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RESEARCH ARTICLE

Exploring patterns of explicit and implicit anti-gay attitudes in Muslims and Atheists

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Abstract

Research into the relationship between religion and anti-gay attitudes frequently focuses on Christianity. We explored the role of religiosity dimensions, previous contact, and factors in the dual-process motivation model as predictors of explicit and implicit anti-gay attitudes in samples of Muslims and Atheists. The explicit and implicit attitudes of Muslims were more negative than the attitudes of Atheists. Explicit attitudes were more negative towards gay men than lesbians; implicit attitudes were negative towards gay men but were unexpectedly positive towards lesbians. In regression analyses, religious fundamentalism and extrinsic religious orientations (Study 1), and contact and right-wing authoritarianism (Study 2) were strong significant predictors of explicit anti-gay attitudes. Interestingly, none of the factors of interest predicted implicit anti-gay attitudes. These findings reveal a strong link between Islam and explicit anti-gay attitudes, but suggest that the relationship between religion and implicit anti-gay attitudes may be more complex than previously thought.

The relationship between religion and attitudes towards homosexuality is well established. However, research in this domain frequently focuses on Christian samples, and these attitudes are yet to be fully explored among members of other religions, such as Islam. The traditional teachings of Islam are outright in their condemnation of homosexuality (e.g., Duran, 1993) and have thus engendered a theologically derived antipathy towards gay men and lesbians by Muslim individuals. Anti-gay attitudes (also referred to as homophobia or sexual prejudice; see Herek & McLemore, 2013) have been evidenced by empirical reports of pervasively negative attitudes among self-identified Islamic individuals (Duyan & Duyan, 2005; Gelbal & Duyan, 2006; Güney, Kargı, & Çorbacı-Oruç, 2004; Rouhani, 2007); however, little work has addressed the factors driving this negativity. Some research suggests that such attitudes are a result of religious scriptural teachings (e.g., Bonthuys & Erlank, 2012; Duran, 1993), while other research has suggested that these attitudes are beyond what is necessitated by the teachings of the Qur'an (e.g., Dossani, 1997; Hooghe, Claes, Harell, Quintelier, & Dejaeghere, 2010). Relative to Christianity, little is

known about the relationship between Islam and attitudes towards homosexuality. The literature suggests that individuals who identify with a religion tend to report more anti-gay attitudes than individuals who do not (e.g., Finlay & Walther, 2003; Hunsberger, 1995). However, it is argued that religiosity (religious-based individual differences in how a person uses religion in their daily life; e.g., Saroglou, 2009) might be more important in prejudicial attitudes than self-identified categorical religious affiliation (Allport, 1954; Anderson, 2015; Whitley, 2009). These findings are yet to be substantiated within a sample of Muslims. To our knowledge, implicit (i.e., associative) anti-gay attitudes are yet to be explored in an Islamic sample. Thus, across two studies, we explored a series of theoretically informed variables as predictors of explicit (i.e., self-report) and implicit (i.e., associative) anti-gay attitudes in a sample from Turkey.

Islam and Anti-gay Attitudes

Researchers have debated the potential for religion to result in either positive (e.g., intergroup tolerance;

Hunsberger, 1995) or negative (e.g., intergroup hostility; Hunsberger & Jackson, 2005) contributions to societal attitudes. In the case of gay men and lesbians, both religious affiliation and religiosity are usually related to negative attitudes, because gay people are arguably perceived as violating religious value systems for the majority of the world's religions (Whitley, 2009). As such, religion often has been found to be an important predictor of explicit anti-gay attitudes, a finding that has been well documented in Christian samples (e.g., Finlay & Walther, 2003; Haslam & Levy, 2006; McFarland, 1989; Whitley, 2009). A disproportionate amount of research in this domain has focused on Christian samples, and this relationship is less established with other religions.

Traditional Islamic scholars state that Islam condemns homosexuality based on doctrinal interpretations (Jamal, 2001; Siraj, 2009). More specifically, these scholars view being gay as deviant, sinful, and a revolt against God (Abu-Saud, 1990), which leaves no possibility for simultaneously identifying as gay and Muslim (Duran, 1993). There have been attempts for alternative interpretations of the Qur'an (which could be inclusive of homosexuality) by more contemporary scholars (Jamal, 2001; Kugle, 2003); however, the majority of Islamic communities have not endorsed these interpretations. Arguably, we can conclude that Islam prescribes anti-gay attitudes. Empirical studies of anti-gay attitudes within Muslim samples are quite minimal in the literature. The few that exist suggest that anti-gay attitudes are prevalent and particularly negative (Duyan & Duyan, 2005; Güney et al., 2004). Explicit anti-gay attitudes have been predicted by gender, interpersonal contact, and religious beliefs (Duyan & Duyan, 2005; Gelbal & Duyan, 2006; Sakalli, 2002, 2003).

Gay people in Turkey have been subject to various forms of violence, stigma, and discrimination. Public endorsements of anti-gay rhetoric by politicians and media, and adverse treatment by police and other relevant authorities have led to an under-reporting of hate crimes, the acceptability of sexual prejudice in Turkish society, and a subsequent prevalence of a homophobic culture. For example, in the sixth wave of the World Values Survey (2011), 85% of Turkish citizens reported that gay people were their least desired neighbours. Although these results form a solid base for forming further predictions about the associations between Islam and anti-gay attitudes, the continued investigation of this relationship is warranted, and Turkey provides a pertinent context for this investigation.

Implicit Measures and Anti-gay Attitudes

A relatively recent shift in methodological approaches to psychological research has seen the introduction of implicit measurements of attitude-objects (for a review, see Fazio & Olson, 2003). These measures are thought to capture implicit attitudes towards a target, which are contemporarily conceptualized as related but distinct complements to their explicit counterparts (Nosek, 2007; Nosek & Smyth, 2007). The Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) was first used to measure attitudes towards homosexuality by Banse, Seise, and Zerbes (2001). This computerized task requires participants to classify stimuli as either GOOD/BAD or HOMOSEXUAL/HETEROSEXUAL, and measures the discrepancy between stereotypically congruent and stereotypically incongruent combinations of these stimuli. A large-scale study collated large amounts of data from a website that hosts the IAT and conducted analyses of attitudes towards a variety of social targets, including homosexuality (Nosek et al., 2007). Across 6 years, the website collected data from over 2.5 million participants from a variety of locations, which varied widely in demographic factors. This study found evidence that many societies express negative explicit and implicit anti-gay attitudes. In fact, 68% of the sample demonstrated an implicit preference for stimuli that represented heterosexuality, relative to homosexuality. This finding is widely replicated throughout the literature, with implicit measures commonly finding evidence of moderate to strong levels of implicit anti-gay attitudes towards gay men and lesbians (Boysen, Vogel, & Madon, 2006; Dasgupta & Rivera, 2006; De Houwer & De Bruycker, 2007; Steffens & Buchner, 2003), although occasionally research has found evidence of neutral (Breen & Karpinski, 2013, Study 1) or positive implicit attitudes towards lesbians (Anderson, Kaufmann, & de la Piedad Garcia; Breen & Karpinski, 2013, Study 2; Steffens, 2005).

