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The International Journal for the Psychology of Religion

ISSN: 1050-8619 (Print) 1532-7582 (Online) Journal homepage: www.tandfonline.com/journals/hjpr20

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To cite this article: Cameron Mackey, Brier Gallihugh, Kimberly Rios & Will Gervais (20 Apr 2025): Faithless Found: Replication and Extension of Gervais (2011), The International Journal for the Psychology of Religion, DOI: 10.1080/10508619.2025.2491901

To link to this article: https://doi.org/10.1080/10508619.2025.2491901

THE INTERNATIONAL JOURNAL FOR THE PSYCHOLOGY OF RELIGION
https://doi.org/10.1080/10508619.2025.2491901

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Faithless Found: Replication and Extension of Gervais (2011)

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ABSTRACT

Little research examining anti-atheist prejudice reduction interventions has been replicated. The current manuscript aimed to replicate and extend previous anti-atheist prejudice research We proposed three conceptual replications of Will Gervais' "Finding the faithless" (Study 3). Participants in all three studies were presented with information suggesting that atheists are either common (33% of the population) or rare (3% of the population). Study 1 replicated "Finding the faithless" Study 3 in an undergraduate sample. In Study 2, a sample of Americans on Prolific read that either 33% (common) or 3% (rare) of Americans are atheist. Study 3 had a sample of Americans on Prolific view a graphic showing that Americans overestimated (vs. underestimated) the prevalence of atheists. Across all studies, perceived prevalence did not reduce anti-atheist prejudice. Perceived contact with atheists was associated with more positive feelings toward atheists, replicating past research. We discuss this lack of replication and suggest future avenues for research.

Atheists are one of the most disliked social groups in the United States (Edgell et al., 2016; Franks & Scherr, 2014; Gervais, 2014; Giddings & Dunn, 2016) and are seen as untrustworthy and immoral (Cook et al., 2015; Gervais, 2014; Gervais et al., 2011; Grove et al., 2020). Anti-atheist prejudice has been documented around the world (Gervais et al., 2017), and even atheists intuitively see atheists as immoral (Gervais, 2014; Gervais et al., 2017; but see Mallinas & Conway, 2022). Research indicates that distrust is a major driver of anti-atheist prejudice (Gervais et al., 2011). Trust is crucial in social relationships (Cottrell et al., 2007); therefore, understanding ways to reduce anti-atheist prejudice and atheist distrust is important.

Much research has examined how to reduce prejudice and increase trust in atheists. Subverting stereotypes about atheists being untrustworthy or immoral (Grove et al., 2020) and presenting morality as innate and nonreligious in nature (Mudd et al., 2015) have been shown to *not* reduce anti-atheist prejudice. Other attempts at reducing prejudice against atheists have been more successful. Past research has found that reminding religious believers of secular forms of authority (e.g., the police; Gervais & Norenzayan, 2012; but see Crawford, 2018), having religious believers read about evolution (Magee & Hardin, 2010), describing atheists as adhering to a moral code and showing warm concern for others (Mallinas & Conway, 2022), presenting atheists as moral by emphasizing their concern for harm reduction, care, and compassion (Simpson & Rios, 2017; Simpson et al., 2019), and imagining intergroup contact with atheists (LaBouff & Ledoux, 2016) can reduce anti-atheist prejudice and increase willingness to interact with and help atheists.

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Supplemental data for this article can be accessed online at https://doi.org/10.1080/10508619.2025.2491901

Table 1. Estimates of nonreligious Americans.

Sample	Date of Data Collection	*N*	*M*	*SD*
Psych Pool 1	April 2020	139	37.64%	19.26%
MTurk Study 1	May 2020	149	40.60%	22.56%
MTurk Study 2	June 2020	213	48.89%	18.58%
Psych Pool 2	December 2020	263	40.31%	18.58%

"Nonreligious" refers to atheists, agnostics, and those who are "nothing in particular" religiously. Psych Pool = undergraduate student sample. MTurk = Mechanical Turk sample.

