

# Right-Wing Authoritarianism Predicts Prejudice Equally Toward “Gay Men and Lesbians” and “Homosexuals”

Jarret T. Crawford  
The College of New Jersey

Mark J. Brandt  
Tilburg University

Yoel Inbar  
University of Toronto

Stephanie R. Mallinas  
The College of New Jersey

Two recent experiments found evidence for what we term the *social category label* (SCL) effect—that the relationship between right-wing authoritarianism (RWA) and prejudice against gay men and lesbians can be reduced or even eliminated when the target group is labeled “gay men and lesbians” rather than “homosexuals” (Rios, 2013). Although this appears a promising approach to reduce self-reported sexual prejudice, with both theoretical implications for the meaning of RWA itself and practical implications for question wording for assessing these attitudes, there are several reasons to further examine these findings, including (a) inconsistencies with extant evidence, (b) small sample sizes in the original 2 experiments, and (c) concerns with the RWA measures used in the 2 experiments. We tested the SCL hypothesis with a nationally representative sample (Study 1) and close and conceptual replications of Rios’ (2013) 2 studies (Studies 2–5) using multiple measures of RWA and prejudice. Across 23 tests of the SCL hypothesis, we obtained 1 statistically significant and 1 marginally significant effect consistent with the hypothesis, 2 significant effects *opposite* the hypothesis, and 19 nonsignificant effects. A meta-analysis of evidence reported here and in Rios (2013) indicates that RWA strongly predicts antigay prejudice, with no significant variation by label. This confirms the typically robust association between RWA and antigay prejudice and confirms that the SCL effect is not robust. We discuss potential limitations of these studies, theoretical, methodological, and practical implications for our failures to replicate the original SCL studies, and future directions for examining social category label effects.

**Keywords:** right-wing authoritarianism, sexual prejudice, replication, labeling effects

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Intergroup attitudes researchers have long been interested in explaining the dispositional antecedents of prejudice against socially disadvantaged or marginalized groups. Decades of research have shown that right-wing authoritarianism (RWA; Altemeyer, 1981, 1996, 1998)—which captures willingness to obey authorities

perceived as legitimate, aggression against those who would disobey these authorities, and adherence to social norms and conventions—is an especially powerful predictor of prejudice against groups seen as threatening traditional social norms and moral values (Duckitt, 2006; Duckitt & Sibley, 2010). Higher RWA is associated, for example, with greater prejudice against gay men and lesbians (Altemeyer, 1998; Terrizzi, Shook, & Ventis, 2010), Muslims (Echebarria-Echabe & Fernandez Guede, 2007; Imhoff & Recker, 2012), and immigrants (Asbrock, Christ, Duckitt, & Sibley, 2012; Zakrisson, 2005). The relationship between RWA and prejudice is quite robust, with a recent meta-analysis estimating the relationship at  $r = .49$  (95% CIs [.46, .51]; Sibley & Duckitt, 2008).

Naturally, social scientists have been interested in reducing the link between RWA and prejudice, or in reducing prejudice among those high in RWA. Such interventions have had mixed results. In one study, Altemeyer (1994) used Rokeach’s (1973) value-confrontation procedure, which confronts participants with the discrepancy between how highly they rank the value of freedom relative to equality (this procedure presumably highlights how participants care more about their own personal freedom than that of others). Altemeyer (1994) found that people high in RWA exposed to these value inconsistencies more strongly

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Jarret T. Crawford, Department of Psychology The College of New Jersey; Mark J. Brandt, Department of Social Psychology, Tilburg University; Yoel Inbar, Department of Psychology, University of Toronto; Stephanie R. Mallinas, Department of Psychology The College of New Jersey. Stephanie Mallinas is now at Florida State University.

We thank Kimberly Rios for providing experimental materials and data from Rios (2013). For the conceptual and close replications of Rios (2013) Studies 1 and 2, we preregistered our research and analysis plan prior to data collection using the replication recipe (Brandt et al., 2014). Where we deviate from the preregistered analyses we note it explicitly in the text. Preregistration of the conceptual and close replications of Rios (2013) Study 1 can be found at <https://osf.io/z5bqy/> and for Rios (2013) Study 2 at <https://osf.io/pk9ga/>.

Correspondence concerning this article should be addressed to Jarret T. Crawford, Department of Psychology, The College of New Jersey, 2000 Pennington Road, Ewing, NJ 08628. E-mail: [crawford@tcnj.edu](mailto:crawford@tcnj.edu)

avored academic scholarships for Aboriginal students compared with those in a control group. However, a follow-up study by Altemeyer (1994) failed to replicate these effects. Other work has shown that increased contact quality and quantity with outgroup members can reduce prejudice among people high in RWA (Asbrock, Christ, Duckitt, & Sibley, 2012; see Hodson, 2011 for a review).

One recently proposed method for reducing the RWA-anti-gay prejudice association considers whether the label used to describe the target group itself can reduce or even eliminate the effect of RWA on sexual prejudice (Rios, 2013). Rios (2013) hypothesized that the “homosexual” label implies greater social deviance and “otherness” than the “gay men and lesbians” label (see Connell, 1992), and that therefore the relationship between RWA and prejudice toward gay men and lesbians should be moderated by which label is used. In two studies (Study 1  $N = 62$ ; Study 2  $N = 102$ ) participants from online community samples were randomly assigned to complete measures of prejudice against either “homosexuals” or “gay men and lesbians.” RWA significantly predicted prejudice against “homosexuals,” but there was no significant relationship between RWA and prejudice against “gay men and lesbians” (all analyses controlled for social dominance orientation [SDO]; Pratto, Sidanius, Stallworth, & Malle, 1994). Furthermore, consistent with the idea that the label affects the perceived social deviance and otherness of gay men and lesbians, the moderation effect was mediated by differences in perceived symbolic threat (Study 1) and psychological essentialism (Study 2).

This social category label (SCL) effect<sup>1</sup> is consistent with other research finding that the label used to describe a social group influences the way people think or feel about that group. For example, Whites react more negatively to African Americans when they are labeled “Black” compared with “African American” (Hall, Phillips, & Townsend, 2014). Labels for high status groups also appear to influence intergroup attitudes, as White Americans induced to self-identify as “White” are less supportive of diversity than those induced to self-identify as “European American” (Morrison & Chung, 2011).

If the SCL effect is robust, it would have important theoretical implications for how social psychologists understand authoritarianism and its effects on prejudice. In essence, it would imply that RWA does not necessarily predict prejudice against socially deviant groups (Duckitt, 2006; Duckitt & Sibley, 2010), but rather how the group is labeled determines the effect of RWA on prejudice. There are also strong methodological implications of the SCL effect, as it would suggest that previous research showing a relationship between RWA and antigay prejudice is a function of which label researchers have used to describe the social category. Finally, there are potentially important implications for how survey researchers devise questions about social groups, how government officials ask about citizens’ demographic background information, and how political pundits and social commentators discuss different social groups. Moreover, compared with many other types of prejudice reduction interventions (e.g., intergroup contact), changing labels would be relatively easy. There are, however, three key reasons to further examine the robustness of the SCL effect: inconsistency with extant findings regarding the relationship between RWA and prejudice against gay men and lesbians, small sample sizes in the original studies, and RWA measurement issues in the original studies.

### Inconsistency With Extant Findings

In the original SCL effect studies (Rios, 2013), the association between RWA and attitudes toward “gay men and lesbians” was not significantly different from zero. This is surprising because published evidence is largely inconsistent with a null relationship between RWA and attitudes toward “gay men and lesbians.” Although these extant studies do not compare the effects of different labels, they do find substantial correlations between RWA and variables measuring negative attitudes toward “gay men” or “gays” and “lesbians” (e.g., Duckitt, Bizumic, Krauss, & Heled, 2010; Pratto et al., 1994; Sibley, Robertson, & Wilson, 2006; Terrizzi, Shook, & Ventis, 2010; Whitley, 1999). For example, in a sample of 146 college students, Terrizzi, Shook, and Ventis (2010) found a correlation of  $r = .82$  between RWA and LaMar and Kite’s (1998) Attitudes toward Gay Men and Lesbians scale.

Further, in our own previously unpublished data collected prior to our awareness of Rios (2013), we find that the association between RWA and prejudice toward “gay men,” “gays,” and “lesbians” (both with and without controlling for SDO) is consistently positive and moderate in size. Table 1 provides details for these 12 samples.<sup>2</sup> With the exception of Sample 3, which consisted of college students, all of these samples were collected online via Mechanical Turk (MTurk). RWA was measured with versions based on Altemeyer’s (1996, 1998) RWA scales or Duckitt, Bizumic, Krauss, and Heled’s (2010) multidimensional Authoritarianism-Conservatism-Traditionalism (ACT) scale. Any RWA or ACT items containing references to gays, lesbians, homosexuals, or homosexuality were removed prior to analysis. SDO was measured with one of several iterations of the SDO scale (Pratto et al., 1994). There were various measures of prejudice, including feeling thermometer ratings and willingness to discriminate.

We performed a meta-analysis of these data to estimate the effect of RWA on prejudice against “gay men/gays and lesbians” in our own samples. In samples with multiple measures of prejudice, we z-scored and averaged the measures to create composite prejudice scores. When sexual orientation was assessed in the sample, nonheterosexual participants were excluded from analysis (as in Rios’, 2013 Studies 1 and 2). The zero-order correlation between RWA and prejudice against “gays and lesbians” or “gay men and lesbians” was positive and significant in every sample ( $r_s .29-.74$ ; partial  $r_s$  controlling for SDO  $.31-.66$ ). The meta-analysis shows that RWA predicts prejudice against “gay men and lesbians” or “gays and lesbians” across a variety of operationalizations of both RWA and of prejudice, and in both student and community samples (without controlling for SDO:  $r = .51$ , 95% CI [.44, .59]; controlling for SDO:  $r = .42$ , 95% CI [.35, .49]).