STUDY 1

The major aim of this paper was to explore the relationship between religion and (explicit and implicit) anti-gay attitudes. To our knowledge, the relationship between Islam and implicit anti-gay attitudes has not yet been explored. Initially, we explored the predictive ability of demographic factors that are known to predict anti-gay attitudes in Christian samples (i.e., age, gender, and self-identified religious affiliation). Then, we explored the ability of religiosity factors to account for variance in attitudes above and beyond that accounted for by these demographic variables.

Religiosity variables have been widely theoretically (and often empirically) linked to anti-gay attitudes (Whitley, 2009). Intrinsic (i.e., the use of religion for personal means) and extrinsic (i.e., social or utilitarian approaches to religion) religious orientations (Allport & Ross, 1967) are often used in this domain of research. An intrinsic religious orientation has previously been shown to correlate positively with anti-gay attitudes (but not with gender-based or race-based prejudice; Kirkpatrick, 1993), while an extrinsic religious orientation has previously been shown to correlate positively with other forms of prejudice (e.g., Altemeyer & Hunsberger, 1992) but not anti-gay attitudes (Whitley, 2009). Hunsberger (1995) suggested that religious fundamentalism and religion as quest are constructs that are more appropriate (than intrinsic and extrinsic religious orientations) for use when attempting to distinguish more and less prejudiced individuals. Religious fundamentalism has consistently been found as a key factor driving anti-gay attitudes (Hunsberger, 1996; Laythe, Finkel, Bringle, & Kirkpatrick, 2002; Rowatt et al., 2006), while the use of religion as quest is contemporarily found to be nonrelated to prejudice (Batson & Schoenrade, 1991). We used these four constructs as predictor variables in Study 1.

We derive our demographic hypotheses from the existing literature on explicit anti-gay attitudes:

- (1) We expect more explicit and implicit anti-gay attitudes from Muslim participants than Atheist participants (e.g., Hooghe et al., 2010).
- (2) We expect more explicit and implicit anti-gay attitudes towards gay men than lesbians (Gelbal & Duyan, 2006).
- (3) We expect moderate correlations between explicit and implicit measures (Nosek, 2007; Nosek & Smyth, 2007).
- (4) In the first step of regression analyses, we expect the demographic factors of gender (i.e., being male; Dolinski, 2010), age (i.e., being older; Whitley, 1987), and religious affiliation (i.e., being Muslim; Hooghe et al., 2010) to predict more explicit and implicit anti-gay attitudes.
- (5) Based on notions that religiosity is a better predictor of anti-gay attitudes than religious affiliation and demographic factors (Allport, 1954), we expect demographic factors to no longer be significant predictors of anti-gay attitudes when religiosity factors are included in the model of prediction. Based on Christian samples, we specifically expect religious fundamentalism (Ahrold & Meston, 2010; Laythe, Finkel, & Kirkpatrick, 2001) and intrinsic religious orientation (Kirkpatrick, 1993) to predict negative explicit and implicit anti-gay attitudes.

Method

Measures

Implicit Measure of Anti-gay Attitudes. We administered an online version of the Go/No-Go Association Task (GNAT; Nosek & Banaji, 2001) using *Inquisit* by Millisecond Software. The target category and target attribute were displayed on the top left-hand and right-hand corners of the screen throughout practice and experimental blocks. Participants were instructed that words and pictures would appear rapidly and briefly in the centre of the computer screen and that the task required them to classify the presented stimuli as either belonging to the target category or target attribute by hitting the <SPACE BAR> (i.e., a 'go' response), or as not belonging to the target category or attribute by making no response (i.e., a 'no-go' response). GNAT blocks comprised 20 practice trials and 80 experimental trials. Prior to each block, participants were presented with the complete set of target stimuli (and distracters), to attenuate learning curves associated with stimuli nonfamiliarity. Within each block, there was an approximately equal number of target trials (i.e., 'go') and distracter trials (i.e., 'no-go'). Each trial had a response deadline of 600 milliseconds and an inter-stimulus interval of 200 milliseconds. Feedback was given after each trial, in the form of a green circle to indicate a correct response or a red cross to indicate an incorrect response.

Participants responded to a four-block GNAT that assessed implicit associations between gay male and lesbian targets with positive and then negative attributes (for design, see Table 1). For example, the GAY MALE + POSITIVE block asked participants to categorize stimuli that could be classified in the target category of GAY MALE and the target attribute of POSITIVE. In this block, if a picture of two men kissing or the Turkish word 'HARİKA' (i.e., 'great') were presented, then the participant would correctly classify the stimuli by pressing the <SPACEBAR>. Conversely, should a picture of a man and women kissing or the Turkish word 'İĞRENÇ'

Table 1. GNAT blocks as a function of target and distracters categories

Attitude	Target category	Distracter	Target attribute
Gay men	Symbols representing male homosexuality	Symbols representing heterosexuality	Positive
	Symbols representing male homosexuality	Symbols representing heterosexuality	Negative
Lesbians	Symbols representing female homosexuality	Symbols representing heterosexuality	Positive
	Symbols representing female homosexuality	Symbols representing heterosexuality	Negative

(i.e., 'disgusting') be presented, the participant should make no response and let this trial lapse. Experimental blocks were presented in a randomized order.

Stimuli depicting gay men, lesbians, and heterosexuals comprised a variety of matched pictures (e.g., couples in bridal attire, couples hugging or kissing, wedding cake toppers, interlocking gender symbols [e.g., ♂♂], etc.). Image stimuli were matched for content across target categories. Image stimuli were presented in a 10 cm × 10 cm square against a white background. Word stimuli were six Turkish words with a positive valence ($M_{\text{length}} = 4.90$ characters) and six Turkish words with a negative valence ($M_{\text{length}} = 5.50$ characters) presented in white 24-point uppercase Arial font. All stimuli were presented against a black background screen.