Given the increasing number of religiously unaffiliated individuals in the US (Pew, 2022) and in the West more broadly (Inglehart, 2021), it is important to examine whether attempts to reduce anti-atheist prejudice replicate over time. However, replication studies in the psychology of religion, and in the area of anti-atheist prejudice reduction research, are few and far between (Van Elk, 2019), with one exception being a series of studies that replicated the effect of emphasizing atheists' capacity for care and compassion on prejudice reduction (Simpson & Rios, 2017; Simpson et al., 2019). Without replicating and extending the findings of previous work, it is difficult to understand the efficacy of anti-atheist prejudice interventions. In the current research, we attempt to replicate the findings of one of the earliest sets of studies on anti-atheist prejudice reduction. In that set of studies (Gervais, 2011), perceptions of greater atheist prevalence reduced distrust of atheists. Gervais (2011) work has been cited over 180 times, but the results of this research have not been thoroughly re-investigated (see Koger, 2018, for a partial exception).

More than a decade has passed since the Gervais (2011) research was conducted, and the religious context has changed substantially since that time. This research was originally conducted in Canada, where 77% of the population identified as religious in 2011 (Pew, 2013), a proportion that declined to 68% in 2019 (Cornelissen, 2021). A similar decline can be seen in the United States: 76.5% of the population identified as religious in 2015, a proportion that has dropped to 69% as of 2021 (Smith, 2021). Concurrently, atheist identification in the United States may be underestimated, with nearly one in three atheists not acknowledging their atheism in online anonymous surveys (Gervais & Najle, 2018). The total number of atheists worldwide may be similarly underestimated.

Perceptions of atheist prevalence seem to be rather high. Across four studies, we asked two undergraduate samples and two MTurk samples to estimate the percentage of Americans who identified as nonreligious (defined as "atheist, agnostic, or nothing in particular religiously;" Smith, 2021). See Table 1 for the full descriptive statistics of these estimations. While we did not specify atheist prevalence, research conducted by YouGov (Orth, 2022) has found that Americans estimate that 33% of Americans are atheist. Our estimates are a bit higher, perhaps reflecting the broader "nonreligious" category.

Past research (Craig & Richeson, 2014; Schlueter & Scheepers, 2010) has shown that when people learn that groups perceived as threatening are projected to increase in size, they subsequently report *more* prejudice against those groups. Therefore, the finding that presenting atheism as common can reduce anti-atheist prejudice (Gervais, 2011) is counterintuitive. There is a possibility that social consensus effects can explain these findings. If people believe that atheists are prevalent (i.e., the consensus is that atheism is "no big deal"), then higher perceptions of atheism should reduce prejudice against this group. This line of thinking squares with "coming out" as atheist (language that mirrors tactics embraced by the LGBTQ community) as a way to engage in atheist activism (Cimino & Smith, 2007). If Gervais (2011) findings replicate, the tactic of "coming out" to increase perceptions of prevalence may be another method of reducing anti-atheist prejudice.

Case study: Gervais (2011)

Gervais (2011) first study demonstrated that, across 54 countries, atheist prevalence (operationalized as the percentage of respondents who answered *no* to the item "I believe in God" in each