Thus, the evidence scattered in the extant literature and this meta-analysis of our own existing data suggests that the null association between RWA and prejudice toward “gay men and lesbians” found in the two original studies (Rios, 2013) is anom-

<sup>1</sup> We have given this name to this effect so that it can be efficiently discussed in the article. This term does not appear in Rios (2013).

<sup>2</sup> The preregistration of these analyses can be found at <https://osf.io/yuvj7/>. The preregistration noted 13 samples; however, one sample did not contain a measure of SDO as originally thought, and was therefore excluded from the analyses.

Table 1  
*Sample Characteristics of Twelve Existing Samples*

Sample name	Composition	Date	Size	RWA scale type	SDO scale type	Prejudice measure
Sample 1	MTurk	March 2014	617	12-item ACT (.91)	4-item SDO brief (.83)	Feeling thermometer
Sample 2	MTurk	September 2013	198	36-item ACT (.96)	4-item SDO brief (.83)	Feeling thermometer
Sample 3	Student	March 2011	64	11-item RWA (.80)	10-item SDO (.89)	Feeling thermometer
Sample 4	MTurk	March 2014	360	36-item ACT (.96)	4-item SDO brief (.85)	Feeling thermometer
Sample 5	MTurk	July 2013	203	18-item ACT (.94)	16-item SDO (.95)	Social distance (1–7) (.82)
Sample 6	MTurk	February 2011	134	11-item RWA (.92)	10-item SDO (.93)	Feeling thermometer (.92)
						Warmth (1–7) (.88)
						Discrimination (1–7) (.82)
						Stereotypes (1–7) (.89)
						Contact (1–7) (.89)
Sample 7	MTurk	November 2013	201	36-item ACT (.97)	4-item SDO brief (.85)	Feeling thermometer
Sample 8	MTurk	November 2013	203	36-item ACT (.97)	4-item SDO brief (.86)	Feeling thermometer
Sample 9	MTurk	December 2013	220	36-item ACT (.96)	4-item SDO brief (.81)	Feeling thermometer
Sample 10	MTurk	December 2013	277	36-item ACT (.96)	4-item SDO brief (.87)	Feeling thermometer
Sample 11	MTurk	March 2011	264	11-item RWA (.91)	10-item SDO (.91)	Discrimination (1–7) (.88)
						Stereotypes (1–7) (.84)
						Contact (1–7) (.91)
Sample 12	MTurk	December 2010	120	11-item RWA (.91)	10-item SDO (.93)	Contact (1–7) (.84)
						Discrimination (1–7) (.84)

*Note.* Samples 6, 11, and 12 used the term “gay men and lesbians;” all other samples used the term “gays and lesbians.” Samples, 2, 6, and 7–12 included assessment of participant sexual orientation. Internal reliability coefficients for RWA, SDO, and prejudice measures are included in parentheses. RWA = right-wing authoritarianism; SDO = social dominance orientation; ACT = authoritarianism-conservatism-traditionalism.

alous. The average relationship between RWA and prejudice toward “gay men and lesbians” appears to be larger than those two original studies estimated; therefore, those studies may have overestimated the size of the difference between this relationship and the relationship between RWA and prejudice toward “homosexuals” (i.e., the interaction at the heart of the SCL effect). All of the studies reported hereafter therefore compare these two relationships in the form of the RWA  $\times$  Label interaction effect.

### Small Sample Sizes

The original tests of the SCL effect (Rios, 2013) used a Dichotomous (Label)  $\times$  Continuous (RWA) design. These designs are surprisingly complex, and so such designs are often underpowered (Aguinis, Boik, & Pierce, 2001). This is the case with the two original studies testing the SCL effect (Study 1:  $N = 62$ , post hoc power of .50 calculated with Aguinis et al., 2001; Study 2:  $N = 102$ , post hoc power of .68). Studies with low statistical power are unlikely to provide precise effect size estimates and often overestimate the effect size (Ingre, 2013). In the five studies presently reported, we sought to increase power relative to the original studies.

### RWA Measurement Issues

The original studies did not use full or standard versions of the RWA scale. Study 1 used a 6-item version of Altemeyer’s (1998) 32-item scale. The original article does not specify how these items were chosen. Study 2 used a 10-item subscale of Manganelli Rattazzi, Bobbio, and Canova’s (2006) 21-item RWA scale, which consisted entirely of positively worded items. The precise measurement of authoritarianism, and especially of right-wing authoritarianism, has been the center of controversy since the original work on authoritarianism (see, e.g., Adorno, Frenkel-Brunswick, Levinson, & Sanford, 1950; Altemeyer, 1998; Funke, 2005;

Stenner, 2005). This has led to a proliferation of validated RWA measures that try to improve on historical conceptualizations of the constructs; however, it is also then unclear how well findings with one measure of RWA generalize to other measures of the same or related constructs. Therefore, in our conceptual replications of these two original studies (described below), we explore the generalization of the SCL effect to other measures of RWA.

### The Present Studies

We examined the robustness of the SCL effect in a series of conceptual and close replications. In Study 1, we analyzed data from a large survey experiment embedded in the 2012 time series of the American National Election studies (ANES) that varied the use of the “gays and lesbians” and “homosexuals” labels.

In Studies 2 and 3, we conducted close and conceptual replications of Rios (2013) Study 1. The close replication (Study 2) used the original materials provided by the original author. The conceptual replication (Study 3) measured RWA using a short version of Duckitt et al.’s (2010) ACT scale, which captures three distinct components of RWA: authoritarianism, which assesses punitiveness versus leniency; conservatism, which assesses obedience versus rebelliousness; and traditionalism, which assesses conformity versus nonconformity to social norms, values, and morality (These dimensions are respectively analogous to the attitudinal clusters Altemeyer, 1998 identified as authoritarian aggression, authoritarian submission, and conventionalism which were never separately measured in earlier versions of the RWA scale). Using this scale allowed us to test if the SCL effect extends to alternative measures of RWA, and whether support for the SCL hypothesis varies by RWA component. In Studies 4 and 5, we conducted close and conceptual replications of Rios (2013) Study 2. Again, the close replication (Study 4) used the original materials provided by the original author. The conceptual replication (Study 5) included the full balanced version of Manganelli Rattazzi et al.’s (2006) RWA

scale instead of the 10-item imbalanced version used in Rios (2013) Study 2. Finally, we meta-analyzed the data reported here and in the two original studies to test how well the data overall support the SCL hypothesis.

### Study 1: 2012 American National Election Study (ANES)<sup>3</sup>

The ANES is a representative survey of American voters typically conducted during an election year. It consists of a preelection and a postelection survey that includes questions assessing a variety of social, political, and psychological variables. In the preelection survey of the 2012 ANES, respondents were randomly assigned to indicate their support for employment and military service discrimination against either “gays and lesbians” or “homosexuals.”

The 2012 ANES does not include direct measures of the RWA or SDO scales, but it does include measures that other researchers have used as proxies for these constructs. It includes one measure of traditional values and another measure of child rearing values, both of which have been used as proxies of the RWA construct in the extant literature (Brandt & Reyna, 2014; Feldman & Stenner, 1997; Stenner, 2005), along with an egalitarianism measure. Egalitarianism is negatively related to SDO (Levy, West, Ramirez, & Karafantis, 2006; Pratto, Sidanius, Stallworth, & Malle, 1994), and the reverse-coded ANES egalitarianism measure has been used as a proxy SDO measure (Sidanius, Devreux, & Pratto, 1992). Thus, the embedded experiment within the 2012 ANES offers an opportunity for a conceptual replication of the SCL hypothesis in a nationally representative sample.

### Method

**Participants and procedure.** A total of 2,477 participants from the 2012 time series of the ANES who indicated they were heterosexual or straight were included in the analyses (1,175 male, 1,302 female;  $M_{\text{age}} = 50.4$ ,  $SD = 16.3$ ). Participants completed a preelection and a postelection survey.

**Materials.** The traditionalism measure consists of two items<sup>4</sup> (“The newer lifestyles are contributing to the breakdown of our society;” “This country would have many fewer problems if there were more emphasis on traditional family ties”) that were strongly correlated ( $r = .66$ ) and were averaged together (1 = *disagree strongly* to 5 = *agree strongly*).

For the 4-item measure of child rearing values, participants choose the quality that is more important for a child to have among four pairs of “desirable qualities.” The pairs were “independence or respect for elders,” “curiosity or good manners,” “self-reliance or obedience,” and “being considerate or well-behaved,” with the latter of each pairing the more authoritarian choice. More authoritarian options were coded as 2, less authoritarian options were coded as 1, and “both were important” options were coded as 1.5. The items were averaged to form a scale ( $\alpha = .63$ ); lower scale reliabilities are common for this particular measure of authoritarianism (e.g., Feldman & Stenner, 1997).

The traditionalism and child rearing values items are face-valid measures of authoritarianism, and have been used as such in the extant literature (e.g., Brandt & Reyna, 2014). Further, in two additional Mechanical Turk validation studies (Sample 1,  $N =$

256; Sample 2,  $N = 258$ ), we found relationships between RWA (as measured by Duckitt et al.’s, 2010 36-item ACT scale) and traditionalism of  $r = .84$  and  $.82$ , respectively, and between RWA and child rearing values of  $r = .52$  and  $.59$ , respectively. Thus, these measures seem appropriate measures of the authoritarianism construct.

Participants also completed the 6-item antiegalitarian measure (e.g., “We have gone too far in pushing for equal rights in this country;” 1 = *disagree strongly* to 5 = *agree strongly*;  $\alpha = .83$ ; see SOM for all items).