An index of sensitivity was calculated for each block of implicit associations based on the signal detection theory index of d' (i.e., the ratio of correctly identified targets and incorrectly identified distracters, as recommended by Nosek & Banaji, 2001). We calculated implicit attitude scores for each target by subtracting the d' for negative blocks from the d' for positive blocks. Thus, in this study, a negative score indicates implicit anti-gay attitudes. The GNAT has previously been used to measure a variety of attitude-objects (for a discussion on reliability, see Williams & Kaufmann, 2012), including gay male and lesbian targets (Anderson et al., 2015).

Explicit Measures of Anti-gay Attitudes. Explicit anti-gay attitudes were measured with the *Attitudes Toward Lesbians and Gay Men Scale* (ATLG; Herek, 1984), which is composed of 10 statements about lesbians (ATL subscale; e.g., 'Female homosexuality is a sin') and 10 statements about gay men (ATG subscale; e.g., 'I think male homosexuals are disgusting'). Participants reported their endorsement on a 9-point Likert-type scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). After reverse scoring the appropriate items, an average score was calculated. High scores indicate negative anti-gay attitudes. A short version of this scale had previously been translated and validated in Turkish (Duyan, Gelbal, & Duyan, 2013); we back-translated the remaining items for use in the current study. Reliability for the current sample was acceptable (ATL $\alpha = .94$; ATG $\alpha = .84$).

Measures of Religiosity. The revised *Religious Fundamentalism Scale* (RF; Altemeyer & Hunsberger, 2004) measured the level at which an individual believes religious teachings and doctrine are unchanging and are central to the truths about humanity (e.g., 'Whenever science and sacred scripture conflict, science must be wrong.'). The RF scale comprised 12 items, and participants

indicated their level of endorsement on a 9-point Likert-type scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). An average score was calculated after reverse scoring appropriate items. High scores represent higher levels of religious fundamentalism. A Turkish version of the scale was previously translated and validated by Sezen (2010). Reliability for the current sample was acceptable ($\alpha = .92$).

The *Religious Orientation Scale* (ROS; Allport & Ross, 1967) was used to measure an *intrinsic* religious orientation and an *extrinsic* religious orientation. The Intrinsic ROS (sub)scale comprises nine items (e.g., 'My religious beliefs are really what lie behind my whole approach to life. '), while the Extrinsic ROS (sub)scale comprises 12 items (e.g., 'I pray chiefly because I have been taught to pray. '). Participants indicated their level of endorsement on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). An average score was calculated. High scores represent higher levels of the respective religious orientation. A Turkish version of the scale was previously translated and validated by Kotehne (1999). Reliabilities for the current sample were acceptable (Intrinsic ROS $\alpha = .92$; Extrinsic ROS $\alpha = .75$).

The *Quest Scale* (Batson & Schoenrade, 1991) measures the degree to which an individual's approach to religion is tentative and is characterized by existential questions arising from doubt and contradiction with 12 items (e.g., 'My life experiences have led me to rethink my religious convictions. '). Participants indicated their level of endorsement on a 9-point Likert-type scale ranging from 1 (*strongly disagree*) to 9 (*strongly agree*). An average score was calculated after reverse scoring appropriate items. High scores represent a higher level of questing orientation. We back-translated this scale for the current study, and reliability for the current sample was acceptable ($\alpha = .84$).

Finally, as a measure of general religiosity, participants were asked to endorse three statements about the importance of religion in their lives on a 5-point Likert-type scale (e.g., frequency of prayer; as used by Saroglou, Pichon, Trompette, Verschueren, & Dernelle, 2005). These items were back translated for the purpose of the current study, and an average score was calculated. High scores represent a higher level of general religiosity. Reliability for the current sample was acceptable ($\alpha = .92$).

Participants and Procedure

The final sample comprised 67 Atheist (age range: 19–55 years, $M = 27.08$, $SD = 5.68$; female = 34) and 173 Muslim (age range: 19–52 years, $M = 22.67$, $SD = 7.79$ years; female = 125) volunteers who were residents of Istanbul, Turkey. An additional 40 participants

were excluded from analyses, including one Christian, one Buddhist, and five Muslim participants for performance on the implicit measure that was below chance (i.e., an average $d' < 0$), and 16 male and 17 female participants who identified as gay.

The study was advertised on the University's online research participation system, which was also open to the general public; 99 participants (41.25%) were students from local universities and were eligible for partial course credit. Participants read an information letter about the purpose and methods of the study, and indicated their informed consent before being directed to a webpage to provide demographic information (i.e., age, gender, religious affiliation, and sexual and political orientations) and to respond to the explicit measures. Finally, participants then completed the four-block GNAT (randomized to limit order effects) before being thanked and debriefed.

Results

Demographic Analysis

Explicit and implicit anti-gay attitudes were explored using a 2 (target gender: lesbian, gay male) × 2 (participant religious affiliation: Muslim, Atheist) mixed-design factorial ANOVA. The inclusion of participants' gender yielded no differences in results; this variable was excluded from analysis.

Differences in Explicit Anti-gay Attitudes. Participants in the sample reported negative explicit attitudes. Attitudes towards gay male targets were more negative than towards lesbian targets, and Muslim participants reported attitudes that were more negative than Atheists (see Figure 1). More specifically, the attitudes of atheists were positive, and the attitudes of Muslims were negative, both in relative terms and in comparison to other samples in the literature using the same scale. Explicit

anti-gay attitudes towards gay male targets and lesbian targets were highly correlated, $r = .87, p < .001$.

Analyses revealed the expected main effects of participant religion, $F(1, 192) = 98.64, p < .001, \eta_p^2 = .34$, and target gender, $F(1, 192) = 51.71, p < .001, \eta_p^2 = .21$. An interaction between these variables was significant, $F(1, 192) = 9.36, p < .001, \eta_p^2 = .05$; explicit attitudes were more negative towards gay male targets than lesbian targets for both Muslims, $t(155) = 10.94, p < .001$, Cohen's $d = 0.55$, and Atheists, $t(37) = 3.25, p = .01$, Cohen's $d = 0.30$. This effect was stronger for Muslim participants than Atheist participants. Post-hoc tests also revealed that Muslims reported more negative explicit attitudes than Atheists (gay men, $t(192) = 9.98, p < .001$, Cohen's $d = 1.98$; lesbians, $t(192) = 8.90, p < .001$ Cohen's $d = 1.76$).

