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Factors Associated with Transphobia: A Structural Equation Modeling Approach

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ABSTRACT

Our study examined factors associated with transphobia with a particular focus on the interrelations between religious fundamentalism and contact to impact transphobia. We used an online sample of U.S. adults (*Mean age* = 38.91 years, *SD* = 12.58 years; *n* = 400) to conduct a partially latent variable SEM analysis and tested the direct effects of religious fundamentalism, contact, and gender on transphobia and the indirect effects of religious fundamentalism on transphobia through contact. We additionally tested for gender differences in the structural relations of the variables through a multi-group analysis. Results showed a statistically significant effect of religious fundamentalism, contact, and gender on transphobia. Religious fundamentalism also had a statistically significant indirect effect on transphobia through contact. Gender differences were also found for the effects of religious fundamentalism on contact and on transphobia. We conclude with implications for research and practice.

KEYWORDS

Transphobia; transgender prejudice; religious fundamentalism; contact; gender; structural equation modeling; multi-group analysis

Although public opinion polls in the United States indicate that the attitudes of American adults toward transgender persons—“those who have a gender identity that is not fully aligned with their sex assigned at birth” (American Psychological Association [APA], 2015, p. 832)—have become largely positive and accepting in recent years (e.g., Cox & Jones, 2011), there is evidence to suggest that they continue to face prejudice and discrimination because of their unconventional gender identities and expressions (e.g., Lewis et al., 2017; Norton & Herek, 2013). In the 2011 Transgender Discrimination Survey, for example, 63% of the sample of transgender-identified persons reported having been targets of discrimination at some point in their lifetime (Grant, Mottet, & Tanis, 2011). In a more recent study, 54% of the transgender participants reported prior experiences of verbal harassment, 24% reported having been victims of physical assault, and 13% indicated having been targets of sexual violence in the K-12 school settings (James et al., 2016). Other surveys have reported similar findings concerning lack of access to basic medical care and

experiences of various forms of violence among transgender people (e.g., APA, 2015; Kenagy, 2005a, 2005b; Lombardi, 2009; Xavier, Bobbin, Singer, & Budd, 2005), bringing attention to the need to better understand factors associated with transphobia in an effort to devise and implement strategies to reduce such prejudice in the United States.

Hill and Willoughby (2005) define transphobia as the degree to which a person feels uncomfortable with or is prejudiced toward transgender persons, which, in the literature, is used interchangeably with other terms, such as transgender prejudice, transprejudice, and anti-transgender prejudice to denote the same construct (Hill & Willoughby, 2005; Nagoshi et al., 2008; Nisley, 2010; Walch, Nagamake, Francisco, Stitt, & Shingler, 2012). Although a few consistent correlates to transphobia, such as religiosity (e.g., Elischberger, Glazier, Hill, & Verduzco-Baker, 2016; Flores, 2015; Norton & Herek, 2013), contact (Acker, 2017; Barbir, Vandevender, & Cohn, 2017; Bowers, Lewandowski, Savage, & Woitaszewski, 2015), and gender (e.g., Nagoshi et al., 2008; Norton & Herek, 2013; Tebbe & Moradi, 2012) have been identified and examined in previous studies, the interrelations between religious fundamentalism and contact in relation to transgender prejudice and potential gender differences in their structural relations have not been adequately examined. The present study, therefore, tested the link among these variables, using a structural equation modeling approach.

Factors associated with transphobia

Religious fundamentalism

The notion that religions and various forms of religiosity foster negative attitudes and prejudice toward out-group members has a long theoretical as well as empirical history in social psychological research (e.g., Allport & Ross, 1967; Altemeyer & Hunsberger, 1992), with more recent experimental studies providing evidence for the causal relationship between religiosity and prejudice (e.g., Johnson, Rowatt, & LaBouff, 2010). The association between religiosity and prejudice is also one that has been consistently observed in the context of sexual prejudice, where higher levels of religiosity (across different religions) have been correlated with higher levels of prejudice against gay and lesbian persons (e.g., Finlay & Walther, 2003; Fisher et al., 2017; Herek, 1987; Hunsberger, 1996; Wilkinson, 2004). Not surprisingly, parallel findings have been noted within transgender attitude research. Specifically, studies have found various measures of religiosity—self-identification as religious, regular attendance at religious services, belief in a literalistic view of the Bible, and affirmation of the central importance of religion—to be related to greater transphobia and negative behavioral intentions toward transgender persons (Acker, 2017; Cragun & Sumerau, 2015; Tadlock et al., 2017).

While much of the available studies on religiosity and transphobia have operationalized religiosity in different ways, thus making meaningful comparisons across studies difficult, few studies have examined religious fundamentalism as a focal aspect of religiosity. Religious fundamentalism refers to a conviction in the superiority of one belief system over others and has been conceptualized as serving a boundary-maintenance function to various systems of belief (Altemeyer & Hunsberger, 1992). Based on its strong association with conservative social values (i.e., tradition, conformity, resistance to change), religious fundamentalism has further been defined as an ideology of resistance to change, which also bears a likeness to related constructs, including the need for closure (i.e., aversion to ambiguity and preference for predictability) and right-wing ideologies (i.e., resistance to disruptions of social-cultural traditions) (Jackson, 2011; Makwana et al., 2018).