In the preelection survey, participants were randomly assigned to answer policy questions about either “gays and lesbians” ( $n = 1,260$ ) or “homosexuals” ( $n = 1,217$ ). These policies were to “protect homosexuals [gays and lesbians] against job discrimination” and “allow homosexuals [gays and lesbians] to serve in the United States Armed Forces.” Responses ranged from 1 = *strongly approve* to 4 = *strongly disapprove*, so that higher scores indicated more disapproval of the antidiscrimination policies. They were correlated ( $r = .47$ ) and averaged to form a scale.<sup>5</sup>

### Results and Discussion

We weighted the sample based on strata and primary sampling unit for all analyses to ensure representativeness (see Damico, 2014). This is important for this wave of the ANES because the sampling frame purposefully oversampled some demographic groups. Models were estimated with the “svyglm” function of the “survey” package for R (Lumley, 2014).

The SCL hypothesis predicts a significant Authoritarianism  $\times$  Condition interaction such that there is a significant slope of authoritarianism in the “homosexuals” condition but a nonsignificant or weaker slope in the “gays and lesbians” condition. For all of the studies reported here we followed the data analytic strategy used in Rios’ (2013) original tests of the SCL effect. We regress discrimination/prejudice on authoritarianism (mean-centered), antiegalitarianism (mean-centered), and condition (0 = homosexuals; 1 = gays and lesbians) in Step 1, and the Authoritarianism  $\times$  Condition and Antiegalitarianism  $\times$  Condition interactions in Step 2 (Aiken & West, 1991). If there are significant or marginally

<sup>3</sup> We did not preregister Study 1 because we only happened upon this experimental manipulation while reviewing the ANES dataset to analyze as part of data collected prior to Rios (2013). Rather than maintaining the original preregistration plan we opted to test the effect of the experimental manipulation.

<sup>4</sup> Two other items are often used to measure traditionalism in the ANES that we did not include in our analyses because they reference tolerance toward people who are not traditional, creating an overlap between our predictor and outcome variables (see Brandt & Reyna, 2014).

<sup>5</sup> Discriminatory policies may not index prejudice and stereotypes, like the measure used in the original studies (Rios, 2013). To test see if the policy items were associated with prejudice we regressed policy on a feeling thermometer toward “gays and lesbians” (0 = cold/unfavorable, 100 = warm/favorable) that was collected in the postelection survey and the experimental condition, revealing a strong main effect of the feeling thermometer on policy ( $b = -.017$ ,  $SE = .001$ , 95% CI  $[-.019, -.016]$ ,  $\beta = -.54$ ,  $p < .001$ ). In the second step of the equation we included the interaction between the feeling thermometer and the experimental condition, revealing a nonsignificant interaction effect ( $b = -.00008$ ,  $SE = .002$ , 95% CI  $[-.003, -.003]$ ,  $\beta = -.001$ ,  $p = .96$ ). This suggests that the policy items are strongly associated with affective prejudice regardless of group label.

significant interactions, we follow up with simple slope analyses for each condition and for  $\pm 1$  SD of the authoritarianism mean.

The results for traditionalism are in Table 2. In Step 1, traditionalism predicted more opposition to the antidiscrimination policies, and Step 2 indicated that the interaction between traditionalism and the experimental condition was not significantly different from zero. The results for authoritarian child rearing values are also in Table 2. In Step 1, authoritarian child rearing values predicted more opposition to the antidiscrimination policies, and Step 2 indicated that the interaction between authoritarian child rearing values and the experimental condition was not significantly different from zero.

In sum, across two measures of authoritarianism in a large and representative sample, the SCL hypothesis did not receive support. Each measure of authoritarianism predicted opposition to antidiscrimination policies regardless of group label.

### Studies 2 and 3: Conceptual and Close Replications of Rios' (2013) Study 1

The 2012 ANES analysis did not find support for the SCL effect. Although scholars have previously argued that the RWA scale and the authoritarianism measures used by the ANES all capture aspects of the underlying "authoritarianism" construct (e.g., Brandt & Reyna, 2014; Hetherington & Suhay, 2011) and we found strong positive correlations between the RWA scale and these two variables in two separate MTurk samples (see Study 1 Method), the 2012 ANES sample is limited in that it did not contain a version of the RWA scale itself.

Further, the dependent variables varied between the 2012 ANES and the original studies: whereas the 2012 ANES employed two items capturing support for discriminatory policies, Rios' (2013) original studies used a two-item affective reaction measure (Study 1) and a 21-item scale (Kite & Deaux, 1986) that captured various negative attitudes and beliefs about gay men and lesbians/homosexuals (Study 2). We cannot rule out the possibility that there is something unique about the dependent measures used in the orig-

inal studies that lends to support for the SCL effect or in our initial replication that lends to nonsignificant SCL effects.

We therefore conducted close (Study 2) and conceptual (Study 3) replications of Rios' (2013) Study 1. In Study 2, we used all of the original materials. Study 3 was identical to Study 2 except that we used a short 17-item version of Duckitt et al.'s (2010) ACT scale instead of the 6-item RWA scale used in the original study. In both replication attempts, we included the 2-item measure of antigay prejudice from Rios' (2013) Study 1, and followed that measure with the 21-item prejudice measure from Rios' (2013) Study 2, along with a feeling thermometer rating. We report both studies together because they were conducted simultaneously.

### Studies 2 and 3: Method

**Participants.** There were 62 participants sampled in Rios (2013) Study 1. Our target  $N$  was 2.5 times the original sample size (Simonsohn, 2015). We oversampled to guard against possible incomplete data, ultimately recruiting 464 participants from MTurk. After excluding participants who were not heterosexual, a sample of 411 participants remained (Study 2 [close replication]:  $N = 195$ , 56% male, 44% female,  $M_{\text{age}} = 35$  years; Study 3 [conceptual replication]:  $N = 216$ , 54% male, 46% female,  $M_{\text{age}} = 36$  years).

**Materials and procedure.** All RWA, SDO, and antigay prejudice measures are provided in the SOM. Participants were randomly assigned to the close or conceptual replication study. In both studies participants completed the RWA and SDO measures, followed by measures of symbolic threat, realistic threat, and prejudice toward "homosexuals" or "gays and lesbians" depending on the experimental condition. The close replication followed the original methods of Rios (2013) Study 1, with the addition of the 21-item prejudice measure used in Rios (2013) Study 2 (see SOM; 1 = *strongly disagree*; 5 = *strongly agree*), followed by a feeling thermometer item (0 = *very cold*; 100 = *very warm*), which were on separate pages at the end of the study. All prejudice measures were scored so that higher scores indicate more antigay prejudice.

Table 2

Study 1: Results of Moderated Multiple Regression Analyses Using Traditionalism and Child-Rearing Values on the Policy Outcomes Variable From Analysis of the 2012 American National Election Study

	Step 1					Step 2				
	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	CIs	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	CIs
<b>Traditionalism</b>										
Constant	1.77	.03			[1.71, 1.85]	1.78	.03			[1.71, 1.85]
Traditionalism	.20	.02	.26	11.18***	[.17, .24]	.22	.03	.26	8.07***	[.17, .28]
Antiegalitarianism	.28	.03	.31	10.10***	[.23, .34]	.26	.04	.31	6.24***	[.18, .34]
Condition	-.06	.05	-.03	-1.22	[-.15, .04]	-.07	.05	-.03	-1.38	[-.16, .03]
Traditionalism $\times$ Condition						-.04	.04	-.03	-1.17	[-.11, .03]
Antiegalitarianism $\times$ Condition						.05	.05	.03	.95	[-.05, .16]
<b>Child-rearing</b>										
Constant	1.71	.03			[1.65, 1.77]	1.71	.03			[1.65, 1.77]
Child-rearing values	.62	.07	.21	9.31***	[.49, .75]	.72	.10	.21	7.26***	[.52, .91]
Antiegalitarianism	.35	.02	.39	15.56***	[.31, .39]	.33	.03	.37	10.5***	[.27, .40]
Condition	-.06	.04	-.04	-1.53	[-.15, .02]	-.07	.04	-.04	-1.7 <sup>+</sup>	[-.15, .01]
Child-rearing values $\times$ Condition						-.20	.13	-.03	-1.49	[-.46, .06]
Antiegalitarianism $\times$ Condition						.04	.04	.04	.84	[-.05, .12]

Note. Higher scores on policy outcome variable indicates more discrimination.

<sup>+</sup>  $p < .10$ . \*\*\*  $p < .001$ .

The conceptual replication followed all of the original methods with the exception of the additional prejudice measures (described above) and the replacement of the RWA measure used in the original study with 17 items<sup>6</sup> from the 36-item ACT scale (Duckitt et al., 2010). The ACT scale has separate measures of authoritarianism (e.g., “The way things are going in this country, it’s going to take a lot of ‘strong medicine’ to straighten out the troublemakers”); conservatism (e.g., “Our country will be great if we show respect for authority and obey our leaders”); and traditionalism (e.g., “It is important that we preserve our traditional values and moral standards”). All items were rated on the same 1 = *strongly disagree* to 7 = *strongly agree* scale.

Lastly, participants reported demographic information, including their sexual orientation.

## Study 2: Close Replication Results and Discussion

Table S1 (below the diagonal) in SOM reports the correlations, *Ms*, and *SDs* for RWA, SDO, symbolic threat, and all three prejudice measures in the close replication of Rios Study 1. All variables were strongly and positively correlated with each other. All measures were reliable (all  $\alpha$ s > .90). Table 3 reports the results of moderated multiple regression analyses on each of the four outcome variables. There were significant RWA and SDO main effects on each dependent measure, and no significant condition main effects or SDO  $\times$  Condition interactions.