Differences in Implicit Anti-gay Attitudes. Implicit attitudes towards gay male targets were negative, but implicit attitudes towards lesbian targets were positive (see Figure 2). Muslims demonstrated more negative implicit attitudes than Atheists. Analyses revealed a significant main effect of target gender, $F(1, 141) = 36.55, p < .001, \eta_p^2 = .21$, and a significant main effect of participant religion, $F(1, 141) = 10.77,$

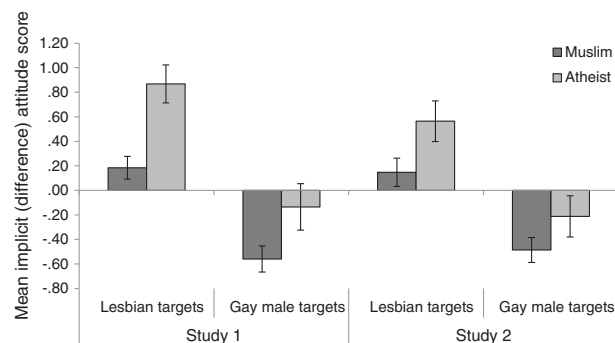


Fig. 2: Mean and standard error implicit attitude scores towards lesbian and gay male targets as a function of participants' religious affiliation in Studies 1 and 2. Error bars represent $\pm 1 SE$

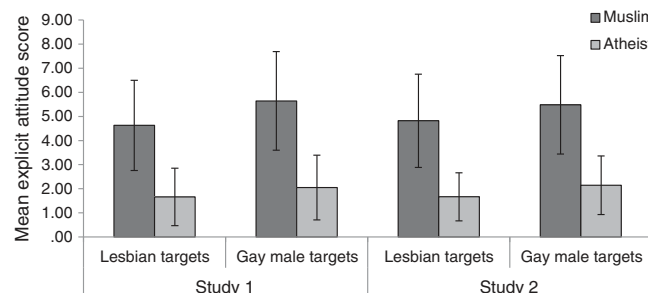


Fig. 1: Mean and standard deviation scores of Muslim and Atheist explicit attitudes towards lesbian and gay male targets as a function of participants' religious affiliation in Studies 1 and 2. Error bars represent $\pm 1 SD$

Table 2. Descriptive and inferential statistics and correlations for religiosity measures as a function of religious affiliation (Study 1)

Scale	Muslim (<i>n</i> = 170)		Atheist (<i>n</i> = 66)		<i>df</i>	<i>t</i>	Cohen's <i>d</i>	1	2	3	4	5
	Mean	<i>SD</i>	Mean	<i>SD</i>								
1. RF	6.42	1.61	2.71	1.45	103.09	16.09**	2.42	–	.34*	.26	–.10	–.11
2. Intrinsic ROS	3.61	0.72	1.78	0.62	123.91	18.35**	2.72	.79**	–	.85**	.15	.72**
3. Extrinsic ROS	2.94	0.45	2.17	0.78	47.17	6.16**	1.21	–.15*	.04	–	.25	.61**
4. Quest	4.39	1.49	5.43	1.24	218	–4.59**	0.76	–.50**	–.32**	.05	–	.15
5. General religiosity	5.35	0.99	1.59	0.91	234	26.43**	3.95	.73**	.76**	.09	–.37*	–

Note: RF, religious fundamentalism; ROS, religious orientation scale. Pearson correlation coefficients presented below the diagonal represent relationships for Muslim participants; those presented above the diagonal represent relationships for Atheist participants. Significant correlation coefficients are presented in boldface. Effect sizes are suggested by Cohen (1988).

* $p < .05$; ** $p < .001$.

$p < .001$, $\eta_p^2 = .07$. No interaction existed between these variables ($p = .31$). Specifically, Muslim participants demonstrated more negative implicit attitudes than Atheist participants, and attitudes were more negative to gay male targets than lesbian targets.

Correlations

Implicit anti-gay attitudes towards gay male targets and lesbian targets were weakly correlated, $r = .21$, $p = .01$. Implicit attitudes towards lesbian targets were correlated with explicit attitudes towards both gay male targets, $r = -.21$, $p = .01$, and lesbian targets, $r = -.29$, $p < .001$ (the scoring of the GNAT results in a higher score representing positive implicit attitudes, while the scoring of the ATLG results in a higher score representing negative explicit attitudes; thus, a negative correlation paradoxically represents findings that explicit and implicit anti-gay attitudes are related in the same direction). Implicit anti-gay attitudes towards gay male targets were not correlated with explicit attitudes ($ps > .13$).

Regression Analyses

The sample was relatively high in all measures of religiosity, particularly in general religiosity and religious fundamentalism. The descriptive statistics for religiosity measures are presented in Table 2 along with independent *t*-tests to explore for significant differences as a result of religious affiliation. Unsurprisingly, all forms of religiosity were significantly higher for Muslims than Atheists, except for questing that was significantly higher in Atheists than Muslims.

In order to estimate the proportion of variance in explicit and implicit anti-gay attitudes that can be accounted for by attitude-relevant individual differences, we conducted a series of multiple regression analyses (MRA) based on ordinary least square regression models. For each regression, Step 1 included

demographic variables (gender, age, and religious affiliation), and Step 2 included measures of religiosity (RF, intrinsic and extrinsic ROS, Quest, and general religiosity). Responses to the intrinsic religiosity scale were negatively skewed and corrected using a logarithmic transformation. There were no further issues after testing the assumptions for multivariate regression.

Predicting Explicit Anti-gay Attitudes. In the first step of the model predicting explicit anti-gay attitudes towards lesbians, demographic variables accounted for a significant 36.20%; specifically, religious affiliation (i.e., Muslim identification) and age were significant predictors. In the second step, the inclusion of religiosity measures accounted for an additional 23.10% of attitudes towards lesbians, $\Delta F(5, 183) = 20.73$, $p < .001$. The final model accounted for 57.50% (adjusted) variance; religious affiliation and age ceased to be significant predictors, and RF and extrinsic ROS were predictors of negative attitudes towards lesbians (final model, $F(8, 183) = 33.31$, $p < .001$; large effect, Cohen's $f^2 = 1.46$; see Table 3).¹

The same pattern of results was revealed for explicit anti-gay attitudes towards gay men; in the first step of the model, demographic variables accounted for a significant 36.70%; religious affiliation (i.e., Muslim identification) and age were significant predictors. In the second step, the inclusion of religiosity measures accounted for an additional 28.70% of attitudes towards gay men, $\Delta F(5, 184) = 30.55$, $p < .001$. The final model accounted for 63.90% (adjusted) variance; religious affiliation and age again ceased to be significant, and RF and extrinsic

¹Effect sizes for multiple regressions in this paper were based on the effects for the overall final model (i.e., calculated from the observed R^2 after the inclusion of the final step of the MRA) and were calculated using software by Soper (2015) based on the work of Cohen (1988).

