acceptance of homosexuals without the intrinsic and extrinsic religiosity variables (see Table 2) to examine if the results were comparable. The results for the two sets of regression models were largely similar, but there were some differences. Among the demographic variables, income, and age were significantly related to the ATLG (without religiosity) model, but not education which was the sole demographic variable that had a significant relationship with ATLG (with religiosity). In addition, Asian orientation was now significantly associated with both ATLG and acceptance in the without religiosity

model, that is, respondents with high levels of Asian orientation tend to have negative attitudes and be less accepting of homosexuals.

[Insert Table 2 about here.]

To investigate if differences in the levels of ATLG and acceptance of homosexuals exist among the major religious groups, a one-way ANOVA test was performed. Only Christians, Buddhists, Muslims, and Freethinkers<sup>7</sup> were included in the analysis as the remaining religious groups' sample size was too small for meaningful comparisons. The findings revealed that there were significant differences among the four religious groups in their attitudes ( $F(3, 780) = 16.08, p < .001$ ) and acceptance toward lesbians and gay men ( $F(3, 780) = 17.61, p < .001$ ) (*RQ2*). A post-hoc Scheffé test showed that Muslims had the most negative attitudes toward gay men and lesbians and were significantly different from Buddhists and Freethinkers. In contrast, Freethinkers were the most positive in their attitudes, significantly higher than the remaining religious groups. In terms of acceptance, Muslims were found to be the least accepting of homosexuals and significantly differed from the other religious groups. Freethinkers were the most accepting and significantly different from Buddhists and Muslims (see Table 3).

[Insert Table 3 about here.]

### **Discussion**

The results indicate that there has only been a small change in ATLG in Singapore from 2005 to 2010. The modest decrease in negative attitudes can be accounted for by most of the values and demographic factors over the same period, especially intrinsic religiosity, suggesting that the change was not sweeping or broad based. A comparison of the

demographics and values variables in 2005 and 2010 revealed that some of these variables changed, while some did not. However, the present study is not designed to determine which of these changes contribute to the change in ATLG. Future studies should attempt to include such design.

The data also indicate that while a majority of Singaporeans have negative ATLG, there is no majority view on acceptance of homosexuals. Nearly as many people say they can accept as say they cannot, and a sizable portion (nearly 15%) say they are neutral on the issue. Taken together, these data show that it is possible to hold negative views yet accept homosexuality on some level. To better understand how and why this apparent divergence occurs future research should more thoroughly examine how people reconcile their acceptance with negative attitudes toward lesbians and gay men. It would also be beneficial to track changes in acceptance levels and ATLG to see how they covary over time.

In terms of predicting ATLG and acceptance of homosexuals, our results were largely consistent with findings from previous studies; conformity to norms, intrinsic religiosity, Western orientation, interpersonal contact and mediated exposure were significantly associated with the two criterion variables. Perception of homosexuality as a choice was significantly associated with ATLG but not with acceptance of homosexuals, while Asian orientation and extrinsic religiosity showed no significant association with either dependent variable. Also, the interaction between contact and mediated exposure was a significant predictor of ATLG but not acceptance. The demographic variables, treated as controls, showed only one difference between ATLG and acceptance of homosexuals.<sup>8</sup> This pattern of results indicates that ATLG and acceptance are similar in terms of what predicts

them, but there are some subtle differences and they are distinct concepts, as the univariate data discussed above reveals.

Consistent with earlier findings (Detenber et al., 2007), conformity to norms was negatively associated with ATLG, and also with acceptance of homosexuals. This is likely to be due to prevailing societal norms in Singapore (Jones, 1994; Sheridan, 1999) which do not seem to have changed much since 2005. Also, in line with findings from previous studies (e.g., Herek, 1987; Kirkpatrick, 1993), intrinsic religiosity was a significant predictor of ATLG and acceptance of homosexuals whereas extrinsic religiosity was not. These results indicate that in Singapore people who say religion guides their lives (i.e., devout practitioners) are more likely to have negative attitudes toward and be less accepting of homosexuals. In contrast, ATLG and acceptance are unrelated to an instrumental, and arguably more casual, view of religion.