There was a marginally significant RWA  $\times$  Condition interaction on the 2-item prejudice measure ( $p = .09$ ). Simple slopes show that RWA significantly predicted the 2-item prejudice measure against “homosexuals,”  $b = .53$ ,  $SE = .13$ , 95% CI [.27, .79],  $\beta = .40$ ,  $t = 4.06$ ,  $p < .001$ , and marginally significantly against “gay men and lesbians,”  $b = .22$ ,  $SE = .13$ , 95% CI [.16, .35],  $\beta = .18$ ,  $t = 1.70$ ,  $p = .09$ . Further, among those high (+1 *SD*) in RWA, prejudice was higher in the “homosexuals” than in the “gay men and lesbians” condition,  $b = -.80$ ,  $SE = .39$ , 95% CI [-1.58, -.02],  $\beta = -.20$ ,  $t = -2.03$ ,  $p = .04$ , whereas there were no differences between conditions among people low (-1 *SD*) in RWA,  $b = .21$ ,  $SE = .40$ , 95% CI [-.58, 1.00],  $\beta = .05$ ,  $t = .52$ ,  $p = .60$ .

There was a significant RWA  $\times$  Condition interaction on the feeling thermometer ( $p = .04$ ). Simple slopes indicated RWA significantly predicted prejudice against “homosexuals,”  $b = 7.03$ ,  $SE = 1.70$ , 95% CI [3.66, 10.40],  $\beta = .40$ ,  $t = 4.14$ ,  $p < .001$ , but not against “gay men and lesbians,”  $b = 2.06$ ,  $SE = 1.62$ , 95% CI [-1.17, 5.28],  $\beta = .13$ ,  $t = 1.27$ ,  $p = .21$ . Further, among those high in RWA, prejudice was marginally higher in the “homosexuals” than in the “gay men and lesbians” condition,  $b = -9.63$ ,  $SE = 5.07$ , 95% CI [-19.63, .36],  $\beta = -.18$ ,  $t = -1.90$ ,  $p = .06$ , whereas there were no differences between conditions among people low in RWA,  $b = 6.24$ ,  $SE = 5.14$ , 95% CI [-3.90, 16.38],  $\beta = .12$ ,  $t = 1.21$ ,  $p = .23$ .

There were no other interactions predicting the 21-item prejudice measure or symbolic threat. As an exploratory analysis, we z-transformed each prejudice measure and averaged across to create a composite antigay prejudice measure ( $\alpha = .93$ ). Analyses with this measure found a marginally significant RWA  $\times$  Condition interaction ( $p = .07$ ) indicating that the relationship between RWA and prejudice was marginally stronger in the “homosexuals” than in the “gay men and lesbians” condition. Therefore, the SCL hypothesis received qualified support in this close replication of Rios’ (2013) Study 1, although these effects were primarily of

marginal statistical significance despite the significantly larger sample size than Rios (2013) Study 1.<sup>7</sup>

## Study 3: Conceptual Replication Results and Discussion

Table S1 (above the diagonal) in SOM reports the correlations, *Ms*, and *SDs* for RWA, SDO, symbolic threat, and all three prejudice measures in the conceptual replication of Rios (2013) Study 1. All variables were strongly and positively correlated with each other (all  $\alpha$ s > .90). Table 4 reports results of moderated multiple regression analyses on each of the four outcome variables. Main effects of RWA and SDO indicate that higher RWA and SDO scores predicted greater prejudice on all three measures, and greater symbolic threat. Inconsistent with the SCL hypothesis, there were no significant RWA  $\times$  Condition interactions on any outcome variable ( $ps$  ranged from .26 to .94). An exploratory analysis, with a z-transformed and combined prejudice measure ( $\alpha = .93$ ), found a main effect of RWA ( $p < .001$ ), but no significant RWA  $\times$  Condition interaction ( $p = .68$ ).

## Component-Based Analysis of ACT Scale

To examine whether support for the SCL hypothesis varied by RWA component, we computed the following moderated multiple regression analyses on each of the four outcome variables in a set of exploratory analyses. In Step 1, we entered the dummy-coded condition variable (0 = homosexual; 1 = gay men and lesbians) and the mean-centered variables for Authoritarianism, Conservatism, Traditionalism, and SDO. In Step 2, we entered the Authoritarianism  $\times$  Condition, Conservatism  $\times$  Condition, Traditionalism  $\times$  Condition, and SDO  $\times$  Condition interactions. For the 21-item prejudice measure, the feeling thermometer, symbolic threat, and a composite prejudice measure there were no significant or marginally significant interactions between any of the ACT dimensions and the experimental condition (all  $p$ ’s > .12; see SOM for full analyses).

For the two-item prejudice measure, in Step 1 there were main effects of Traditionalism ( $b = .78$ ,  $SE = .14$ , 95% CI [.52, 1.05],  $\beta = .56$ ,  $t = 5.78$ ,  $p < .001$ ) and SDO ( $b = .50$ ,  $SE = .10$ , 95% CI [.30, .69],  $\beta = .32$ ,  $t = 5.00$ ,  $p < .001$ ). No other main effects were significant,  $ps > .21$ . In Step 2, there was a significant Authoritarianism  $\times$  Condition interaction ( $b = -.82$ ,  $SE = .31$ , 95% CI [-1.44, -.21],  $\beta = -.41$ ,  $t = 2.65$ ,  $p = .01$ ). Probing this interaction showed that whereas Authoritarianism did not significantly predict prejudice in the “homosexuals” condition ( $b = .25$ ,  $SE = .23$ , 95% CI [-.20, .70],  $\beta = .14$ ,  $t = 1.09$ ,  $p = .28$ ), it *negatively* predicted

<sup>6</sup> This scale originally included 18 items (six items for each component) but due to a clerical error, one item on the traditionalism component was duplicated and therefore removed from analyses.

<sup>7</sup> We specified in our preregistration that we would remove outliers following the procedure used by Rios (2013), however, decided not to use this procedure because of recently published analyses suggesting that removing outliers does not improve—and can harm—Type I error rates (Bakker & Wicherts, 2014). There were no outliers in Study 3. In Study 2, there was one outlier on the 21-item prejudice measure. The RWA  $\times$  Condition interaction was still nonsignificant after this outlier was removed ( $p = .78$ ). We also specified in the preregistration that we would run additional regression analyses pooling data from Studies 2 and 3 and using an interaction term to compare the two samples. None of the RWA  $\times$  Condition interactions were moderated by sample ( $ps > .34$ ).

Table 3  
 Study 2: Results of Moderated Multiple Regression Analyses on Outcomes Variables for Close Replication of Rios (2013) Study 1

	Step 1					Step 2				
	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	CIs	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	CIs
Panel A: 2-item (Rios 1)										
Constant	4.06	.19		21.19***	[3.69, 4.42]	4.04	.19		21.14***	[3.67, 4.42]
RWA	.38	.09	.29	4.08***	[.19, .56]	.53	.13	.42	4.10***	[.28, .79]
SDO	.41	.13	.23	3.26**	[.16, .66]	.41	.17	.24	2.41*	[.08, .75]
Condition	-.31	.27	-.08	-1.13	[-.84, .23]	-.30	.27	-.07	-1.11	[-.83, .23]
RWA × Condition						-.32	.18	-.17	-1.73†	[-.68, .05]
SDO × Condition						-.03	.25	-.01	-.14	[-.53, .46]
Panel B: 21-item (Rios 2)										
Constant	2.04	.07		30.32***	[1.91, 2.18]	2.04	.07		30.04***	[1.9, 2.17]
RWA	.30	.03	.55	9.34***	[.23, .36]	.34	.05	.62	7.42***	[.25, .42]
SDO	.20	.04	.27	4.59***	[.11, .29]	.17	.06	.23	2.77***	[.05, .29]
Condition	-.04	.09	-.02	-.44	[-.23, .15]	-.04	.09	-.02	-.38	[-.23, .15]
RWA × Condition						-.08	.06	-.10	-1.2	[-.20, .05]
SDO × Condition						.07	.09	.06	.74	[-.11, .24]
Panel C: Feeling thermometer										
Constant	35.63	2.46		14.59***	[31.10, 40.82]	35.63	2.45		14.55***	[30.80, 40.46]
RWA	4.59	1.18	.27	3.88***	[2.26, 6.93]	7.03	1.65	.42	4.26***	[3.77, 10.28]
SDO	6.83	1.63	.30	4.20***	[3.63, 10.04]	6.45	2.19	.28	2.94**	[2.12, 10.77]
Condition	-1.78	3.48	-.03	-.51	[-8.66, 5.11]	-1.70	3.46	-.03	-.49	[-8.52, 5.13]
RWA × Condition						-4.97	2.35	-.21	-2.12*	[-9.60, -.34]
SDO × Condition						.42	3.24	.01	.13	[-5.98, 6.81]
Panel D: Symbolic threat										
Constant	2.18	.08		27.27***	[2.02, 2.34]	2.17	.08		27.27***	[2.02, 2.33]
RWA	.45	.04	.65	11.74***	[.37, .52]	.49	.06	.70	8.94***	[.38, .60]
SDO	.18	.05	.18	3.32**	[.07, .28]	.16	.07	.17	2.14*	[.01, .30]
Condition	.02	.11	.01	.15	[-.20, .24]	.02	.11	.01	.18	[-.20, .24]
RWA × Condition						-.08	.08	-.08	-1.06	[-.23, .07]
SDO × Condition						.03	.11	.02	.26	[-.18, .24]

Note. Higher scores on symbolic threat and prejudice measures indicate more threat and prejudice, respectively. RWA = right-wing authoritarianism; SDO = social dominance orientation; CI = confidence interval.