country) was negatively associated with anti-atheist prejudice among religious believers, controlling for individual differences in demographic characteristics (e.g., educational attainment) and international differences in socioeconomic development or individualism/collectivism. Individuals in Study 2 demonstrated the same negative relationship between perceived prevalence of atheists and anti-atheist prejudice, even when controlling for belief in a dangerous world (BDW) and belief in God in an undergraduate sample. Studies 3 and 4 demonstrated a causal relationship between perceived atheist prevalence and anti-atheist prejudice. In Study 3, participants (undergraduate students at the University of British Columbia) in the "atheists common" condition read an article stating that roughly 50% of students at their university were atheists and that atheists are prevalent worldwide (Zuckerman, 2007). Participants in the "atheists rare" condition instead read that only about 5% of studies at their university were atheists and that atheists were rare around the world. All participants then responded to measures of atheist distrust, a feeling thermometer where a score of 0 indicated the coldest possible feelings toward atheists and a score of 100 indicated the warmest possible feelings toward atheists, an open-ended question about how many atheists they knew, and two items tapping into contact with atheists. Results indicated that participants in the "atheists common" condition exhibited significantly less distrust against atheists compared to participants in the "atheists rare" condition. There was no difference in positivity toward atheists between conditions. Importantly, perceived atheist prevalence did not increase perceived contact with atheists. However, contact with atheists predicted more positive feelings toward atheists, consistent with intergroup contact research (Pettigrew & Tropp, 2006). Study 4 replicated and extended these findings. Participants either read and wrote about the demographic rise of non-religious people, including an atheist prevalence rate of 20%, or were told to think and write about their favorite food. Participants then took a trust-specific version of the IAT. In this task, participants were familiarized with two fictional women, Julie and Vanessa, who were counterbalanced as being either an atheist (someone who does not believe in God) or religious (someone who believes in God). Participants were then tasked with associating each target with words related to either trust (e.g., honest) or distrust (e.g., deceitful). Results indicated that implicit distrust (i.e., speed of associating the atheist target with the distrust-related words) was reduced in the atheist prevalence condition compared to the control condition.

We plan to attempt to conceptually replicate and extend the findings of Study 3 in this suite of studies. The first two studies in the original suite of studies (Gervais, 2011) are correlational in nature, which makes replicating these studies a less informative endeavor. Study 4 utilized the Implicit Association Test (IAT), which has come under fire in recent years for its questionable validity (e.g., Lai & Wilson, 2021). Furthermore, the effect sizes of the explicit distrust and implicit distrust findings in Study 3 and Study 4 (Gervais, 2011) are comparable. Therefore, the effect of atheist prevalence on distrust of atheists should be similar in size, regardless of whether distrust is measured explicitly or implicitly. Anti-atheist prejudice (in terms of voting for atheist candidates) has been shown to be commonplace; that is, people are largely comfortable explicitly disapproving of atheists (Brown-Iannuzzi et al., 2019). Other research examining prevalence and prejudice (Craig & Richeson, 2014; Mackey & Rios, 2025; Ponce de Leon et al., 2022) has measured prejudice through explicit measures. Thus, focusing on the study using explicit anti-atheist prejudice is a viable methodological option.

Follow-up research

Gervais (2011) indicated that "contact-like effects are a possibility" when individuals read about atheists being prevalent (p. 552). Indeed, more recent research has demonstrated that even imagined contact with atheists can decrease anti-atheist prejudice. LaBouff and Ledoux (2016), using an imagined interaction paradigm (see Turner et al., 2007), found that imagining a positive interaction with an atheist (compared to simply thinking about atheists) led to less distrust and more willingness to help atheists. Further, these findings held when controlling for participant religiosity, right-wing authoritarianism, and religious fundamentalism. However, the authors (LaBouff & Ledoux, 2016)

caution that their manipulation may have induced a demand characteristic whereby participants may have been motivated to respond in accordance with LaBouff and Ledoux's (2016) hypothesis. Furthermore, the distinction between perceived prevalence and imagined contact remains uninvestigated.