Nagoshi et al. (2008), as part of a study to develop a transphobia scale, examined the effects of religious fundamentalism on transgender prejudice. In their sample of 310 U.S. college students, they found religious fundamentalism, as measured by Altemeyer and Hunsberger's (1992) Religious Fundamentalism Scale (RFS) to be highly correlated with transphobia. Likewise, in a recent study examining the role of critical consciousness in the relationship between transphobia and voting behavior on the transgender bathroom bill, Parent and Silva (2018) found religious fundamentalism (assessed using the RFS) to be a significant positive predictor of transphobia. Similar patterns were also found in a study conducted by Nagoshi, Raven Cloud, Lindley, Nagoshi, and Lothamer (2019), where religious fundamentalism as assessed by the RFS was, again, found to significantly correlate with transphobia in a sample of heterosexual college students. Finally, a study exploring the relationship between various religiosity characteristics and transphobia in a sample of self-identified Christians found that, of all the religiosity measures tested (religious fundamentalism, beliefs concerning the locus of control behind life circumstances, and religious commitment), only religious fundamentalism significantly predicted all three dimensions of transphobia (interpersonal comfort, sex/gender beliefs, and human value) (Kanamori, Pegors, Hall, & Guerra, 2018), suggesting the potentially unique role it plays in the shaping of transgender prejudice. Given the empirical evidence and the theoretical import of religious fundamentalism as an antecedent to prejudice broadly and transphobia specifically, it is important to consider its role in transgender prejudice.

Intergroup contact

A key contextual factor in the consideration of prejudice is social contact. Notably, intergroup contact theory (Allport, 1954) suggests that interpersonal contact plays a significant role in the shaping of intergroup attitudes. More specifically, the theory purports that interactions with members of a negatively

stereotyped group may be linked to more positive attitudes, not only toward the individuals themselves, but also toward the group to which the individuals belong (Allport, 1954). Since its introduction, intergroup contact theory has been empirically supported across a wide range of intergroup contexts, including among different racial groups, religions, abilities, and sexual orientations (e.g., Barr & Bracchitta, 2012; Bohmert, Northcurr, & DeMaris, 2015; Kanas, Scheepers, & Sterkens, 2015). In fact, in a meta-analysis of 713 independent samples from over 500 empirical studies, Pettigrew and Tropp (2006) found support for the intergroup contact effect, reporting a modest effect size ($r = -.22$), with largest effects in samples involving contact between heterosexual and homosexual individuals (mean $r = -.27$). Relatedly, in a meta-analysis of 83 independent samples from 41 empirical studies examining intergroup contact and sexual prejudice, Smith, Axelton, and Saucier (2009) found that intergroup contact was significantly associated with the reduction of sexual prejudice.

Although few in number and with some mixed results, several transgender attitude studies have examined the relationship between contact and transphobia with findings largely paralleling the trajectory of findings within the broader body of evidence (Acker, 2017; Barbir et al., 2017; Bowers et al., 2015; Elischberger et al., 2016; Gazzola & Morrison, 2014; Hill & Willoughby, 2005; Nisley, 2010; Willoughby et al., 2010). For example, Barbir et al. (2017) reported findings in support of intergroup contact theory in their sample of undergraduate students. In the study, they examined the associations between cisgender heterosexual college students' social contact with transgender peers (operationalized as the number of friendships) and their attitudes and behavioral intentions toward transgender persons and found statistically significant differences between students who reported having no versus at least one transgender friend on four measures of transgender attitudes and behaviors. More specifically, findings indicated that not having transgender friends was associated with greater prejudice and discrimination and less acceptance and support of transgender individuals. Similarly, utilizing two large-scale national surveys ($N_1 = 1,940$; $N_2 = 1,020$), Tadlock et al. (2017) explored the influence of intergroup contact on attitudes concerning transgender people and rights among U.S. adults. Paralleling other studies, their results indicated that social contact with transgender people significantly predicted more positive attitudes toward transgender people and more support for transgender-inclusive policies. Additionally, in a study examining transphobia among students majoring in the helping professions (i.e., social work, occupational therapy, and nursing), Acker (2017) found that previous contact with transgender people (as friends, relatives, or acquaintances) was associated with lower levels of transphobia. Notably, it was found that contact predicted transphobia beyond religiosity, providing an additional 8% of the predictive variance, suggesting that contact may play a more important role than religiosity. Overall, the

available literature suggests that interpersonal contact plays a consequential role in the shaping of transgender prejudice.

Religious fundamentalism and contact

Given the roles that both contact, as a contextual factor, and religious fundamentalism, as an individual factor, play on transphobia, it seems important to understand how these factors interact to impact prejudice toward transgender persons. Could it be that religious fundamentalism impacts transphobia through contact? In other words, is it possible that transphobia found in religious people can be partially explained by the lack of contact they have with transgender persons?

One line of research seems to suggest that this may in fact be the case. Specifically, previous studies concerning right-wing ideologies and prejudice have shown that those who are ideologically opposed to a group tend to avoid interaction with value-violating groups (e.g., Altemeyer, 1998; Hodson, 2011; Hodson, Harry, & Mitchell, 2009; Pettigrew, 1998). For example, in a study examining processes related to neighborhood contact between locals and foreigners, Pettigrew (1998) found that those who were more authoritarian were significantly less likely to live in neighborhoods with foreigners, avoided contact with them even when they lived in the same neighborhood, and were less likely to form friendships with them. As religious fundamentalism is a subtype of right-wing authoritarianism (Altemeyer & Hunsberger, 2004; Krauss, Streib, Keller, & Silver, 2006; Stefurak, Taylor, & Mehta, 2010), the same pattern of relationship is expected with religious fundamentalism, such that those who are higher on fundamentalist tendencies would hold greater prejudice against and have less contact with individuals perceived as challenging their religious values and beliefs. In fact, in a study examining the associations between religious fundamentalism and intergroup-helping behavior, Jackson and Esses (1997) found that those who scored high on religious fundamentalism were more likely to deny gay and lesbian persons as well as single mothers (i.e., those who threaten family values) help in gaining employment. Together, these findings suggest that it is important to examine how religious fundamentalism and intergroup contact are related to impacting prejudicial attitudes.