†  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

prejudice in the “gay men and lesbians” condition ( $b = -.58$ ,  $SE = .21$ , 95% CI [-1.00, -.15],  $\beta = -.40$ ,  $t = 2.70$ ,  $p = .01$ ). Further, a significant Traditionalism × Condition interaction ( $b = .58$ ,  $SE = .28$ , 95% CI [.03, 1.12],  $\beta = .30$ ,  $t = 2.08$ ,  $p = .04$ ) showed that Traditionalism was a stronger predictor of prejudice against “gay men and lesbians” ( $b = 1.06$ ,  $SE = .18$ , 95% CI [.71, 1.41],  $\beta = .77$ ,  $t = 6.07$ ,  $p < .001$ ) than against “homosexuals” ( $b = .49$ ,  $SE = .22$ , 95% CI [.06, .91],  $\beta = .34$ ,  $t = 2.26$ ,  $p = .03$ ). Both of these findings are in opposition to the SCL hypothesis. No other interactions were significant ( $ps > .63$ ).

In the analysis of the full ACT scale, there was no support for the SCL hypothesis, as ACT/RWA had main effects on each antigay prejudice measure and threat, which were not qualified by target label. The component-based analyses also do not lend support for the SCL hypothesis, and actually produced two significant interaction effects opposite the SCL hypothesis on the two-item prejudice measure.

#### Studies 4 and 5: Close and Conceptual Replications of Rios’ (2013) Study 2

In our conceptual replications of the SCL effect (Studies 1 and 3), we did not find any evidence consistent with the SCL hypothesis (and in fact found two results opposite the SCL effect in Study 3 on the two-item prejudice measure used in Rios (2013) Study 1). However, in our close replication, we found partial support for the SCL hypothesis. Specifically, there was a marginally significant interaction effect

on the 2-item prejudice measure and a significant interaction effect on the feeling thermometer consistent with the SCL predictions (although, there was no support for the SCL hypothesis on the 21-item prejudice measure or symbolic threat). This suggests the possibility that the SCL effect emerges with the precise measures used in the original studies, but not with conceptually similar measures. It is also possible, however, that the true effect is near zero and that by testing many different interactions we happened to find significant interactions both consistent with and opposite the SCL hypothesis (i.e., Type I errors). To further examine these possibilities, we conducted close and conceptual replications of Rios (2013) Study 2. In the close replication (Study 4) we used the same 10-item RWA subscale as in the original study. In the conceptual replication (Study 5) we used the full version of this scale. These studies were conducted simultaneously and are therefore reported together.

#### Studies 4 and 5: Method

**Participants.** One-hundred and two participants were sampled in Rios (2013) Study 2. We targeted an  $N$  of at least 255 for each of our replication attempts (Simonsohn, 2015), thus needing 510 participants total. We oversampled to guard against possible incomplete data, ultimately recruiting 534 participants from MTurk. After excluding participants who were not heterosexual, a sample of 483 participants remained (Study 4 [close replication]:  $N = 246$ , 68% male, 32%

Table 4

Study 3: Results of Moderated Multiple Regression Analyses on Outcome Variables for Conceptual Replication of Rios (2013) Study 1

	Step 1					Step 2				
	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	CTR	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	CTR
Panel A: 2-item (Rios 1)										
Constant	4.00	.18		21.94***	[3.64, 4.36]	4.00	.18		21.80***	[3.64, 4.36]
RWA	.48	.11	.29	4.28***	[.26, .70]	.51	.17	.31	3.10**	[.19, .84]
SDO	.47	.10	.30	4.49***	[.26, .67]	.53	.15	.34	3.50**	[.23, .83]
Condition	.05	.26	.01	.20	[-.46, .57]	.05	.26	.01	.21	[-.46, .57]
RWA $\times$ Condition						-.05	.23	-.02	-.22	[-.50, .40]
SDO $\times$ Condition						-.12	.21	-.06	-.55	[-.53, .30]
Panel B: 21-item (Rios 2)										
Constant	2.05	.07		28.33***	[1.91, 2.20]	2.05	.07		28.18***	[1.91, 2.19]
RWA	.35	.04	.47	7.89***	[.26, .44]	.35	.07	.47	5.35***	[.22, .48]
SDO	.21	.04	.30	5.07***	[.13, .29]	.25	.06	.36	4.20***	[.13, .37]
Condition	.04	.10	.02	.39	[-.16, .24]	.04	.10	.02	.40	[-.16, .25]
RWA $\times$ Condition						.01	.09	.01	.08	[-.17, .18]
SDO $\times$ Condition						-.08	.08	-.09	-.97	[-.24, .08]
Panel C: Feeling thermometer										
Constant	35.12	2.34		15.01***	[30.50, 39.73]	34.98	2.35		14.90***	[30.35, 39.61]
RWA	5.04	1.44	.24	3.50**	[2.20, 7.88]	6.82	2.12	.32	3.22**	[2.64, 11.00]
SDO	6.69	1.33	.34	5.03***	[4.07, 9.31]	6.51	1.94	.33	3.36**	[2.69, 10.32]
Condition	.21	3.33	.004	.06	[-6.35, 6.78]	.24	3.36	.004	.07	[-6.34, 6.81]
RWA $\times$ Condition						-3.28	2.90	-.12	-1.13	[-9.00, 2.45]
SDO $\times$ Condition						.57	2.67	.02	.21	[-4.71, 5.83]
Panel D: Symbolic threat										
Constant	2.19	.09		24.41***	[2.02, 2.37]	2.19	.09		24.41***	[2.02, 2.37]
RWA	.45	.06	.47	8.13***	[.34, .56]	.43	.08	.45	5.34***	[.27, .59]
SDO	.29	.05	.33	5.73***	[.19, .40]	.39	.08	.43	5.05***	[.23, .54]
Condition	.18	.13	.07	1.40	[-.07, .43]	.08	.13	.07	1.39	[-.07, .43]
RWA $\times$ Condition						.04	.11	.03	.39	[-.18, .26]
SDO $\times$ Condition						-.16	.10	-.14	-1.59	[-.37, .04]

Note. Higher scores on symbolic threat and prejudice measures indicate more threat and prejudice, respectively. RWA = right-wing authoritarianism; SDO = social dominance orientation; CI = confidence interval.

\*\*  $p < .01$ . \*\*\*  $p < .001$ .

female,  $M_{\text{age}} = 33$  years; Study 5 [conceptual replication]:  $N = 237$ , 70% male, 30% female,  $M_{\text{age}} = 32$  years).

**Materials and procedure.** All RWA, SDO, and antigay prejudice measures are provided in SOM. The materials and procedures for Studies 4 and 5 were identical to those of Studies 2 and 3, with the following exceptions:

Participants in the close replication completed the 10-item subscale of Manganelli Rattazzi et al.'s (2006) RWA scale used in Rios (2013) Study 2, whereas those in the conceptual replication completed a 20-item version of this scale, excluding only the item, "Gays and lesbians are just as healthy and moral as everyone else" because of its content overlap with the outcome variables. For the same reason, we removed the mention of "homosexuals" from item 14 (see SOM). No other items specifically mentioned homosexuals or gay men and lesbians.

We replaced the symbolic threat scale with the 15-item perceived essentialism scale of the sexual orientation category used in Rios (2013) Study 2. As in the original study, we limited our analysis to the 5-item discreteness subscale of this measure.

Participants first completed the 21-item prejudice measure used in Rios (2013) Study 2, followed by the 2-item measure from Rios (2013) Study 1, and then the feeling thermometer.

#### Study 4: Close Replication Results and Discussion

Table S2 (above the diagonal) in SOM reports the correlations,  $M$ s, and  $SD$ s for RWA, SDO, essentialism, and all three prejudice mea-

asures in the close replication of Rios (2013) Study 2. All variables were strongly and positively correlated with each other. All measures were reliable (all  $\alpha$ s  $> .80$ ). Table 5 reports results of moderated regression analyses on each of the four outcome variables. There were main effects of RWA on all outcome variables except the feeling thermometer, but no significant RWA  $\times$  Condition interactions ( $p$ s ranged from .14 to .87). Further, an exploratory analysis with a z-transformed composite prejudice measure ( $\alpha = .87$ ) showed a main effect of RWA ( $p < .001$ ), but no significant RWA  $\times$  Condition interaction ( $p = .58$ ). Thus, there is no support for the SCL hypothesis in the close replication of Rios (2013) Study 2; RWA predicted antigay prejudice regardless of target group label.

#### Study 5: Conceptual Replication Results and Discussion

Table S2 (below the diagonal) in SOM reports the correlations,  $M$ s, and  $SD$ s for RWA, SDO, essentialism, and all three prejudice measures in the conceptual replication of Rios Study 2. All variables were strongly and positively correlated with each other. All measures were reliable (all  $\alpha$ s  $> .77$ ). Table 6 reports the results of moderated multiple regression analyses on each of the four outcome variables. There were main effects of RWA on all outcome variables, but no significant RWA  $\times$  Condition interactions ( $p$ s ranged from .43 to .93). An exploratory analysis with a z-transformed composite prejudice measure ( $\alpha = .87$ ) showed a main effect of RWA ( $p < .001$ ), but no significant RWA  $\times$



Table 5

Study 4: Results of Moderated Multiple Regression Analyses on Outcomes Variables for Close Replication of Rios (2013) Study 2