In an unpublished study, Koger (2018) attempted to replicate Gervais (2011) original findings. They conducted a pilot study on undergraduate students to determine how prevalent atheists were on their campus. Participants in this pilot study reported that they believed that 27% ($SD = 19\%$) of students were atheist, larger than Gervais (2011) pilot data ($M = 11.45\%$, $SD = 9.49\%$). However, the original manipulation, with the "atheists common" condition referring to 50% of the university population being atheists and the "atheists rare" condition referring to 5%, was used in this research as well (Koger, 2018). Participants were randomly assigned to read one of six potential articles, half of which claimed that atheist prevalence was high (10% worldwide; 50% on campus) and half claiming that atheist prevalence was low (rare worldwide and 5% on campus). Two articles were almost identical to Gervais (2011) and only provided information about atheist prevalence at the university and worldwide. Four other articles included atheist prevalence information as well as information about the power and coherence of these groups. In high coherence/power conditions, atheists were described as having formed atheist organizations, electing theists to public office, and reporting interest in changing social policy worldwide and atheist students on campus are active in atheist groups on campus and are involved in student government. In low coherence/power conditions, atheists were described as having few atheist organizations and rarely elected to public office worldwide and atheist students on campus do not have an active atheist group and are unlikely to be involved in student government. Utilizing a 3 (group organization: high, low, no information control) x 2 (prevalence: high, low) design, Koger (2018) examined whether atheists needed to be seen as a powerful, coherent group to elicit threat when they are perceived as prevalent. Overall, Gervais (2011) main findings that increased atheist prevalence would reduce anti-atheist prejudice did not replicate, nor were there effects of perceived power or coherence of atheists as a group (Koger, 2018). To date, this is the only attempt to replicate Gervais (2011) original findings.

Many unexplored questions remain regarding what the original findings (Gervais, 2011) represent. For example, why does reading about the prevalence of atheists reduce distrust of atheists but not negative feelings toward atheists? What is the relationship between intergroup contact and perceived prevalence of nonreligious outgroup members? The following studies attempted to elucidate the mechanisms underlying the relationship between atheist prevalence and atheist distrust.

Predictions

Based on previous research, we made three competing predictions. First, there may be a successful replication of the original findings, whereby individuals who are led to believe that atheists are prevalent will exhibit less anti-atheist prejudice. Previous work (Gervais & Norenzayan, 2012; LaBouff & Ledoux, 2016; Magee & Hardin, 2010; Mallinas & Conway, 2022) has demonstrated that atheist-prejudice can be ameliorated through experimental means. There is a precedent for anti-atheist prejudice interventions to replicate as well (Simpson & Rios, 2017; Simpson et al., 2019). Additionally, even imagined contact with atheists can reduce anti-atheist prejudice (LaBouff & Ledoux, 2016). There is also the possibility that atheist prevalence brings on anticipation for future contact with atheists (Gervais, 2011). This retroactive contact mechanism was purported to be a potential reason for the original findings found by Gervais (2011), and a similar effect may still emerge if the current research successfully replicates the original findings.

Second, research shows that increases in the prevalence of certain groups can *increase* prejudice (Craig & Richeson, 2014). For example, individuals who perceive large immigrant population sizes also report greater anti-immigrant prejudice and perceive more threats to their group (Schlueter & Scheepers, 2010). More recent research has shown that groups that elicit symbolic threat are perceived to be more pervasive compared to groups that do not elicit as

much symbolic threat (Ponce de Leon et al., 2022). Thus, symbolic threat increases perceptions that a group is pervasive in a given area as well as growing in number. When groups associated with symbolic threat (e.g., LGBTQ Americans; Rios et al., 2018) are projected to increase in number, they elicit even more symbolic threat, which in turn predicts more prejudice against them (Mackey & Rios, 2025). Atheists are typically associated with symbolic threat (Rios et al., 2018); thus, increasing perceptions of prevalence and/or pervasiveness of atheists within a given area (e.g., the presence of atheists on a university campus) may increase feelings of symbolic threat, which in turn might predict more (rather than less) prejudice against atheists. For example, when atheists are perceived to be prevalent in science, religious believers distrust science more (Simpson & Rios, 2019). This tendency to hold prejudice against atheists may be especially likely for individuals high in Christian Nationalism, an ideology that advocates for Christianity to hold a major role in American civic life, as has been discovered in recent work (Al-Kire et al., 2021).