Gender

Within the transgender attitude literature, studies have reliably found that men tend to have higher levels of transphobia as compared to their female counterparts (e.g., Case & Stewart, 2013; Hill & Willoughby, 2005; Landen & Innala, 2000; Nagoshi et al., 2008; Tompkins, Shields, Hillman, & White, 2015). This finding is consistent across diverse samples consisting of students, medical professionals, educators, and broadly of U.S. adults. For example, in one study examining U.S. heterosexual adults' attitudes toward transgender

people ($N = 2,281$), Norton and Herek (2013) found that heterosexual men gave significantly lower ratings (i.e., more negative feelings toward transgender persons) than did heterosexual women. In another study, exploring factors associated with transphobia and homophobia in a sample of undergraduate students ($N = 310$), Nagoshi et al (2008) found statistically significant gender differences, with male students reporting higher levels of transphobia compared to female students. Given these consistent findings in the literature, gender is an important factor to consider in transphobia.

Research questions and hypotheses

To date, no transgender attitude study has examined the interrelations between religious fundamentalism and contact in relation to transgender prejudice. Given this gap in the literature, our study sought to extend previous efforts by taking a holistic approach to understanding the link between religious fundamentalism, contact, and transphobia in a sample of U.S. adults. As the literature provides evidence for the reliable effects of gender on transphobia, gender was also included in the proposed model (see Figure 1). Specifically, we asked three research questions and tested four corresponding hypotheses.

RQ1: How is religious fundamentalism related to transphobia?

H1: Religious fundamentalism has a positive direct effect on transphobia, such that greater religious fundamentalism is associated with greater transphobia.

H2: Religious fundamentalism has an indirect effect on transphobia through contact, such that greater religious fundamentalism is associated with lower levels of contact, which in turn is associated with greater transphobia.

RQ2: How is contact related to transphobia?

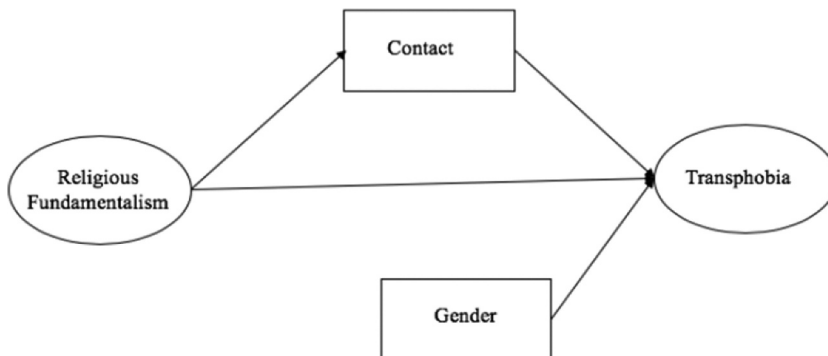


Figure 1. Proposed structural model.

H3: Contact has a negative direct effect on transphobia, such that greater contact is associated with less transphobia.

RQ3: How is gender related to transphobia?

H4: Men exhibit higher levels of transphobia compared to women.

Method

Participants

Data from an online sample of 400 participants were analyzed in the present study. The sample consisted of 53.0% women and 47.0% men with an age range between 19 and 84 years ($M = 38.91$, $SD = 12.58$). Approximately 80% of the participants identified as Caucasian and 59% reported holding at least a Bachelor's degree. Of the sample, 36.3% self-identified as non-religious, 20.3% as non-evangelical Christian, 18.0% as Catholic, and 14.5% as evangelical Christian. See Table 1 for full demographic information.

Measures

Transphobia

While the Genderism and Transphobia Scale (GTS; Hill & Willoughby, 2005) has been used as a measure of transphobia in many prior studies, we chose not

Table 1. Demographics.

Characteristic	N = 400	
	<i>n</i>	%
Ethnicity/Race		
White/Caucasian	319	79.80%
Black/African American	27	6.80%
Latino/Hispanic	24	6.00%
Asian/Pacific Islander	17	4.30%
Other	13	3.25%
Education		
High School	42	10.50%
Some College	87	21.80%
Associate's Degree	36	9.00%
Bachelor's Degree	164	41.00%
Advanced Degree	71	17.80%
Religion		
None	145	36.30%
Catholic	72	18.00%
Non-evangelical Christian	81	20.30%
Evangelical Christian	58	14.50%
Jewish	7	1.80%
Muslim	2	5.00%
Buddhist	8	2.00%
Other	27	6.60%
Gender		
Man	188	47.00%
Woman	212	53.00%

to use this instrument as it more broadly assesses negative beliefs toward gender nonconforming individuals, including feminine men and cross-dressers, and because of its psychometric limitations (see Morrison et al., 2017 for details). Instead, we used the Interpersonal Comfort subscale from the Transgender Attitudes and Beliefs Scale (TABS; Kanamori, Cornelius-White, Pegors, Daniel, & Hulgus, 2017) as it most closely corresponds to other widely used measures of transphobia (Walch et al., 2012).

The TABS is a three-factor, 29-item self-report questionnaire, assessing attitudes toward transgender persons, using a 7-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*). The Interpersonal Comfort factor consists of 14 items and assesses a person's level of comfort in interacting with transgender persons. A sample item from the subscales is: "I would feel comfortable being in a group of transgender persons." For ease of interpretation, six items on the subscale were reverse scored, so that higher scores indicate greater transphobia.

Evidence of convergent and discriminant validity of the scale was reported in the original validation study (Kanamori et al., 2017). Additional validity evidence has been provided through studies that empirically demonstrated theory-based group differences in the TABS scores based on gender and religion (i.e., "known groups validity;" Kanamori, Cornelius-White, 2017; Kanamori, Pegors, Hulgus, & Cornelius-White, 2017) and correlation in the expected direction between scores on the TABS and religiosity measures (Kanamori et al., 2018). Cronbach's alphas for the TABS' subscales range from .90 to .97 and from .97—.98 for the total scale in student and adult samples in the U.S. (Hatch, 2018; Kanamori et al., 2017, 2018). In the current sample, scale score reliability for the Interpersonal Comfort subscale was .97 (95% CI = .96—.97).