	Step 1					Step 2				
	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	CI	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	CI
Panel A: 21-item measure (Rios 2)										
Constant	1.95	.06		32.87***	[1.84, 2.07]	1.95	.06		32.78***	[1.83, 2.07]
RWA	.30	.03	.60	9.93***	[.24, .36]	.32	.04	.63	7.70***	[.24, .40]
SDO	.06	.04	.10	1.70 <sup>†</sup>	[-.01, .14]	-.01	.06	-.01	-.11	[-.12, .11]
Condition	-.10	.08	-.06	-1.18	[-.26, .07]	-.10	.08	-.06	-1.19	[-.26, .07]
RWA × Condition						-.03	.06	-.04	-.50	[-.15, .09]
SDO × Condition						.12	.08	.15	1.56	[-.03, .27]
Panel B: 2-item measure (Rios 1)										
Constant	3.73	.16		23.53***	[3.42, 4.05]	3.72	.16		23.34***	[3.41, 4.04]
RWA	.18	.08	.16	2.14*	[.01, .34]	.25	.11	.23	2.19*	[.02, .47]
SDO	.25	.10	.19	2.48*	[.05, .45]	.16	.16	.12	1.01	[-.15, .46]
Condition	-.37	.23	-.10	-1.64	[-.82, .07]	-.38	.23	-.11	-1.65	[-.82, .07]
RWA × Condition						-.15	.17	-.09	-.89	[-.48, .18]
SDO × Condition						.18	.21	.10	.87	[-.23, .59]
Panel C: Feeling thermometer										
Constant	34.92	2.04		17.15***	[30.91, 38.93]	34.94	2.05		17.04***	[30.90, 38.98]
RWA	.48	1.06	.04	.46	[-1.60, 2.57]	.33	1.44	.02	.23	[-2.51, 3.18]
SDO	5.08	1.31	.29	3.89***	[2.51, 7.66]	4.67	2.00	.27	2.34*	[.73, 8.60]
Condition	-2.18	2.89	-.05	-.75	[-7.88, 3.52]	-2.17	2.90	-.05	-.75	[-7.89, 3.56]
RWA × Condition						.34	2.14	.02	.17	[-3.85, 4.65]
SDO × Condition						.65	2.66	.03	.25	[-4.59, 5.90]
Panel D: Essentialism										
Constant	2.52	.07		38.06***	[2.39, 2.65]	2.51	.07		37.89***	[2.38, 2.64]
RWA	.28	.03	.51	8.15***	[.21, .35]	.33	.05	.60	7.02***	[.23, .42]
SDO	.11	.04	.17	2.66***	[.03, .20]	.05	.06	.08	.85	[-.07, .18]
Condition	-.08	.09	-.04	-.80	[-.26, .11]	-.08	.09	-.04	-.82	[-.26, .11]
RWA × Condition						-.10	.07	-.13	-1.50	[-.24, .03]
SDO × Condition						.11	.09	.13	1.28	[-.06, .28]

Note. Higher scores on essentialism and prejudice measures indicate more essentialism and prejudice, respectively. RWA = right-wing authoritarianism; SDO = social dominance orientation; CI = confidence interval.

<sup>†</sup>  $p < .10$ . \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Condition interaction ( $p = .88$ ). Thus, there is no support for the SCL hypothesis in the conceptual replication of Rios (2013) Study 2; RWA predicted antigay prejudice regardless of target group label.

## Meta-Analysis

We aimed for high-powered tests of the SCL hypothesis in our five studies; however, it is possible that when planning our studies we overestimated the likely size of the SCL effect and therefore overestimated the power of our studies (see Francis, 2012; Perugini, Gallucci, & Costantini, 2014). Therefore, we performed a meta-analysis of the original studies (Rios, 2013) and the data described in this article to test if the strength of the relationship between RWA and intergroup attitudes varies significantly by target group label across studies. We estimated this model using the “rma.uni” function from R’s “metafor” package (Viechtbauer, 2010). We specified a random-effects model with restricted maximum-likelihood (REML) estimators, and included a single moderator variable: whether the target group was “gays/gay men and lesbians” or “homosexuals.” The meta-analysis included 19 samples, which are described below.

**Samples collected prior to our attempted replications of Rios (2013).** These 12 samples (see Table 1 for details) assessed the relationship between RWA and attitudes toward “gays/gay men and lesbians.” All measures used are available in SOM.

**Study 1 (2012 ANES).** Recall that respondents in the 2012 ANES completed both a preelection and a postelection survey. In the preelection survey, participants were randomly assigned to answer policy questions about either “gays and lesbians” or “homosexuals.” In the postelection survey, all participants provided feeling thermometer ratings of “gay men and lesbians.” In order to include all relevant data, for the 949 participants who completed the two-item policy measure for “gays and lesbians” in the preelection study and who completed the feeling thermometer rating of “gay men and lesbians” in the postelection study, we computed a composite attitude measure by standardizing and averaging the two policy items and the feeling thermometer rating (these two measures were highly correlated; see Footnote 4). This was not possible for the 1,217 participants who rated the two policies targeting “homosexuals” in the preelection survey, as including their feeling thermometer ratings of “gay men and lesbians” from the postelection survey would have violated the meta-analytic assumption of independence of observations. For these participants, we therefore used only their score on the discrimination index (i.e., the outcome variable in Study 1). For both groups, the measure of RWA was the average ( $r = .44$ ) of the traditionalism and authoritarian child rearing measures described earlier.

**Studies 2–5.** In all studies, participants rated either “homosexuals” or “gay men and lesbians.” To measure antigay prejudice in the meta-analysis, we used the standardized composite antigay

Table 6

Study 5: Results of Moderated Multiple Regression Analyses on Outcomes Variables for Conceptual Replication of Rios (2013) Study 2

	Step 1					Step 2				
	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	CIs	<i>b</i>	<i>SE</i>	$\beta$	<i>t</i>	CIs
Panel A: 21-item measure (Rios 2)	1.99	.06		36.07***	[1.88, 2.10]	2.00	.05		36.94***	[1.89, 2.10]
Constant	.46	.04	.65	12.45***	[.38, .53]	.48	.05	.69	9.68***	[.38, .58]
RWA	.12	.03	.18	3.54**	[.05, .19]	.02	.05	.03	.38	[-.07, .11]
SDO	.02	.08	.01	.21	[-.14, .17]	.01	.08	.01	.18	[-.13, .16]
Condition						-.06	.07	-.06	-.79	[-.20, .09]
RWA $\times$ Condition						.23	.07	.24	3.43**	[.10, .36]
SDO $\times$ Condition										
Panel B: 2-item measure (Rios 1)										
Constant	3.66	.17		21.72***	[3.33, 4.00]	3.67	.17		21.60***	[3.34, 4.01]
RWA	.50	.11	.31	4.47***	[.28, .72]	.55	.16	.34	3.43**	[.23, .86]
SDO	.29	.11	.19	2.73**	[.08, .49]	.21	.14	.14	1.49	[-.07, .50]
Condition	-.25	.23	-.07	-1.07	[-.71, .21]	-.25	.24	-.07	-1.07	[-.71, .21]
RWA $\times$ Condition						-.09	.23	-.04	-.41	[-.54, .35]
SDO $\times$ Condition						.16	.21	.07	.74	[-.26, .57]
Panel C: Feeling thermometer										
Constant	33.56	2.18		15.41***	[29.26, 37.85]	33.59	2.19		15.33***	[29.27, 37.91]
RWA	5.98	1.45	.29	4.14***	[3.13, 8.83]	5.83	2.04	.28	2.85**	[1.80, 9.86]
SDO	3.72	1.35	.19	2.75**	[1.05, 6.39]	2.45	1.85	.13	1.32	[-1.20, 6.09]
Condition	-2.72	3.02	-.06	-.90	[-8.66, 3.23]	-2.68	3.02	-.06	-.89	[-8.63, 3.28]
RWA $\times$ Condition						.25	2.90	.01	.09	[-5.46, 5.96]
SDO $\times$ Condition						2.78	2.72	.10	1.02	[-2.58, 8.13]
Panel D: Essentialism										
Constant	2.49	.07		38.60***	[2.36, 2.61]	2.49	.07		38.51***	[2.36, 2.62]
RWA	.30	.04	.41	6.92***	[.21, .38]	.32	.06	.43	5.21***	[.20, .43]
SDO	.24	.04	.35	6.00***	[.16, .32]	.19	.06	.27	3.40**	[.08, .29]
Condition	.04	.09	.03	.47	[-.14, .22]	.04	.09	.03	.48	[-.13, .22]
RWA $\times$ Condition						-.04	.09	-.04	-.45	[-.21, .13]
SDO $\times$ Condition						.12	.08	.12	1.50	[-.04, .28]

Note. Higher scores on essentialism and prejudice measures indicate more essentialism and prejudice, respectively. RWA = right-wing authoritarianism; SDO = social dominance orientation; CI = confidence interval.

\*\*  $p < .01$ . \*\*\*  $p < .001$ .

prejudice measure from each sample that averaged across the two-item prejudice measure, the 21-item prejudice measure, and the feeling thermometer.

**Rios (2013) Studies 1 and 2.** In both studies, participants rated either “homosexuals” or “gay men and lesbians.” Antigay prejudice was measured with a two-item prejudice scale (Study 1) or a 21-item prejudice scale (Study 2). Sample sizes are slightly larger than in the original studies because some participants did not have SDO data. These were excluded in the original studies but are included here in the zero-order analyses.

### Moderation by Label

Figure 1 provides forest plots with effect sizes and 95% CIs for each sample and overall for the zero-order relationships. The meta-analytic point estimates of the size of the zero-order relationship between RWA and antigay prejudice were very similar whether participants rated “gays/gay men and lesbians” ( $r = .47$ , 95% CI [.41, .53]) or “homosexuals” ( $r = .45$ , 95% CI [.37, .53]). Figure 2 provides forest plots with effect sizes and 95% CIs for each sample and overall for the partial relationships, controlling for SDO. Effect size estimates were likewise very similar whether participants rated “gays/gay men and lesbians” ( $r_p = .36$ , 95% CI [.30, .43]) or “homosexuals” ( $r_p = .38$ , 95% CI [.28, .47]). To test whether these differences were statistically significant, we estimated a metaregression model.

When analyzing zero-order correlations, the coefficient for the moderator variable did not differ significantly from zero;  $b = -.01$ , 95% CI [-.13, .10],  $p = .81$ . We also reestimated this model with partial correlations (controlling for SDO) rather than zero-order correlations, but again the moderator coefficient did not differ significantly from zero;  $b = .01$ , 95% CI [-.11, .14],  $p = .83$ . These effects highlight that RWA strongly predicts antigay prejudice regardless of group label.