Western orientation had a positive association with ATLG and acceptance of homosexuals whereas Asian orientation had no significant association with either variable. These results could be explained by the fact that the Western perspective tends to have a higher threshold for what might be considered social deviance and acceptance of non-mainstream behaviours. However, without the predictive power of intrinsic religiosity (i.e., in the second regression model, see Table 2), Asian orientation emerged as a significantly negative predictor of ATLG and acceptance of homosexuals. This finding reflects the fact that Asian populations tend to have a more negative view of homosexuality than populations in the West (Pew Research Center, 2003, 2007). Extending this to the context of the present study, it is reasonable to conclude that those with higher levels of Asian

orientation have less favourable attitudes toward homosexuals and are less accepting of them.

Perception of homosexuality as a choice was negatively associated with ATLG but not with acceptance of homosexuals. This reinforces the notion that ATLG and acceptance of homosexuals are similar but not identical with each other. While Herek's (1988) ATLG scale gauges attitudes toward gay men and lesbians in general, the acceptance of homosexuals' measure in this study focuses more on the nature of personal relationships. It is possible for people to hold negative attitudes toward gay men and lesbians but accept gay men and lesbians on a more personal level (i.e., as co-workers or friends), regardless of whether they perceive homosexuality to be a lifestyle choice. The precise reason why perception of homosexuality as a choice has this differential effect could be the subject of future research.

Interpersonal contact and mediated exposure were both positively associated with ATLG and acceptance of homosexuals. These findings are consistent with the results from past studies (Herek, 1988, 1994; Schiappa et al., 2005, 2006). The standardized regression coefficients for interpersonal contact were larger than that of mediated exposure in all four regression equations (refer to Tables 1 & 2), indicating that interpersonal contact has a bigger influence in shaping ATLG and acceptance of homosexuals than mediated exposure. This fits with previous findings which have shown that interpersonal contact matters more in shaping attitudes than mediated contact (Tan, Fujioka, & Lucht, 1997). Although mediated exposure may influence attitudes under certain circumstances, direct contact still remains the most important factor in influencing attitudes.

In contrast to previous studies that indicated mediated exposure has the most effect on ATLG for people with little or no interpersonal contact with gay men and lesbians (e.g., Armstrong et al., 1992; Schiappa et al., 2005, 2006), the present study found that mediated exposure has the strongest effect on ATLG among people with many personal contacts. There are two plausible explanations. First, it could be due to the positive correlation between interpersonal contact and mediated exposure in this sample of Singapore citizens and permanent residents. Alternatively, this could be due to differences in the way mediated exposure has been measured—this study used the total number of films and television programs watched as a gauge of mediated exposure whereas other studies (e.g., Schiappa et al., 2006) used viewing frequency and Likert-scale items on parasocial contact to measure the extent of mediated exposure. As for the non-significant relationship between the interaction effect and acceptance, since personal contact is the most influential predictor of acceptance, it is possible for personal contact to influence acceptance of homosexuals *independently* of mediated exposure. This further indicates that ATLG is a more abstract concept whereas acceptance pertains more to specific characteristics of interpersonal relationships with various types of gay men and lesbian personal contacts. Nevertheless, more research needs to be done to establish the interaction pattern between interpersonal contact and mediated exposure.

Among all the religious groups, Muslims held the most negative attitudes toward gay men and lesbians and were the least accepting of homosexuals (refer to Table 3). This is not surprising as homosexuality runs counter to Islamic teachings. Also, it is logical for Freethinkers to hold the most positive attitudes toward gay men and lesbians and be the most accepting of homosexuals amongst all the religious groups, as studies have shown that

Freethinkers are the most likely to have liberal worldviews (Agnew, Thompson, Smith, Gramzow, & Currey, 1993). Christians had the second lowest ATLG scores but were more accepting of homosexuals than Buddhists and Muslims. This could be a reflection of the Christian doctrine which advocates “hating the sin but not the sinner” (Feenan, 2006). Also, this further underscores the need to distinguish ATLG and acceptance of homosexuals.