Religious fundamentalism

This construct was measured using the Revised Religious Fundamentalism Scale (R-RFS; Altemeyer & Hunsberger, 2004). The R-RFS is a one-factor, 12-item questionnaire designed to measure the extent to which a person holds that their belief system contains the ultimate guide to life to the exclusion of other systems of belief. Participants rate their agreement to the items on a 9-point Likert scale (1 = *very strongly disagree* to 9 = *very strongly agree*). Sample items include: "No single book of religious teachings contain all the intrinsic, fundamental truths about life" and "To lead the best, most meaningful life, one must belong to the one, fundamentally true religion." After reverse scoring negatively worded items, higher scores indicate greater religious fundamentalism. Scale score reliabilities for the R-RFS have ranged between $\alpha = 0.91$ and .92 in samples of college students and their parents; the original scale validation study also reports evidence for the convergent and discriminant validity of R-RFS scores

(Altemeyer & Hunsberger, 2004). For the present sample, Cronbach's Alpha was .96 (95% CI = .95—.96).

Contact

The amount of contact with transgender persons was assessed using a single item. Participants were asked to rate the question, "How often do you interact with people who are transgender?" on a 10-point scale (ranging from 1 = *Never* to 10 = *All the time*). Participants' ratings on this item were used as an observed variable in the study.

Procedures

After obtaining Institutional Review Board approval, participants were recruited through Amazon Mechanical Turk (MTurk)—an on-demand online workforce (i.e., "MTurk workers") regularly utilized by researchers for participant recruitment. Prior research suggests that MTurk samples are just as or more diverse than those gathered through other nonrandom methods (e.g., Berinsky, Huber, & Lenz, 2012; Buhrmester, Kwang, & Gosling, 2011; Clifford, Jewell, & Waggoner, 2015). As the population of interest for the present study was the general U.S. adult population, we restricted participation to individuals who were over the age of 18 and who reside in the United States. A brief description of the study as an academic survey exploring people's beliefs and attitudes concerning issues related to transgender persons was posted on the MTurk platform. Upon consent, participants were directed from MTurk to Qualtrics, where they completed all questions for the study. The survey instruments were first presented in a random order, after which participants answered demographic questions (gender, ethnicity, age, religious affiliation, and education). Participants were additionally asked two questions concerning (a) their level of knowledge pertaining to issues related to transgender identity and (b) their frequency of contact with transgender individuals. Qualtrics's "request response" function was activated in the survey to minimize item nonresponse, and attention check items were included to identify random response patterns.

Analytical methods

The data were prepared in SPSS version 25 then imported into Mplus version 7.4 (Muthén & Muthén, 2015) to perform a partially latent variable SEM analysis. The proposed structural model was first tested for the entire sample. Once gender was found to have a significant effect on transphobia, a multi-group analysis was conducted to test if there were differential structural relations among the variables between the genders. In both sets of analyses, the two-step SEM approach (Anderson & Gerbing, 1988) was followed to

analyze the proposed models. A Confirmatory Factor Analysis (CFA) was first conducted to test the adequacy of the measurement model prior to testing the structural model. Models were assessed using the maximum likelihood (ML) estimation method. The chi-square test of model fit along with several other fit indices—root-mean-square error of approximation (RMSEA), comparative fit index (CFI), and standardized root-mean-square residual (SRMR)—were used to evaluate the fit of the tested models. The target values recommended by Hu and Bentler (1999) were used: RMSEA less than or equal to .06, CFI greater than .95, and SRMR value less than or equal to .08. Chi-square difference test was used for model comparisons.

Results

Data preparation, descriptive statistics, and preliminary analysis

Before conducting the main analyses, data were screened for missing values and tested for assumptions relevant to SEM. Participants who did not meet the requirements for participation and were missing more than 50% of the responses on the survey items (including those who did not pass the attention checks) were deleted listwise, reducing the initial sample size from 441 to 427. Little's MCAR test suggested that the remaining data were missing completely at random ($\chi^2 = 264.85$, $df = 333$, $p = .998$). As less than 5% of the data were missing and the majority of the missing information was on demographic information, cases with missing values ($n = 21$) were excluded. Additionally, four participants were excluded from the study due to suspicious response patterns (see below for details). Finally, one participant who identified as a transgender man and another as a transgender woman were also excluded from analyses as there were too few within those gender categories to ascertain meaningful results, leaving a total of 400 participants in the final sample.

Since the latent variables, transphobia, and religious fundamentalism were both assessed with single measures, we created item parcels from items on these measures to use as indicators of the latent variables (Tebbe & Moradi, 2012; Weston & Gore, 2006). Specifically, we conducted two separate Exploratory Factor Analyses (EFAs) on items from each of the scales and rank-ordered items on each measure from highest to lowest based on factor loadings (range for items on the transphobia measure = .68—.91; range for items on the religious fundamentalism measure = .64—.89). We then assigned each item to three item parcels in countervailing order to maximize the equality of the average factor loadings across the parcels (Kline, 2011). This resulted in three item parcels per latent factor: TP1, TP2, and TP3 as indicators of transphobia and RFP1, RFP2, RFP3 as indicators of religious fundamentalism. Item ratings were summed to create a score for each parcel. Although item parceling is not recommended when unidimensionality of the items cannot be assumed

(Kline, 2011), this technique was deemed appropriate because single factor solutions were obtained (based on considerations of eigenvalues, screeplot, and percent variance explained by factors) for both EFAs.