### General Discussion

Across five studies, we performed a total of 23 tests of the SCL hypothesis. These studies used both nationally representative (Study 1) and community samples (Studies 2–5), and multiple operationalizations and measurements of both authoritarianism and antigay prejudice. Of these tests, one significant and one marginally significant effect was consistent with the SCL hypothesis and two significant effects were opposite the SCL hypothesis (i.e., stronger effects of RWA on prejudice toward “gay men and lesbians” than toward “homosexuals”). The remaining 19 tests and a meta-analysis showed that RWA predicted prejudice regardless of target group label.

There are several possible reasons why we did not obtain the SCL effect. First, it is possible that the particular measures of RWA used in the original studies are necessary for the effect. This would explain why the original studies (Rios, 2013) found evidence for the SCL

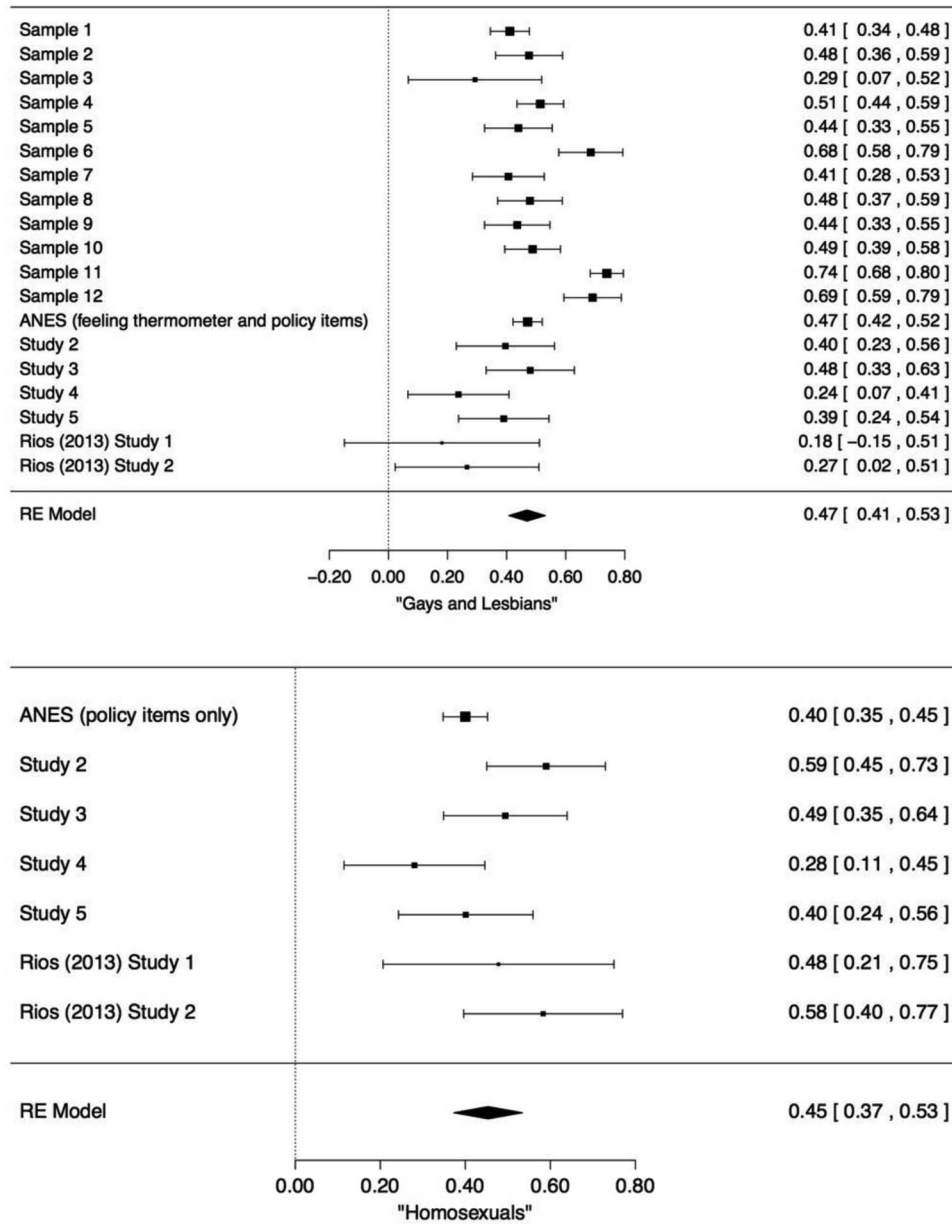


Figure 1. Forest plot of correlations between right-wing authoritarianism and prejudice toward “gays/gay men and lesbians” (top) and “homosexuals” (bottom). Error bars are 95% confidence intervals; squares are proportional to sample size.

effect and why we did not find evidence for it in any of the conceptual replications using a number of different measures of RWA. However, this would not explain why we did not find evidence for the SCL effect in Study 4 (the close replication of Rios, 2013, Study 2). It would further suggest that the original SCL effect is very limited in scope and unable to generalize to other (and more established) measures of the same construct.

Second, it could be that the precise order of the measures of prejudice make a difference, such that measures presented first are more likely to show the effect compared with measures presented last. This would explain why in Study 2 the two-item prejudice measure

showed the effect, but the 21-item measure of prejudice did not. This would not explain, however, why symbolic threat in Study 2 did not show the effect (it was immediately prior to the two-item measure of prejudice), why the feeling thermometer item in Study 2 showed the effect (it was immediately following the 21-item measure), or why none of the prejudice measures in Studies 3–5 showed the effect. This explanation would also suggest that the effect is not long lasting, failing to extend beyond two or more survey items.

Third, it is possible that the type of antigay prejudice measure determines variation in SCL effects. This would explain why Study 2 revealed statistically or marginally significant support for

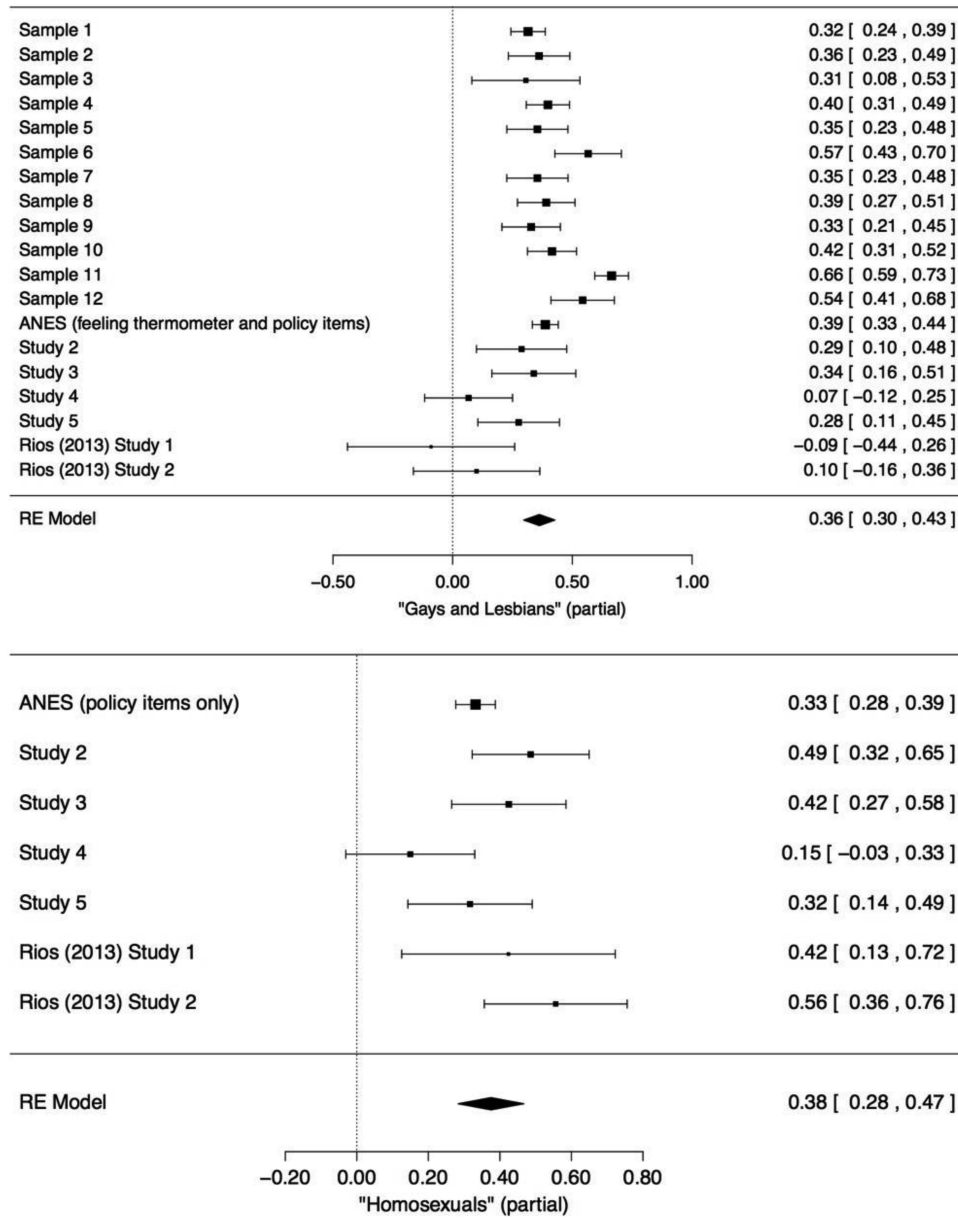


Figure 2. Forest plots of partial correlations (controlling for social dominance orientation) between right-wing authoritarianism and prejudice toward “gays/gay men and lesbians” (top) and “homosexuals” (bottom). Error bars are 95% confidence intervals; squares are proportional to sample size.

the SCL effect on the affectively tinged prejudice measures (i.e., the feeling thermometer rating and two-item prejudice measure from (Rios, 2013, Study 1), but not on the 21-item prejudice measure which captured a variety of attitudes and beliefs. However, this would not explain why there was no support for the SCL effect for either of these two measures in Studies 3–5, or why one of the original studies (Rios, 2013, Study 2) found supportive effects with the 21-item prejudice measure. It would also suggest that the original SCL effect is very limited in scope and unable to generalize to more cognitive or behaviorally tinged measures.