This study has limitations that could be overcome in future research. First, some measures had relatively low reliabilities (e.g., conformity to norms) or comprised only one item (e.g., perceptions of homosexuality as a choice). Second, this study utilized a simple longitudinal design to track changes in ATLG. Future research may attempt to use panel designs so that more accurate temporal comparisons can be made. Third, although we modified the religiosity scales to suit the local context, these scales nonetheless have a strong Judeo-Christian bias (Detenber et al., 2007). Thus, subsequent studies should develop religiosity scales that are more applicable for other religions. Fourth, in order to have a better overview of public opinion on issues pertaining to homosexuality, the findings from this study also need to be replicated in other Asian countries. Fifth, future studies should also incorporate additional attitudinal and behavioural measures such as discrimination against homosexuals.

In sum, the findings from this study show that a wide range of demographic and psychographic variables can influence ATLG and acceptance of homosexuals. With the addition of new variables in this study, the amount of variance explained was double the variance explained in Detenber et al.’s study (2007). Hence, by using more sophisticated regression models, this study provides a more holistic explanation of the factors which shape ATLG and acceptance of homosexuals. It is possible that this study can inform

policy debate with its finding that Singaporeans are still very conservative on this issue and generally hold negative attitudes toward gay men and lesbians. Although there has been only a very modest positive shift in ATLG from 2005 to 2010, it is important to keep tracking changes in attitudes toward gay men and lesbians as public debate on issues pertaining to homosexuality continues to increase in Singapore. Given that Singapore has become more Westernized (Wilson, 2000) and that media content with homosexual themes is increasingly available on the Internet (Lim, 2004) and in local cinemas (Ong, 2006), it seems possible that there will be a more significant shift in attitudes toward gay men and lesbians over time.

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### Endnotes

<sup>1</sup> Out of the 12,004 randomly generated numbers, 6,825 numbers were fax / disconnected / business numbers, or non-Singapore residents; 2,685 were unanswered or busy; 214 had language problem; 23 were unattempted. Out of the 2,257 contacts, 1,074 refused to participate, 124 terminated the interview halfway, 72 asked to be called back at a later time (but the predetermined time was after the end of the interviewing period) and 987 completed the interview. Outcome rates, calculated according to AAPOR guideline, were response rate 3 = .37; cooperation rate 3 = .45; and refusal rate 3 = .43. We used 'Completes/Total sample size' to calculate the 'e' value in this study. Due to technical problems, interview data of 28 respondents could not be retrieved, resulting in the final sample of 959 individuals, aged 18 or older.

<sup>2</sup> For all items, the proportion of missing values was less than 10%. A total of 35 cases were removed during the data cleaning process—15 cases because interviewees gave 'don't know' or 'refused to answer' as responses for more than 25% of the items; another 18 cases of data because of numerous logical inconsistencies; and two cases were removed because respondents demonstrated severe response set (i.e., gave similar answers on most questions, including reversed items).

<sup>3</sup> The parameters for Singapore citizens and permanent residents, based on the 2009 Population Trends (Singapore Department of Statistics, 2009), are 49.0% males, with the median age of 36.9 years, and the median monthly household income of S\$5,398. The proportion of race is 75.7% Chinese, 12.5% Malays, and 8.7% Indians. Based on the 2005 General Household Survey (Singapore Department of Statistics, 2005), 27.3% of the Singapore resident population has no formal education or only primary school qualification,

43.1% has lower secondary, secondary, or upper secondary school qualification, and 30.0% has diploma or degree qualification. In terms of marital status, 30.4% are single and 61.9% are married. Based on the 2000 census data (Singapore Department of Statistics, 2000), 14.6% of the resident population are Christians, 42.5% are Buddhists, 8.5% are Taoists, 14.9% are Muslims, 4.0% are Hindus, and 14.8% are freethinkers or has no religious beliefs.

<sup>4</sup> We performed a second ANCOVA test to compare the ATLG in the 2005 and current survey, controlling for the demographics and values variables except for intrinsic and extrinsic religiosity so that respondents with no religious beliefs (16.8%), who were not asked the religiosity questions, would be included in the analysis. Similarly, the result revealed that there was no significant difference in the attitudes over the past five years ( $F(1, 1,893) = .005, p = .94$ ). The effect sizes of the covariates were relatively small, with most covariates had effect sizes of less than .01, except for conformity to norms and marital status which partial eta-squared ( $\eta_p^2$ ) were .022 and .01, respectively.

<sup>5</sup> According to the guidelines provided by Cohen (1988), the effect size is small, medium, and large when the  $\eta_p^2$  (partial eta-squared) is .01, .06, and .14, respectively.