Table 3. Unstandardized (*B*) and standardized (β) regression coefficients, and semi-partial correlations for each predictor in hierarchical regression models predicting explicit anti-gay attitudes with attitude-relevant factors in Study 1

	Explicit attitudes towards lesbians				Explicit attitudes towards gay men			
	<i>B</i>	<i>SE B</i>	β	<i>s</i> ²	<i>B</i>	<i>SE B</i>	β	<i>s</i> ²
Step 1								
Gender	0.03	0.04	0.04	.04	0.33	0.32	0.06	.06
Age	-0.01	0.01	-0.14	-.13*	-0.07	0.03	0.15	-.14*
Religious affiliation	0.38	0.05	0.55	.49**	3.20	0.38	0.54	.49**
Step 2								
Gender	-0.01	0.03	0.01	-.01	0.11	0.24	0.02	.02
Age	-0.01	0.01	-0.05	.05	-0.02	0.02	-0.05	.05
Religious affiliation	0.02	0.07	-0.03	-.02	0.41	0.50	0.07	.04
RF	0.06	0.02	0.49	.20**	0.59	0.12	0.54	.22**
Intrinsic	0.64	0.55	0.14	.06	6.86	4.19	0.18	.07
Extrinsic	0.08	0.03	0.17	.13*	0.59	0.22	0.16	.12*
Quest	0.01	0.01	0.05	.02	-0.04	0.08	-0.02	-.02
General religiosity	0.01	0.02	0.08	.03	0.05	0.18	0.04	.01

Note: RF, religious fundamentalism. Excessive skewness of the intrinsic religiosity variable was corrected using a logarithmic transformation. Dummy-coded variables: Gender (0 = female, 1 = male); Religion (0 = Atheist, 1 = Muslim). Constants for explicit attitudes towards lesbians: Step 1 = 2.88; Step 2 = -4.24; constants for explicit attitudes towards gay men: Step 1 = 11.06; Step 2 = -62.63. Statistically significant findings are presented in boldface.

* $p < .05$; ** $p < .001$.

religious orientation were predictors of negative attitudes towards gay men (final model, $F(8, 184) = 43.51$, $p < .001$; large effect, Cohen's $f^2 = 1.89$).

Predicting Implicit Anti-gay Attitudes. Implicit attitudes towards lesbian targets were not predicted by either demographic variables (Step 1, $p = .19$) or religiosity factors (Step 2, $p = .16$, Cohen's $f^2 = 0.10$). Similarly, implicit attitudes towards gay male targets were not predicted by either demographic variables (Step 1, $p = .29$) or religiosity factors (Step 2, $p = .27$, Cohen's $f^2 = 0.09$).

STUDY 2

The results of the first study showed that religion is indeed related to anti-gay attitudes in Turkey; Muslims reported more negative explicit attitudes and demonstrated more negative implicit attitudes than Atheists. Religious fundamentalism and extrinsic religiosity measures were also powerful predictors of explicit attitudes, yet neither demographic factors nor religiosity measures predicted implicit attitudes. This leaves unanswered the question of which factors do predict these attitudes. Other variables that have previously been linked to anti-gay attitudes are the role of contact (Allport, 1954) and factors in the dual-process motivation model (i.e., right-wing authoritarianism [RWA] and social dominance orientation [SDO]; Duckitt & Sibley, 2010).

In a meta-analysis, higher levels of previous contact with gay people were linked to more positive explicit attitudes towards gay people (Smith, Axelson, & Saucier, 2009); to our knowledge, the role of contact in implicit attitudes is yet to be explored. Duckitt and Sibley's (2010) model suggests that prejudice is derived from competition-based and threat-based dual processes, which relate to SDO (Sidanius & Pratto, 1999) and RWA (Altemeyer, 1991), respectively. Each construct has distinct motivational antecedents and contributes unique variance in models that predict prejudice. Previous research has shown that RWA and SDO are often correlated, yet they are theoretically distinct and are statistically independent and meaningful predictors of prejudice (Duckitt & Sibley, 2010). Research has previously linked RWA and SDO to explicit anti-gay attitudes (Von Collani, Grumm, & Streicher, 2010; Whitley, 1999) and RWA to implicit anti-gay attitudes (Jonathan, 2008; although this finding is not consistent, e.g., Rowatt et al., 2006). To our knowledge, the relationship between SDO and implicit anti-gay attitudes is yet to be explored, and the dual-process motivation model has not yet been used to understand either explicit or implicit attitudes towards gay people. Therefore, we used these constructs as predictors in Study 2. Based on the existing literature, we extended the first four hypotheses from Study 1 to propose that previous contact with gay people (Smith et al., 2009), and RWA and SDO (Von Collani et al., 2010) would significantly contribute to models predicting explicit anti-gay attitudes when

entered into the second and third steps of a regression model, respectively. We tentatively predict the same pattern of findings for implicit anti-gay attitudes.

Method

Measures. The explicit and implicit attitude measures used in Study 1 were used again in Study 2; specifically, explicit attitudes were measured using the ATLG (Herek, 1984), and implicit attitudes were measured using the GNAT (Nosek & Banaji, 2001).

The short form of the *Right-Wing Authoritarianism Scale* (RWA; Altemeyer, 1991) measured support for traditional forms of authority and conservatism (e.g., 'Homosexuals and feminists should be praised for being brave enough to defy "traditional family values"' [reverse-scored]). The short form comprises 14 items, and participants indicate their level of endorsement on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). An average score was calculated after reverse scoring appropriate items. High scores represent higher levels of support for authority and the rejection of egalitarian ideals. Some items of the scale were previously translated and validated by Göregenli (2010), and the remaining items were back translated into Turkish for the purpose of this study. Reliability for the current sample was acceptable ($\alpha = .90$).