One of the assumptions for SEM analysis is that the data are free of univariate and multivariate outliers. Since the data at hand included ratings on controversial topics for which extreme feelings are reasonably expected, data were instead checked for the validity of values (i.e., patterns of random responding, similar ratings on reverse-scored items, etc.). We then conducted tests of univariate and multivariate normality, and the data failed to meet the assumptions ($p < .001$). This may be attributed to the large sample size and the nature of the items as noted above. Since the Maximum Likelihood (ML) estimation method is robust against violations of normality, and because of the study's large sample size ($n = 400$), it would be appropriate to proceed with the planned analyses using the ML estimation method (McDonald & Ho, 2002). At the same time, with some concerns pertaining to standard error values and the model chi-square test statistic, we ran the proposed model first using the ML estimation method, then with the robust (Satorra-Bentler) estimation method recommended for non-normal data and compared the results. Since results were largely invariant (the largest difference in standard errors between the two estimation methods was .007 and the difference between the model chi-square values was .94), we report results obtained from the ML estimation method.

Bivariate correlations and descriptive statistics for scores on all indicators are presented in Table 2. All correlations were statistically significant, and as expected, correlations of parcel scores assessing the same latent construct were higher than those between different constructs. Correlations among some item parcels were high, but none exceeded $r = .93$. This was considered reasonable as parcels were created from items from the same scale, and thus expected to have high correlations. Adding to the summary information is that 41 participants scoring in the top quartile of religious fundamentalism (roughly 40%) reported contact with transgender persons, in comparison to 62, 55, and 71 participants in the second, third, and fourth quartiles, respectively. This descriptive information suggests that those with high religious fundamentalism reported having had

Table 2. Means, standard deviations, and correlations of observed variables.

Observed Variables	Min	Max	M	SD	1	2	3	4	5	6	7	8
TP1	5	35	13.84	8.45	1							
TP2	5	35	14.39	8.57	.924**	1						
TP3	4	28	10.29	6.65	.927**	.898**	1					
RFP1	4	36	15.18	9.67	.454**	.413**	.438**	1				
RFP2	4	36	15.42	9.62	.422**	.396**	.401**	.892**	1			
RFP3	4	36	15.05	9.95	.461**	.435**	.427**	.904**	.900**	1		
Contact	1	10	2.83	2.36	-.261**	-.254**	-.227**	-.214**	-.214**	-.196**	1	
Gender	1	2	-	-	0.084	-.160**	-.171**	-.173**	0.041	0.056	0.043	1

N = 400. ** $p < .01$.

less contact with transgender persons relative to those scoring lower on religious fundamentalism.

Measurement model

The CFA model consisted of two latent variables and six observed variables. The first latent factor, transphobia, was composed of loadings from the three-item parcels, TP1, TP2, and TP3. The second latent construct, religious fundamentalism, consisted of loadings from three item parcels, RFP1, RFP2, RFP3. The fit indices and parameter estimates for the measurement model supported an outstanding fit except for the model chi-square test, which was statistically significant: $\chi^2 (8, n = 400) = 16.37, p = .037$; RMSEA = 0.051 (90% CI = 0.012; 0.087), CFI = 0.997, SRMR = 0.009. Given the large sample size, a normed chi-square was calculated and resulted in a value less than 4 (*normed* $\chi^2 = 2.05$), indicating an adequate model fit. All path coefficients of the model were statistically significant and high, suggesting that the indicators sufficiently measured their respective latent variables (see Table 3 for standardized path coefficients). The intercorrelation between the latent variables, religious fundamentalism, and transphobia was $r = .48$.

Structural model

The proposed partially latent structural model (see Figure 1) consisted of two exogenous factors and two endogenous factors, one of which (contact) was locally exogenous (as it functions as endogenous in relation to religious fundamentalism and as exogenous in relation to transphobia). Results indicated excellent fit of the structural model: $\chi^2 (18, n = 400) = 27.05, p = .078$; RMSEA = 0.035 (90% CI = 0.000; 0.061), CFI = 0.997, SRMR = 0.020. Likewise, parameter estimates indicated that all variables had a statistically significant impact on transphobia. Contact and gender were found to have negative associations with transphobia (contact: $\beta = -.15, SE = .04$; gender: $\beta = -.18, SE = .04$), indicating that more contact with transgender persons and being a woman were related to lower levels of transphobia. On the other hand, religious fundamentalism was found to have a positive impact on transphobia ($\beta = 0.45, SE = .04$), and its effect was the strongest among the three. In other

Table 3. Measurement model standardized path coefficients.

Observed Indicators	Transphobia	Religious Fundamentalism
TP1	0.98	
TP2	0.95	
TP3	0.95	
RFP1		0.95
RFP2		0.94
RFP3		0.96

N = 400. All path coefficients significant at $p < .001$.

words, higher levels of religious fundamentalism predicted more transphobia. Religious fundamentalism also significantly negatively predicted contact ($\beta = -.22$, $SE = .05$), suggesting that higher levels of religious fundamentalism were associated with less contact with transgender persons. However, religious fundamentalism explained only 5% of the variance in contact, suggesting that there are other factors that influence the amount of contact with transgender people. The indirect effect of religious fundamentalism on transphobia through contact was also statistically significant, though modest in size ($\beta = .03$, $SE = .01$). Taken together, the total effect of religious fundamentalism on transphobia was statistically significant and positive ($\beta = .48$, $SE = .04$). Overall, the model accounted for approximately 29% of the variance in transphobia. Figure 2 depicts the partially latent structural model with all standardized parameter estimates.

Multi-group comparison

Since the effect of gender on transphobia was statistically significant, we conducted a comparison between the gender groups to examine whether the hypothesized structural relations among the variables—religious fundamentalism, contact, and transphobia—varied between men and women. The means and standard deviations of all measures, stratified by gender, are found in Table 4.

Multi-group CFA

The CFA model consisted of the same two latent variables (transphobia and religious fundamentalism) and six observed variables (TP1, TP2, TP3 and RFP1, RFP2, RFP3) as before. To examine whether the relationships between the factors and indicators are invariant between the genders, we first examined the tenability of the proposed measurement model for each group separately.