<sup>6</sup> Mediated exposure refers to the number of movies and television shows with gay or lesbian characters respondents have watched in the past year.

<sup>7</sup> The Freethinkers group includes those with no religious beliefs as well as those with some religious beliefs. Both groups were included in the analysis as there was no significant difference among the two groups in their attitudes ( $t(220) = .34, p = .74$ ) and acceptance toward homosexuals ( $t(220) = -.66, p = .51$ ).

<sup>8</sup> Although past research has pointed out gender differences in attitudes toward homosexuals (e.g., Kite & Whitley, 1996), our study showed that gender had no significant effect on ATLG or acceptance. This result is consistent with the earlier study by Detenber et al. (2007).

### Appendix. Item Inventory for Composite Measures

#### Attitudes toward lesbians and gay men (Cronbach's $\alpha = 0.82$ )

1. Sex between two men is just plain wrong.
2. You think male homosexuals are disgusting.
3. Male homosexuality is a natural expression of sexuality in men.
4. Sex between two women is just plain wrong.
5. You think lesbians are disgusting.
6. Female homosexuality is a natural expression of sexuality in women.

#### Acceptance of homosexuals (Cronbach's $\alpha = 0.91$ )

To what degree would you accept or not accept:

1. A homosexual co-worker.
2. A homosexual teacher.
3. A homosexual friend.
4. A homosexual neighbour.
5. A homosexual family member.

#### Conformity to norms (Cronbach's $\alpha = 0.60$ )

1. Following familial and social expectations is important.
2. A person need not follow one's family's and the society's norms.
3. A person need not conform to one's family's and the society's expectations.

#### Asian orientation (Cronbach's $\alpha = 0.67$ )

1. You identify with Asian culture.
2. You are Asian at heart.
3. You hold Asian values.

#### Western orientation (Cronbach's $\alpha = 0.64$ )

1. You identify with Western culture.
2. You have a Western way of seeing things.
3. You hold Western values.

#### Intrinsic religiosity (Cronbach's $\alpha = 0.78$ )

1. You enjoy reading about your religion.
2. Your whole approach to life is based on your religion.
3. It is important for you to spend time in private thought and prayer.
4. You have often had a strong sense of god's presence.
5. You try hard to live all your life according to your religious beliefs.
6. You are religious but you don't let it affect your daily life.
7. It doesn't much matter what you believe so long as you are good.

8. Although you believe in your religion, many other things are more important in life.

**Extrinsic religiosity (Cronbach's  $\alpha = 0.62$ )**

1. You go to the place of worship mostly to spend time with your friends.
2. You go to the place of worship mainly because you enjoy seeing people you know there.
3. You go to the place of worship because it helps you to make friends.
4. Prayer is for peace and happiness.
5. You pray mainly to gain relief and protection.
6. What religion offers you most is comfort in times of trouble and sorrow.

**Homosexuality as a choice**

1. Homosexuality is not a choice.

**Mediated exposure (Pearson's  $r = .54$ )**

1. In the past year, how many films with gay / lesbian characters have you watched?
2. In the past year, how many TV shows with gay or lesbian characters have you watched?

**Interpersonal contact**

1. Do you have a family member who is homosexual -- that is, gay or lesbian?
2. Do you have a relative who is homosexual -- that is, gay or lesbian?
3. Do you have a close friend who is homosexual -- that is, gay or lesbian?
4. Do you have an acquaintance who is homosexual -- that is, gay or lesbian?

**(Pearson's  $r = .56$ )**

5. In total, how many gay men do you know personally?
6. In total, how many lesbian women do you know personally?

Table 1. Factors influencing ATLG and acceptance of homosexuals (with religiosity)