The *Social Dominance Orientation Scale* (SDO; Pratto, Sidanius, Stallworth, & Malle, 1994) measured a preference for hierarchy and inequality between social groups. The SDO scale comprises 16 items (e.g., 'Some groups of people are simply inferior to other groups'), and participants indicate their level of endorsement on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). An average score was calculated after reverse scoring appropriate items. Higher scores indicate a stronger SDO and a preference for social hierarchy. A Turkish version of the scale was previously translated and validated by Göregenli (2004). Reliability for the current sample was acceptable ($\alpha = .91$).

We measured previous contact with gay men and lesbians with a series of items asking about the frequency (i.e., how often do you spend time with lesbians [gay men]; endorsed on a scale ranging from 1 [*never*] to 5 [*all the time*]) and quality of this contact (i.e., How close are you to lesbians [gay men] that you know; endorsed on a scale ranging from 1 [*not at all close*] to 5 [*very close*]). There were no significant differences between target gender-specific measures of contact, $t(132) = 0.64$, $p = .521$ (nor interactions with participant religion or gender; p s > .433), and so, the measures of contact with lesbians and with gay men were merged to form a single measure contact with gay people ($n_{\text{items}} = 4$, $\alpha = .92$).

Participants and Procedure

The final sample comprised 45 self-identifying Atheist (age range: 18–39 years, $M = 25.76$, $SD = 5.08$; female = 28) and 88 self-identifying Muslim (age range: 18–34 years, $M = 21.43$, $SD = 2.32$ years; female = 65) volunteers who were residents of Istanbul, Turkey. An additional 19 participants were excluded from analyses, including two participants for identifying as Christian, four Muslim participants for performance on the implicit measure that was below chance (i.e., an average $d' < 0$), and two male and 11 female participants who identified as gay. The survey was advertised on the University's online research participation system, which was also open to the general public; 86 participants (64.66%) were students from local universities and were eligible for partial course credit. The protocol for administration was identical to that of Study 1.

Results

Demographic Analysis

As in Study 1, gender yielded no differences in results; thus, this variable was again excluded from analysis.

Differences in Explicit Anti-gay Attitudes. Participants of Study 2 reported explicit attitudes that were more negative towards gay male targets than towards lesbian targets, and Muslim participants reported more negative explicit attitudes than Atheists (see Figure 1). Explicit anti-gay attitudes towards gay male targets and lesbian targets were highly correlated, $r = .90$, $p < .001$. Analyses (Greenhouse–Geisser adjusted) revealed the expected main effects of participant religion, $F(1, 130) = 82.23$, $p < .001$, $\eta_p^2 = .39$, and target gender, $F(1, 130) = 44.30$, $p < .001$, $\eta_p^2 = .25$, to the extent that women and Atheists reported more positive explicit attitudes than men and Muslims, respectively. In Study 2, the interaction between these variables was not significant ($p = .158$).

Differences in Implicit Anti-gay Attitudes. As per Study 1, implicit attitudes towards gay male targets were negative, but implicit attitudes towards lesbian targets were positive (see Figure 2), and again, Muslims demonstrated more negative implicit attitudes than Atheists. Analyses revealed a significant main effect of target gender, $F(1, 123) = 29.58$, $p < .001$, $\eta_p^2 = .19$, and a significant main effect of participant religion, $F(1, 123) = 4.92$, $p = .028$, $\eta_p^2 = .04$. No interaction existed between these variables ($p = .59$). Specifically, Muslim participants demonstrated more negative implicit attitudes than Atheist participants, and implicit attitudes

were more negative in response to gay male targets than lesbian targets.

Correlations

Implicit anti-gay attitudes towards gay male targets and lesbian targets were unrelated ($p = .22$). Positive implicit attitudes towards lesbian targets were correlated with negative explicit attitudes towards both gay male targets, $r = -.26$, $p = .003$, and lesbian targets, $r = -.25$, $p = .005$. Implicit anti-gay attitudes towards gay male targets were again unrelated to explicit attitudes ($ps > .21$).

Regression Analyses

The sample reported somewhat low scores on the measures of SDO and RWA, and relatively low levels of previous contact with gay people. Responses to the SDO scale and the demographic item of age were positively skewed but corrected using a logarithmic transformation (raw data are presented, but analyses are conducted on the transformed variable). The descriptive statistics for these measures are presented in Table 4 along with independent t -tests to explore for significant differences as a result of religious affiliation. Muslims were higher than Atheists on SDO and RWA, and also had less previous contact with gay people.

To estimate the proportion of variance in explicit and implicit anti-gay attitudes that can be accounted for by previous contact with gay people and the dual-process motivation model (Duckitt & Sibley, 2010), we conducted a series of MRAs. For each regression, Step 1 included demographic variables (gender, age, and religious affiliation), Step 2 included the measures of contact, and Step 3 included SDO and RWA.

Predicting Explicit Anti-gay Attitudes. In the first step of the model predicting explicit attitudes towards lesbians, demographic variables accounted for a significant 38.50% ($p < .001$); religious affiliation (i.e., Muslim

identification) was the only significant demographic predictor. In the second step, the inclusion of contact accounted for an additional 7.60% of attitudes towards lesbians ($p < .001$). In the third step, the inclusion of SDO and RWA accounted for a further 20.30% of attitudes towards lesbians ($p < .001$). The final model accounted for 64.80% (adjusted) variance; religious affiliation and RWA were predictors of negative explicit attitudes, and previous contact was a predictor of positive explicit attitudes towards lesbians (final model, $F(6, 131) = 41.22$, $p < .001$; large effect, Cohen's $f^2 = 1.98$; Table 5).

In the first step predicting explicit attitudes towards gay men, demographic variables accounted for a significant 36.20% ($p < .001$); religious affiliation (i.e., Muslim identification) was the only significant demographic predictor. In the second step, the inclusion of contact accounted for an additional 9.60% of attitudes towards gay men ($p < .001$). In the third step, the inclusion of SDO and RWA accounted for an additional 19.20% of attitudes towards gay men ($p < .001$). The final model accounted for 64.80% (adjusted) variance; religious affiliation and RWA were predictors of negative explicit attitudes, and previous contact was a predictor of positive explicit attitudes towards lesbians (final model, $F(6, 131) = 41.22$, $p < .001$; large effect, Cohen's $f^2 = 1.98$).