Finally, it is possible that there will be null effects of the prevalence manipulation on anti-atheist prejudice. The previously discussed research by Koger (2018) did not replicate the original Gervais (2011) effect, whereby perceived prevalence of atheists reduced anti-atheist prejudice. Furthermore, the religious demographic makeup of the United States has dramatically shifted since Gervais' work was published. Twenty-nine percent of Millennials (i.e., adults born between the early 1980s and the mid 1990s) and 34% of Generation Z (i.e., adults born after the mid 1990s) identify as religiously unaffiliated (Cox, 2022). Furthermore, across the American population, traditional markers of religiosity such as church attendance and believing that religion is an important aspect of one's life have declined as well (Pew, 2019; Smith, 2021). It is possible that younger people, who are less hostile to nonreligion than older people, may simply not find atheists threatening. Perhaps perceptions of atheist prevalence in the overall American population are already high, given the increasing number of nonreligious Americans and their continued predicted growth (Pew, 2022). Indeed, previous estimates (Orth, 2022) indicate that Americans perceive many minority groups as larger than they actually are. Thus, an atheist prevalence manipulation may have a negligible effect of reducing anti-atheist prejudice if atheists are already seen as prevalent.

Overview of research

The current paper is a conceptual replication and extension of previous work (Gervais, 2011, Study 3). Study 1 recruited undergraduate students. Study 2 replicated Study 1 with a sample recruited from an online crowdsourcing platform (Prolific Academic). Study 3 replicated and expanded upon Study 2, with updated atheist prevalence information presented in graphical format. All studies were reviewed by the Institutional Review Board at Ohio University. All hypotheses across studies were preregistered (Study 1: https://osf.io/tczqd; Study 2: https://osf.io/5e2kh; Study 3: https://osf.io/ec645) and connected to the Open Science of Religion homepage in the Open Science Framework site (https://osf.io/d3r8q/).

Methods

Participants

We recruited at least 500 participants across all three studies based on an *a priori* power analysis in G*Power 3.1 (Faul et al., 2009) to detect a small-to-medium effect size of $f = .15$ (Cohen's $d = .30$) at 90% power using a 2×2ANOVA design to give us enough power to detect moderation effects. This sample size was chosen in light of Gervais (2011) original effect size ($d = .41$). Building on this original effect size, we selected a sample size that would be able to detect our proposed moderators at higher power levels (Brandt et al., 2014). We chose a 90% power level to combat the possibility that the original study was underpowered (Anderson et al., 2017).

Table 2. Race, gender, age, political orientation, and religious affiliation demographics across all studies.

Demographics across all studies					
Study	% White	Gender	Age (SD)	Political Orientation	Religious Affiliation
Study 1	85% White	76% female, 21% male, 3.3% non-binary	20.9 (6.4)	3.59(1.57)	53.5% Christian, 30.7% nonreligious, 15.8% other
Study 2	62% White	49% female, 48% male, 2.6% non-binary	47(17)	3.20(1.75)	45% Christian, 46.2% nonreligious, 8.2% other
Study 3	62% White	50% female, 49% male, 1.4% non-binary	46(17)	3.21(1.69)	54.8% Christian, 37% nonreligious, 17.2% other

Study 1's participants were undergraduate students and compensated with course credit for participating in the study, while participants in Studies 2–3 were recruited from Prolific, an online recruitment site, and compensated with $1.00 for participation in the study. We used Prolific's "nationally representative" distribution feature to recruit a sample on Prolific that is more representative of the US population than typical Prolific samples (but see Stagnaro et al., 2024). See Table 2 for demographic information across all three samples.

The original study (Gervais, 2011, Study 3) did not use exclusionary criteria based on demographics; thus, across all studies, we did not exclude participants based on demographic criteria. However, we excluded participants based on statistical outliers on our dependent variables. We excluded participants with standardized residuals that were more than 3 *SD* from the mean. Additionally, we excluded participants on Prolific Academic with duplicate IP addresses and participants who expressed suspicion of our hypotheses (see the Suspicion Probe below for details) or who were not American citizens. Finally, participants who did not complete every variable for any reason (including technical errors) were excluded from analysis. After removing observations ±3 SD from the mean of dependent variables within each analysis, the full (i.e., outlier included) data sets were used when result decisions did not change. For analyses in which a change occurred, both the full and outlier removed models were reported. This approach is taken for Study 2 and Study 3 as well. However, only in two specific analyses did the results change (see Results below).