Fourth, it is possible that the SCL effect occurs only in the populations sampled in the original studies. This would explain

why the original studies were able to find support, but only two of our 23 analyses across five studies were able to find support. Although we have no way to directly dispute this possibility, if accurate, it would restrict the generalizability of the effect. The data we collected (Studies 2–5) were from online community samples, as were the data from the original studies (albeit, different online samples). Moreover, the data in Study 1, which did not support the SCL hypothesis, were from a nationally representative sample which should lend itself to the broadest generalizations out of all of the different extant tests of the SCL hypothesis.

Fifth, it is possible that the societal context surrounding attitudes toward gay men and lesbians has changed between when the

original data were collected and when our data were collected. Replication in social psychology is complicated because the very target of study can shift in ways that make direct replications difficult (e.g., Brandt et al., 2014) or even illusory (Stroebe & Strack, 2014). According to the Pew Research Center (2015), between 2010 and 2012, attitudes toward same-sex marriage underwent an important shift, when those who supported same-sex marriage went from a minority (42% vs. 48%) to a plurality (48% vs. 43%); as of this writing in 2015, a majority of Americans now support same-sex marriage (57% vs. 39%). This could explain why the original studies, which were collected in 2010 and 2011 (K. Rios, September 16, 2014, personal communication) were able to find support for the SCL effect and our five studies, collected between 2012 and 2015, were not.

The change in societal context is the most difficult explanation for us to rule out, and, to our knowledge, the necessary data to test this hypothesis do not exist. If this explanation is accurate, it suggests an interesting and dynamic association between societal attitudes, RWA, and social category labels. That said, it is unclear to us why a societal shift toward increasingly progay attitudes would increase the relationship between RWA and prejudice against “gay men and lesbians.” If anything, people high in RWA might be expected to adopt more positive attitudes toward gay men and lesbians as such attitudes became more conventional (Altemeyer, 1996). It would also not explain why extant studies (including four of our 12 samples collected prior to our replication attempts) collected around the time of the original studies (Rios, 2013) show that RWA predicts prejudice against “gay men and lesbians” (e.g., Duckitt et al., 2010; Terrizzi et al., 2010), inconsistent with the null association between RWA and prejudice found in the original studies (Rios, 2013). It would also suggest that these effects were somewhat fleeting and that pollsters, pundits, and other organizations should no longer worry that particular labels used to refer to gay men and lesbians will instigate prejudice from people high in RWA.

Taken together, then, what are we to make of the SCL hypothesis? Given that 19 of 23 interaction effects we tested were nonsignificant, and that the four significant or marginally significant interaction effects were evenly split between supporting and opposing the SCL hypothesis, it seems quite possible that any support observed for the SCL effect may simply be the result of Type I error. Continuous  $\times$  Dichotomous variable designs like the ones necessary to test the SCL effect are deceptively complicated. For example, the RWA  $\times$  Condition interaction effect is also dependent on the strength of the correlations between RWA and prejudice, RWA and SDO, and SDO and prejudice, along with the strength of the correlation between the SDO  $\times$  Condition interaction and the other variables in the model. Given that the original studies had relatively small samples, it is possible that one or more of these different relationships was particularly strong (or weak), and this made the SCL effect appear more robust than it would in large samples that (theoretically) produce more accurate parameter estimates. In the sample that likely provides the best estimate of the effect size in the American population (i.e., the large and nationally representative 2012 ANES sample), the interactions between the label condition and the authoritarian measures were in the direction expected by the SCL hypothesis, but neither were significantly different from zero. Likewise, meta-analytically com-

binning all the data reported here and in Rios (2013) showed no support for the SCL hypothesis.<sup>8</sup>

### Theoretical, Methodological, and Practical Implications

Moderator variables have a “checked history” in personality psychology (Chaplin, 1991, p. 143). This history is, in part, filled with attempts to find the key moderators that increase the correlation between personality traits and behaviors; however, moderator variables in personality research can also help researchers understand how well trait associations generalize to other contexts (i.e., the stability of its association or predictive power; Revelle, 2007). The SCL effect (Rios, 2013) seemed to suggest that the RWA-anti-gay prejudice association was not stable and did not generalize to a context where the group was described with a different term. This would have potentially been an important demonstration because in the past RWA was strongly linked to prejudice (Sibley & Duckitt, 2008), especially toward groups seen as deviating from or threatening societal norms and conventions (Duckitt, 2006; Duckitt et al., 2010; Duckitt & Sibley, 2010), which includes gay men and lesbians (Asbrock et al., 2012; Brandt, Chambers, Crawford, Wetherell, & Reyna, 2015). The SCL effect reported in Rios (2013) would therefore require revisions to such theoretical frameworks as it would suggest that RWA’s effects on prejudice against one such socially unconventional or deviant group are tenuous and dependent upon how the group is labeled.

In our replication studies we have found, contrary to the SCL effect, that the RWA-anti-gay prejudice association is stable across these different contexts. In a sense, although we have failed to replicate the SCL effect we have succeeded in replicating the robust association between RWA and antigay prejudice across two different labeling conditions. The results of the present studies are therefore important as they indicate that theory regarding the effect of RWA on prejudice against potentially threatening unconventional or socially deviant groups (e.g., Duckitt & Sibley, 2010) remains intact—RWA is a robust predictor of perceived symbolic threat from and prejudice against gay men and lesbians, a group seen as deviating from societal conventions (Asbrock et al., 2012; Brandt et al., 2015). This stability across conditions is also supportive of suggestions that RWA captures a stable disposition (Cohrs, 2013), at least when it comes to predicting antigay prejudice.

If robust, the SCL effect would also have important methodological implications (e.g., the social category label one chooses in survey research). Rather than changing hearts and minds, changing

<sup>8</sup> An anonymous reviewer suggested that the two experimental conditions in the original studies were not perfectly controlled because of the possibility that people may be more likely to infer “gay men” instead of “lesbians” from the category “homosexuals.” While we cannot directly address this question, data from three of our studies collected prior to the publication of Rios (2013) included separate measures of prejudice against “gay men” and “lesbians,” and each indicated that RWA is very strongly correlated with prejudice against both “gay men” and “lesbians” (Sample 6:  $r_s = .73$  and  $.77$ , respectively; Sample 11:  $r_s = .74$  and  $.80$ , respectively; Sample 12:  $r_s = .65$  and  $.65$ , respectively). Thus, even if it is the case that the term “homosexual” is not entirely inclusive of “lesbians,” it appears that RWA is a very strong predictor of prejudice against both “gay men” and “lesbians.”

group labels could reduce prejudice among the most prejudiced. If robust, the impact of the SCL effect could potentially be wide-reaching, as it is relevant not just to social and personality psychology but to other disciplines including political science, communications, and public policy. It would thus have multiple avenues by which it could inform scholarship and policy. However, our results indicate that survey researchers and policymakers need not alter the labels they use to describe gay men and lesbians because of concerns that one label may exacerbate negative attitudes more than another among a certain subset of the population. Of course, given that the term “homosexuals” is considered a derogatory term because of its historical association with deviancy and psychopathology (American Psychological Association, 1991), there are other legitimate reasons to prefer the label “gay men and lesbians” to “homosexuals.” However, the present studies show that enhanced prejudice from an authoritarian subset of individuals is unlikely to be one of them.

The implications of these studies for whether social category labels can produce main effects on intergroup attitudes is unclear. Some recent evidence indicates increased prejudice among Whites toward African Americans when labeled “Blacks” than when labeled “African Americans” (Hall et al., 2014). Further, using a large national sample, a 2010 CBS News-New York Times poll found greater support for “gay men and lesbians” serving in the U.S. military than “homosexuals” (Hetchkopf, 2010). However, we did not uncover a single label main effect in any of our five close and conceptual replications, and such main effects in Rios’ (2013) original studies were either nonsignificant (Study 1) or unreported and presumably nonsignificant (Study 2).

Although this might suggest a need for skepticism regarding labeling effects more broadly, it might also suggest that such effects are temporally or context dependent as societal attitudes toward such groups change. Future research is therefore needed to understand the potential effects of group labels on group attitudes. One possibility is that people who use the “homosexual” label in conversation are more prejudiced than those who use the “gay man” or “lesbian” labels, as the label one uses may serve as a signal for one’s attitudes toward the group. It may also be the case that this type of labeling affects the self-concept and identities of gay and lesbian individuals (cf. Morrison & Chung, 2011). The present studies should not discourage scholars from investigating labeling effects on intergroup attitudes, but rather, should encourage them to use large samples, diverse populations, and established measures when designing robust tests of their potential effects.

## Conclusion

The SCL hypothesis suggests that a subtle change in how gay men and lesbians are labeled can reduce or even eliminate the relationship between right-wing authoritarianism (RWA) and prejudice against them. Our multiple attempts to closely and conceptually replicate this finding, along with our meta-analysis of the original data (Rios, 2013) and our own, provided little support for the SCL hypothesis. Instead, our findings are consistent with research showing that RWA is a strong predictor of negative attitudes toward groups perceived as threatening to traditional moral values and beliefs (Altemeyer, 1996, 1998; Duckitt, 2001; Sibley & Duckitt, 2008), such as gay men and lesbians. At this stage it is therefore premature for social and personality psychol-

ogists to revise their theories regarding how the relationship between RWA and attitudes toward such groups can be altered through subtle labeling effects.

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