Predicting Implicit Anti-gay Attitudes. Implicit attitudes towards lesbian targets were not significantly predicted by models with demographic variables (Step 1, $p = .11$), the addition of contact (Step 2, $p = .15$), or the addition of SDO and RWA (Step 3, $F(6, 126) = 2.06$, $p = .07$, Cohen's $f^2 = 0.09$). Because this regression was close to reaching levels of statistical significance, it is worth reporting the high autocorrelation in the prediction errors (i.e., $d = 3.55$); the negative correlation between successive error terms can result in an underestimation of the regression's level of statistical significance. As well as the model not reaching statistical significance, none of the individual variables in the final model significantly

Table 4. Descriptive and inferential statistics and correlations for religiosity measures as a function of religious affiliation (Study 2)

Scale	Muslim ($n = 88$)		Atheist ($n = 45$)		df	t	Cohen's d	1	2	3
	Mean	SD	Mean	SD						
1. Contact	1.81	0.98	2.71	0.90	131	5.17*	0.38	–	–.16	–.21
2. SDO	2.64	1.04	2.23	1.10	131	–2.51***	0.96	–.21	–	.61***
3. RWA	3.68	1.08	2.25	1.06	130	–7.50***	1.34	–.44***	.54***	–

Note: SDO, social dominance orientation; RWA, right-wing authoritarianism. Pearson correlation coefficients presented below the diagonal represent relationships for Muslim participants; those presented above the diagonal represent relationships for Atheist participants. The presented descriptive statistics for the SDO scale are untransformed, but analysis is conducted on logarithmically transformed data to correct for excessive skewness. Effect sizes are suggested by Cohen (1988). Statistically significant findings are presented in boldface.

* $p < .05$; *** $p < .001$.

Table 5. Unstandardized (*B*) and standardized (β) regression coefficients, and semi-partial correlations for each predictor in hierarchical regression models predicting explicit anti-gay attitudes with attitude-relevant factors in Study 2

	Explicit attitudes towards lesbians				Explicit attitudes towards gay men			
	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ²
Step 1								
Gender	-0.17	0.34	-0.04	-.04	0.44	0.38	0.08	.08
Age	-4.21	2.62	-.13	-.11	-1.95	2.90	-0.06	-.05
Religious affiliation	2.54	0.38	0.54	.46**	3.05	0.042	0.59	.51
Step 2								
Gender	-0.21	0.31	-0.04	.04	0.40	0.33	0.08	.07
Age	-1.71	2.38	-0.05	-.04	1.02	2.58	0.03	.02
Religious affiliation	1.94	0.35	0.41	.34**	2.34	0.38	0.45	.37**
Contact	-0.87	0.15	-0.40	-.36**	-1.02	0.16	-0.43	-.39**
Step 3								
Gender	-0.16	0.26	-0.03	.03	0.51	0.28	0.10	.10
Age	1.16	1.97	0.04	.03	3.78	2.15	0.11	.09
Religious affiliation	1.18	0.31	0.25	.19**	1.44	0.33	0.011	.21**
Contact	-0.51	0.12	-0.24	-.20**	-0.34	0.14	0.28	-.23**
SDO	1.29	0.75	0.11	.09	0.32	0.82	0.03	.02
RWA	0.82	0.14	0.45	.29**	1.01	0.16	0.51	.32**

Note: RF, religious fundamentalism; SDO, social dominance orientation; RWA, right-wing authoritarianism. Excessive skewness of the age variable and SDO was corrected using a logarithmic transformation. Dummy-coded variables: Gender (0 = female, 1 = male); Religion (0 = Atheist, 1 = Muslim). Constants for explicit attitudes towards lesbians: Step 1 = 7.50; Step 2 = 6.26; Step 3 = -0.838; constants for explicit attitudes towards gay men: Step 1 = 5.82; Step 2 = 4.35; Step 3 = -2.67. Statistically significant findings are presented in boldface.

* $p < .05$; ** $p < .001$.

predicted attitudes, although RWA was approaching significance ($p = .08$). Similarly, implicit attitudes towards gay male targets were not predicted by models with demographic variables (Step 1, $p = .43$), the addition of contact (Step 2, $p = .57$), or the addition of SDO and RWA (Step 3, $F(6, 126) = 0.63$, $p = .70$, Cohen's $f^2 = 0.03$).

GENERAL DISCUSSION

The present studies explored the relationship between religion and anti-gay attitudes in a sample of Muslims and Atheists. Explicit and implicit attitudes were measured. We used demographic factors, religiosity dimensions, theories of contact, and the dual-process motivation model to investigate factors that might be linked to the hostile attitudes towards this social group in Turkey.

Explicit Anti-gay Attitudes

Our hypotheses pertaining to explicit anti-gay attitudes were mainly supported. As expected, in both studies, Muslims reported explicit attitudes that were anti-gay (i.e., attitudes were above the mid-point of the scale and approximately as negative as previously found in general Turkish samples; e.g., Duyan & Duyan, 2005;

Güney et al., 2004). Conversely, Atheists in the sample reported explicit attitudes that were positive, both in relative terms and in comparison to the literature. Explicit attitudes reported by Muslims and Atheists in both studies were more negative towards gay male targets than lesbian targets. This effect was particularly pronounced for Muslim participants, in accordance with the existing literature (e.g., Duyan & Duyan, 2005; Gelbal & Duyan, 2006; Sakalli, 2002; Sakalli, 2003).

Demographic factors of religious affiliation (Studies 1 and 2) and age (Study 2) were significant predictors of anti-gay attitudes towards both gay men and lesbians. This partially supported our demographic predictor hypothesis (gender was not a significant predictor, possibly because of the self-selecting nature of the sample). Interestingly, in Study 1, the inclusion of religiosity measures in the regression model revealed that demographic factors (including religious affiliation) ceased to be significant predictors, and instead, religious fundamentalism played the strongest role in predicting anti-gay attitudes. This finding has been well established in the existing literature using Christian samples (e.g., Ahrold & Meston, 2010; Laythe et al., 2001; Rowatt et al., 2006) and, to a lesser extent, in an Islamic sample (Hunsberger, 1996). This effect did not occur in Study 2; when variables in the higher-order regressions were unrelated to religion,

religious affiliation remained a strong and significant predictor. This suggests that religious affiliation may be a strong predictor of explicit anti-gay attitudes but that religiosity might tap into a more nuanced quantification of religion that is more useful than religious affiliation for predicting these attitudes.