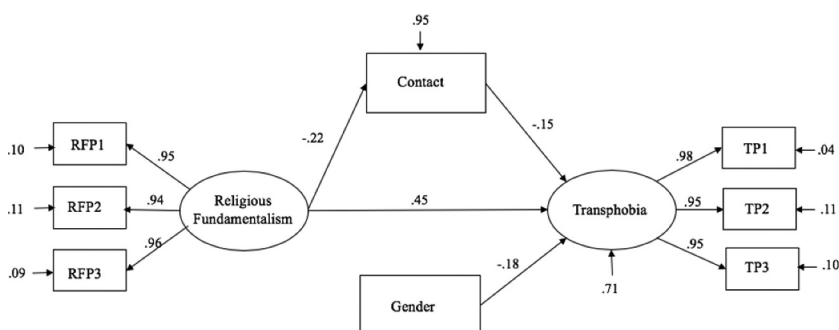


Figure 2. Structural model of religious fundamentalism, contact, and gender on transphobia. 1. $N = 400$. 2. R^2 for transphobia $= .29$. 3. R^2 for contact $= .05$. 4. All parameter estimates were significant, $p \leq .001$

Table 4. Descriptive statistics of measures by gender.

Gender	Measures		
	Religious Fundamentalism ^a	Contact ^b	Transphobia ^c
Men	44.21 (27.90)	2.62 (2.16)	42.72 (23.85)
Women	46.92 (28.53)	3.02 (2.51)	34.78 (21.61)

Means are reported first and standard deviations are in parentheses.

^aAbsolute range = 96 (12–108).

^bAbsolute range = 9 (1–10).

^cAbsolute range = 84 (14–98).

The fit indices and parameter estimates for the measurement model for females supported an outstanding fit: χ^2 (8, $n = 212$) = 9.56, $p = .297$; RMSEA = 0.030 (90% CI = 0.000; 0.090), CFI = 0.999, SRMR = 0.008. The fit of the measurement model for males was not excellent, but adequate: χ^2 (8, $n = 188$) = 17.97, $p = .022$; RMSEA = 0.081 (90% CI = 0.030; 0.132), CFI = 0.993, SRMR = 0.010. Given the less than ideal fit, modification indices were examined for possible model revisions. However, none of the suggested modifications was theoretically supported, and because the model fit was adequate, we deemed the measurement model also sufficient for males. For both groups, all path coefficients were statistically significant ($p < .001$) and high ($\beta = .93$ –.98), suggesting that the indicators measured their respective latent variables well in both groups. Next, we fit the groups' models simultaneously with cross-group equality constraints imposed on the path estimates to determine measurement model invariance. Model fit indices for the constrained model indicated excellent fit, suggesting that the measurement model was invariant between males and females: χ^2 (25, $n = 400$) = 31.11, $p = .186$; RMSEA = 0.035 (90% CI = 0.00; 0.070), CFI = 0.998, SRMR = 0.037.

Multi-group SEM

We then conducted a multi-group SEM to explore whether the predictor–criterion relations in the structural model differed between men and women. Specifically, the proposed structural model (Figure 3) examined the direct effects of religious fundamentalism and contact on transphobia, the direct effect of religious fundamentalism on contact, and the indirect effect of religious fundamentalism on transphobia through contact. As with the multi-group CFA, we first tested the tenability of the proposed structural model separately for each group. Results for women indicated excellent model fit: χ^2 (12, $n = 212$) = 15.32, $p = .224$; RMSEA = 0.036 (90% CI = 0.000; 0.083), CFI = 0.998, SRMR = 0.011. All parameter estimates were statistically significant, suggesting that both religious fundamentalism and contact had a significant impact on transphobia and that religious fundamentalism also had a significant effect on contact. Specifically, contact had a negative effect ($\beta = -.18$, $SE = .07$), while religious fundamentalism had a positive effect on transphobia ($\beta = .39$, $SE = .06$); religious fundamentalism also had a statistically

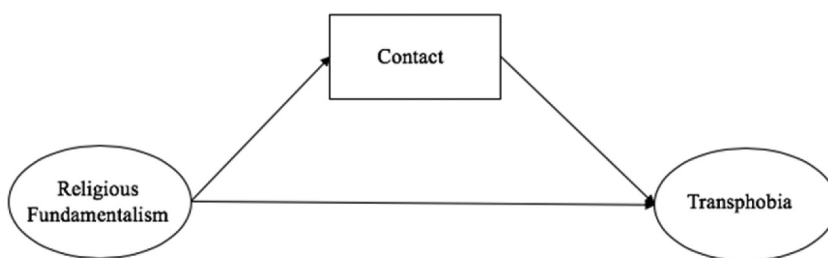


Figure 3. Proposed structural model for multi-group analysis.

significant negative effect on contact ($\beta = -.33$, $SE = .06$). The indirect effect of religious fundamentalism on transphobia through contact was likewise statistically significant ($\beta = .06$, $SE = .02$). Together, the total effect of religious fundamentalism on transphobia was statistically significant and positive ($\beta = .45$, $SE = .06$). Overall, the model accounted for approximately 23% of the variance in transphobia among women.

The same structural model was tested for men, and the results indicated acceptable model fit: χ^2 (12, $n = 188$) = 25.69, $p = .012$ (normed $\chi^2 = 2.14$); RMSEA = 0.078 (90% CI = 0.035; 0.120), CFI = 0.991, SRMR = 0.013. Overall, the pattern of relationships among the variables in the structural model for males was similar to that of females with two exceptions. First, whereas all the parameter estimates in the structural model were statistically significant for women, for men, the association between religious fundamentalism and contact was not statistically significant ($\beta = .08$, $p = .277$). Second, whereas the direct, indirect, and total effects of religious fundamentalism on transphobia were all statistically significant for women, for men, the indirect effect of religious fundamentalism on transphobia through contact was not statistically significant ($\beta = .012$, $p = .318$). Overall, the model accounted for approximately 31% of the variance in transphobia for men, which is 8% higher than for women. Table 5 presents the standardized path coefficients of the structural model in the two separate groups for ease of comparison.