<i>Independent variables</i>	ATLG ( <i>N</i> = 764)				Acceptance ( <i>N</i> = 764)			
	<i>Zero-order correlation</i>	<i>B</i>	<i>SE B</i>	$\beta$	<i>Zero-order correlation</i>	<i>B</i>	<i>SE B</i>	$\beta$
<i>Demographics</i>								
Income	.14***	.02	.01	.07	.22***	.03	.01	.09**
Education	.19***	.03	.01	.08*	.24***	.05	.02	.13***
Age	-.22***	.00	.00	-.02	-.22***	.00	.00	.02
Gender	-	.04	.05	.03	-	.09	.05	.05
Marital status	-	-.07	.06	-.05	-	-.06	.07	-.03
$\Delta R^2$		.08***				.14***		
<i>Values</i>								
Conformity to norms	-.27***	-.16	.03	-.15***	-.28***	-.16	.04	-.14***
Intrinsic religiosity	-.37***	-.39	.04	-.33***	-.23***	-.22	.04	-.17***
Extrinsic religiosity	-.08*	.06	.04	.04	-.16***	-.07	.05	-.05
$\Delta R^2$		.17***				.07***		
<i>Orientations</i>								
Western orientation	.25***	.11	.04	.10**	.30***	.19	.04	.15***
Asian orientation	-.14***	-.02	.05	-.02	-.13***	-.08	.05	-.05
Choice	-.12***	-.07	.02	-.10***	.001	-.01	.02	-.02
$\Delta R^2$		.03***				.04***		
<i>Mediated and Interpersonal Exposure</i>								
Personal contacts	.26***	.10	.03	.12***	.37***	.22	.04	.22***
Total number of films and television programs watched	.22***	.08	.03	.08*	.27***	.10	.04	.09**
$\Delta R^2$		.03***				.06***		
<i>Interaction</i>								
Personal contacts x Total number of films and television programs watched		.08	.02	.11***		.00	.03	.00
$\Delta R^2$		.01***				.00		
<i>Total R<sup>2</sup></i>		.31***				.30***		

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 2. Factors Influencing ATLG and acceptance of homosexuals (without religiosity)

<i>Independent variables</i>	ATLG ( <i>N</i> = 918)				Acceptance ( <i>N</i> = 918)			
	<i>Zero-order correlation</i>	<i>B</i>	<i>SE B</i>	<i>β</i>	<i>Zero-order correlation</i>	<i>B</i>	<i>SE B</i>	<i>β</i>
<i>Demographics</i>								
Income	.14***	.02	.01	.07*	.22***	.03	.01	.11*
Education	.19***	.02	.01	.05	.24***	.04	.01	.09**
Age	-.22***	.00	.00	-.08*	-.22***	.00	.00	-.01
Gender	-	.00	.04	.00	-	.06	.05	.04
Marital status	-	-.03	.06	-.02	-	-.07	.06	-.04
$\Delta R^2$		.08***				.13***		
<i>Values</i>								
Conformity to norms	-.27***	-.17	.03	-.16***	-.28***	-.17	.04	-.14***
$\Delta R^2$		.04***				.03***		
<i>Orientations</i>								
Western orientation	.25***	.13	.03	.12***	.30***	.20	.04	.16***
Asian orientation	-.14***	-.10	.04	-.07*	-.13***	-.10	.05	-.06*
Choice	-.12***	-.10	.02	-.14***	.001	-.01	.02	-.02
$\Delta R^2$		.05***				.04***		
<i>Mediated and Interpersonal Exposure</i>								
Personal contacts	.26***	.09	.03	.10**	.37***	.21	.03	.21***
Total number of films and television programs watched	.22***	.07	.03	.08*	.27***	.09	.03	.09**
$\Delta R^2$		.02***				.05***		
<i>Interaction</i>								
Personal contacts x Total number of films and television programs watched		.07	.02	.10**		.02	.02	.03
$\Delta R^2$		.009**				.001		
<i>Total R<sup>2</sup></i>		.20***				.26***		

Note. \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Table 3. ATLG and acceptance of homosexuals among different religious groups

	ATLG		Acceptance		<i>N</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
<i>Religion</i>					
Christian	2.50 <sub>ab</sub>	.75	3.03 <sub>ac</sub>	.83	200
Buddhist	2.62 <sub>a</sub>	.58	2.87 <sub>a</sub>	.72	251
Muslim	2.29 <sub>b</sub>	.79	2.53 <sub>b</sub>	.87	111
Freethinker	2.81 <sub>c</sub>	.67	3.16 <sub>c</sub>	.78	222

*Note:* Values with different subscripts within columns indicate a difference that is significant at  $p < .05$ .

Figure 1. Interpersonal contact, mediated exposure, and ATLG