An unexpected finding from Study 1 was that extrinsic religiosity predicted anti-gay attitudes but that intrinsic religiosity did not. Previous research in Christian samples has found the opposite; specifically, extrinsic religiosity predicts most prejudices but is not related to reported anti-gay attitudes (Whitley, 1999), and that while intrinsic religiosity is not related to other prejudices, it is related to anti-gay attitudes (Kirkpatrick, 1993). Ford, Brignall, VanValey, and Macaluso (2009) suggested that extrinsic (Christian) religiosity may not relate to anti-gay attitudes because extrinsically oriented individuals may lack the internal motivation to respond in a prejudiced fashion towards gay people. However, given the prevalence of anti-gay attitudes in Turkish culture, an extrinsic religious orientation might bolster an internal motivation to respond in a prejudiced fashion towards gay people.

Finally, as predicted and in accordance with the existing literature, contact (Allport, 1954; Smith et al., 2009) and RWA (Altemeyer & Hunsberger, 1992; Hunsberger, 1995) were predictors of explicit anti-gay attitudes. However, our hypothesis pertaining to SDO was not supported. According to the Duckitt and Sibley (2010) model, SDO is the manifestation of competition-based cognitive motivational processes, while RWA is the manifestation of threat-based cognitive motivational processes. It could be that in Turkish culture, anti-gay attitudes are activated only by threat (and not competition-based) processes. Alternatively, this null finding could be explained by the lack of legal recognition (and thus a low or nonexistent social status) of gay people in Turkey. Research from the USA has shown that SDO is linked to anti-gay attitudes only when there are perceived status gains for gay people (Bahns & Crandall, 2013). As such, because gay people are not legally recognized in Turkey (neither illegalised), their claims for equal rights may not necessarily be acknowledged or taken seriously by common people; hence, SDO would not predict these attitudes.

Implicit Anti-gay Attitudes

Our hypotheses pertaining to implicit anti-gay attitudes were only partially supported in both studies. As expected, Muslim participants demonstrated more negative implicit attitudes than Atheist participants. Implicit attitudes towards gay men were negative, and this effect

was particularly strong for Muslim participants. Contrary to our predictions, demonstrations of implicit attitudes towards lesbian targets were positive, and this effect was particularly strong for Atheist participants. This matches a subset of the existing literature (Breen & Karpinski, 2013, Study 2; Steffens, 2005), which also found positive implicit attitudes towards lesbian targets; however, this previous research reported congruence in the direction of the explicit and implicit attitudes (i.e. their samples reported positive implicit and explicit attitudes towards lesbians). Conversely, our sample demonstrated positive implicit attitudes but reported strong and negative explicit attitudes towards lesbians.

We pose two explanations for the positive implicit attitudes towards lesbians. Each is based on an argument that female homosexuality has less legitimacy and is less visible than male homosexuality in Turkey. First, in Turkish society, any gender expression other than notions of the traditional male or female dichotomy is seen as deviant (Selek, 2001). Previous literature has established a relationship between preferences for traditional gender roles and anti-gay attitudes (Whitley & Ægisdóttir, 2000). Given that Turkish society is under the influence of a strong patriarchal order (Kandiyoti, 1995), if male homosexuality is perceived as rejection of masculine gender roles, then gay male targets would logically elicit harsh negative attitudes (Savran, 2009). However, effects of social exclusion as a function of deviation from gender roles may not extend to lesbians in such a patriarchal society. Second, if patriarchy and the heterosexist order make lesbians less visible (Savran, 2009), then evaluations of this social category would be under-rehearsed. If 'lesbian' is a less salient social category and a less available attitude-object, implicit measurement of attitudes towards lesbian targets might actually be measuring attitudes towards their gender (i.e. the same stimuli may elicit evaluations of 'female' rather than 'lesbian'). In the case of each of these explanations, the positive implicit attitudes we found towards female (lesbian) targets match the positive implicit attitudes generally found towards women in the gender literature (e.g., Rudman & Goodwin, 2004). It also matches findings of positive implicit attitudes towards lesbian targets, when the targets are presented with their gender as the salient social category (Anderson et al., 2015).

Demographic factors, religiosity dimensions, contact, SDO, nor RWA predicted implicit attitudes towards gay men or lesbians. The dissociation between the findings of the regression analyses adds to a growing body of evidence for dual-process models of attitudes (e.g., Wilson, Lindsey, & Schooler, 2000). Specifically,

findings that explicit anti-gay attitudes can be predicted by certain factors, while implicit attitudes cannot suggest that these constructs are independent (Nosek, 2007; Nosek & Smyth, 2007), although there is a growing body of literature that recognizes a variety of theoretical reasons for such divergences, including reasons based in methodology and the cognitive accessibility of these constructs (Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005; Payne, Burkley, & Stokes, 2008). These arguments are further supported by the limited and weak correlations between the implicit and explicit attitudes.

Limitations and Future Directions

One consideration in the interpretation of these findings relates to issues based on sampling. The use of nonprobabilistic sampling in these studies suggests that the pattern of results might not reflect the attitudes of the population in a particularly representative fashion, thus limiting the generalizability of the findings. Indeed, the samples used in our studies differ from the general population of Istanbul on several dimension including higher proportions of women and Atheists, and also, the samples were young and had relatively high levels of education. However, given that all of these dimensions have previously been shown to be related to lower levels of anti-gay attitudes (Herek & McLemore, 2013; Steffens, 2005; Whitley, 2009), and prejudices more generally, this is unlikely to impact our interpretations of these findings. Finally, it is worth considering that the sample was recruited from Istanbul and that this city is somewhat culturally and historically different from other parts of Turkey (Ataman, 2011), which also might impact the external validity of these findings.

More research is warranted into exploring the correlates and predictors of implicit anti-gay attitudes, both broadly and also in Islamic samples. We have tested religiosity and ideological factors as well as the role of contact in these attitudes, and yet the question of what factors do correlate with these constructs remains largely unanswered. Given that RWA was approaching significance in this model, research exploring potential mediating factors of the relationship between RWA and implicit attitudes towards lesbians would be worthwhile. Finally, while there have been substantial gains in understandings of the relationship between religions and anti-gay attitudes, there has been a lack of research on the relationship between religions and anti-gay behaviours. Research with behavioural outcomes is necessary to advance the literature in the broader sense but also to empirically test the claims of Bonthuys and Erlank (2012), who suggested that Islamic people do

harbour negative anti-gay attitudes but that these attitudes do not convert into related behaviours. In closing, the findings of this research suggest that for individuals who subscribe to Islam, religion plays an important role in explicit anti-gay attitudes, although religion does not appear to have the same influence in implicit anti-gay attitudes.

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