We then assessed if the proposed structural model was tenable simultaneously for both groups by first fitting a baseline model with no cross-group equality constraints. Model fit indices for the unconstrained baseline model indicated excellent fit: χ^2 (32, $n = 400$) = 43.30, $p = .088$; RMSEA = 0.042 (90% CI = 0.00; 0.071), CFI = 0.996, SRMR = 0.013. Thereafter, we sequentially

Table 5. Structural model standardized path coefficients by a group.

From/To	Females	Males
Religious Fundamentalism/Transphobia	0.385***	0.528***
Contact/Transphobia	-0.184**	-0.145*
Religious Fundamentalism/Contact	-0.330***	-0.080

N = 400. * $p < .05$, ** $p < .01$, *** $p < .001$.

constrained one parameter of the model at a time and evaluated the erosion of fit across the models using the chi-square difference test. We first added a cross-group equality constraint on the path from religious fundamentalism to contact, which produced a statistically significant increase in the model chi-square ($\Delta\chi^2(1, n = 400) = 33.30, p < .05$), suggesting that the effect of religious fundamentalism on contact was different between men and women. Next, we constrained the path from religiosity to transphobia, which also produced a statistically significant increase in the model Chi-square ($\Delta\chi^2(1, n = 400) = 4.63, p < .05$), again, indicating inequality between the genders on this parameter. Lastly, we constrained the path from contact to transphobia, which resulted in no significant increase in the model chi-square ($\Delta\chi^2(1, n = 400) = .15, p > .05$), which indicates that the effect of contact on transphobia was invariant between men and women.

Discussion

The purpose of the present study was to examine the effects of religious fundamentalism, contact, and gender on transphobia with a particular focus on the link between religious fundamentalism and contact to impact transphobia. With the intent to extend previous research, the study tested the direct effects of all three variables on transphobia along with the indirect effects of religious fundamentalism on transphobia through contact in the same model. We additionally explored gender differences in the pattern of relationships among religious fundamentalism, contact, and transphobia to gain a better understanding of how causal factors differentially relate to impact transphobia in men versus women. Results supported all four hypotheses and revealed gender differences in the structural relationships among the variables.

Not surprisingly, our findings showed that higher levels of religious fundamentalism were associated with greater levels of transphobia. In other words, those who tend to hold more rigid and exclusionary beliefs exhibited greater negative attitudes toward transgender persons, which aligns with the established literature documenting the positive direct effects of religious fundamentalism on anti-transgender prejudice (e.g., Nagoshi et al., 2008; Parent & Silva, 2018). As previously noted, since religious fundamentalists are invested in maintaining clear boundaries around their systems of belief, it may be that they feel threatened by transgender individuals whom they perceive as challenging their values concerning gender identity and norms (Altemeyer & Hunsberger, 1992). This interpretation is also consistent with integrated threat theory (Stephan & Stephan, 2000) and the social science research that has noted threats to deeply held values as a factor underlying various forms of prejudice—one likely experienced by many who hold strong religious convictions (Jackson, 2011). As the specific factor of threat was not tested in our study, future models should examine how a sense of threat plays into the

effects of religious fundamentalism on transphobia. Given the similarities between religious fundamentalism, right-wing ideologies, and traditional gender norms in their preference for preserving existing ideologies (whether religious or socio-cultural), it is also possible that religious fundamentalists feel a strong aversion toward transgender individuals because they violate traditional views of gender and the social norms and practices associated with those binary categories (Makwana et al., 2018; Nagoshi et al., 2008). Future studies may, therefore, benefit from considering the roles of these related constructs in transphobia. Of note also is that, in our study, the direct effect of religious fundamentalism was the largest among all tested variables, indicating that fundamentalist tendencies may have a greater impact on transphobia than other individual and contextual factors. This finding suggests that efforts to foster a more inclusive culture and openness toward others among religious fundamentalists may be needed as a strategy to attenuate transphobia.

Moreover, as hypothesized, contact with transgender persons partially explained the effect of religious fundamentalism on transphobia, though the effect was limited. Specifically, results confirmed previous findings in the broader literature concerning contact avoidance among those who score high on fundamentalism (e.g., Pettigrew, 1998): Applied to the context of transgender prejudice, our findings showed that those who score higher on religious fundamentalism tend to have less interaction with transgender persons, which in turn is associated with greater transphobia. The avoidance tendency, suggested by our study, highlights a key challenge for researchers and intervention strategists to devise programs to creatively increase contact likelihood among religious fundamentalists and transgender persons for whom interaction has been shown to be uncommon. It is also possible that a particular kind of contact may moderate the relationship between religious fundamentalism and transphobia, as at least one study exists, which found that *friendship* with gay and lesbian persons reduced the effects of religious fundamentalism on sexual prejudice among heterosexual adults (Cunningham & Melton, 2013). Whether the same associations hold in the context of transphobia should be explored.

Our study also found that contact with transgender persons had an inverse effect on transphobia. In other words, those reporting more frequent interaction with transgender-identified individuals exhibited less transphobia. Our findings provide support to the intergroup contact theory broadly and align with previous work examining the influence of intergroup contact specifically as it relates to transgender prejudice (e.g., Acker, 2017; Barbir et al., 2017; Bowers et al., 2015). While the effect of contact on transphobia was modest in size, when it comes to discrimination, there is evidence to suggest that even low levels of prejudice may translate into discriminatory behaviors with significant social consequences (Greenwald, Banaji, & Nosek, 2015). For

example, a previously conducted simulation study on the effects of gender bias in the workplace showed that as little as a 1% difference in performance evaluations preferring male employees over female employees (i.e., gender bias) resulted in unequal sex representations (35% female vs. 65% male instead of a 50/50 representation of the sexes) throughout the organization (Martell, Lane, & Emrich, 1996). This report suggests that even the modest effect size of contact on transphobia found in the current study may result in meaningful real-world impact, pointing to a possible direction for prejudice reduction strategies taking advantage of intergroup contact. Moreover, the modest effect of contact on transphobia found in the current study may be partially explained by the range restriction (i.e., floor effects) of the contact variable. Thus, further research using a participant pool with a wider range of contact experience with transgender persons is warranted.

Consonant with existing literature, we also found significant gender effects on transphobia (e.g., Hill & Willoughby, 2005; Tompkins et al., 2015). Specifically, men showed higher levels of transphobia compared to women. As previously noted, these gender differences have been conceptualized as reflecting a stronger commitment to the maintenance of traditional gender norms found among men as compared to women, who may be more averse to accepting transgender individuals who transgress conventional gender identities and norms (e.g., Herek, 1986). Our study also found significant differences in the pattern of relationships among religious fundamentalism, contact, and transphobia between men and women. Specifically, the relationships between (a) religious fundamentalism and contact and (b) religious fundamentalism and transphobia were found to be significantly different between the genders. First, whereas religious fundamentalism was a significant negative predictor of contact for women, this was not the case for men. In other words, our results showed that while women who scored higher on religious fundamentalism had less contact with transgender persons, the level of religious fundamentalism was not associated with the number of contact men had with transgender individuals. As there are little researches concerning the association between religiosity and contact with transgender persons, let alone gender differences, further research is needed to understand the reasons for these divergent associations between men and women.

Second, our study found a significant difference in the effect of religious fundamentalism on transphobia between the genders. Specifically, while religious fundamentalism predicted greater levels of transphobia in both genders, the predictive strength was stronger for men as compared to women. This finding is in apparent contradiction to three previous studies that examined gender differences in correlates of transphobia, which found measures of religiosity to be positive predictors of transgender prejudice *only for women* when separate analyses were conducted by group (Elischberger et al., 2016; Nagoshi et al., 2008; Norton & Herek, 2013). In Norton and

Herek (2013)'s study, religiosity was operationalized as the extent to which religion informs a person's daily life, and transphobia was assessed using a single feeling thermometer item regarding one's feelings toward transgender persons. In Nagoshi et al.'s (2008) study, conducted with a sample of college students, religiosity was measured using the Religious Fundamentalism Scale (RFS; Altemeyer & Hunsberger, 1992) and the outcome variable was a new scale of transphobia developed in the study. These researchers found that religious fundamentalism ceased to be a statistically significant predictor of transphobia for men when homophobia was partialled out, while it remained significant for women. In Elischberger et al.'s (2016) study, religiosity was assessed based on group membership to a particular religion and the outcome variable was behavioral intentions toward transgender children and youth. In another study conducted with a sample of self-identified Christians (Kanamori et al., 2018), gender did not significantly moderate the effect of religious fundamentalism on Interpersonal Comfort, which is the scale from which transphobia indicators were created for the present study. These differences across the studies suggest that conflicting findings may be attributed to variability in the operationalization of religiosity, measures of the outcome variable, and samples. Thus, further research is required to better understand these seeming contradictions. Moreover, given that the study findings seem to indicate that men who are higher in religious fundamentalism are more likely to be transphobic, but that contact does not play a role in this relationship as it does with women, it would be important to explore other factors that may explain the underlying mechanism of this relationship in men. Overall, both the present and previous work appears to suggest gender differences in the pattern of relationships for factors underlying transphobia, which warrants separate analyses in future studies. The field would also benefit from further investigations on the how and why of these reported gender differences.

Limitations, conclusion, and future directions

Findings from our current study should be interpreted in light of several limitations. First, the nonrandom nature of our sample resulted in a participant pool that was predominantly White, which limits the generalizability of the results in the broader population. Future research should, therefore, aim to examine the antecedents of transphobia in samples that are more diverse in a variety of demographic backgrounds, including ethnicity, education, socioeconomic status, and sexual orientation. Similarly, while there is evidence supporting the quality of data gathered using MTurk (e.g., Berinsky et al., 2012; Buhrmester et al., 2011; Clifford et al., 2015), additional research with non-MTurk samples should be pursued to address the limitations of online samples. The self-selection and self-report nature of the study

also indicate that the data likely contain some level of self-report and selection bias (Rosenman, Tennekoon, & Hill, 2011). Another limitation is that our model focused on a select number of individual and contextual variables; thus, it only represents one model that explains the data structure well. Alternative models with other factors, such as homophobia, sexual orientation, traditional gender role attitudes, and right-wing ideologies (Makwana et al., 2018; Nagoshi et al., 2008; Tebbe & Moradi, 2012), should also be tested in future studies, which may explain more of the variance in transphobia. Similarly, as our contact variable focused on the quantity aspect of contact and utilized a single-item measure, future work should additionally consider quality aspects of contact using a validated scale for a more nuanced understanding (Burke et al., 2015; Phelan et al., 2017). Recent work also highlights the need to examine key variables underlying discriminatory behaviors toward transgender persons, not just prejudicial attitudes as was the case for the current study (Gerhardstein & Anderson, 2010). As previously described, there is ample documentation of discrimination experienced by transgender individuals (e.g., James et al., 2016), but little is known concerning the link between prejudicial attitudes and discriminatory behaviors. Thus, an examination of the attitude-behavior link would be valuable. Finally, no definitive conclusions on causal relationships among variables can be drawn in the present study due to the cross-sectional nature of the study design. Future studies employing longitudinal and experimental designs should be pursued in order to test the causal direction of the relationships among religious fundamentalism, contact, and transphobia.

Despite the limitations mentioned above, findings from this study pertaining to key factors underlying anti-transgender prejudice and their differential relations between the genders provide information that extends knowledge concerning the nature of transphobia. Continued work building upon the current study is needed to further deepen understanding of the nature and causes of transgender prejudice and to use those findings to develop effective strategies to ameliorate this form of prejudice.

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