Materials and procedures

Independent variable: atheist prevalence

In Study 1, participants were randomly assigned to read one of two articles. In the "atheists common" condition, participants read that atheists are common worldwide and that roughly 33% of students at their university identify as atheist. In the "atheists rare" condition, participants read that atheists are rare worldwide and only about 3% of students at their university are atheist. These percentages are based on previous estimates and the actual percentage of atheists as reported in a YouGov report (Orth, 2022). We use 3% in the "rare" condition because this number is consistent with previous work (Gervais, 2011; Orth, 2022) estimating atheist prevalence and 33% in the "common" condition because our pilot data indicate that individuals see that percentage as relatively common.

In Study 2, the same conditions were presented, but instead of specifying one's university, participants read that either 3% of Americans (rare) or 33% of Americans (common) are atheist (as these are adults recruited online). In Study 3, participants were presented with a brief writeup showing how Americans either overestimate the number of atheists in the general population (where Americans believe 33% of the population are atheists but are actually 3% of the population) in the "atheists rare" condition or that Americans underestimate the number of atheists in general (where Americans believe 3% of the population are atheists when in reality 33% of the population are atheists). They were additionally presented with a graph based on a YouGov report who conducted similar research (Orth, 2022), thus providing more ecological and face validity than the previous two studies. See Figures 1 and 2 and the full materials for graphs used in this manipulation.

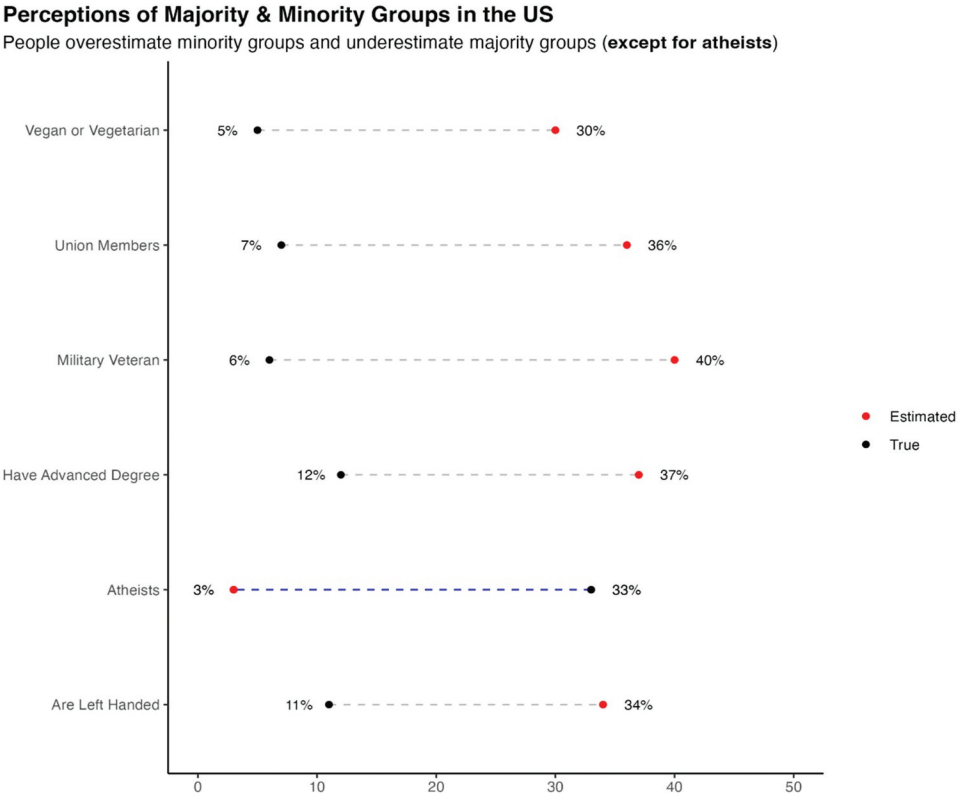

Figure 1. Prototype graphic for the atheists common condition (study 3).

Manipulation check

As a manipulation check, participants across all studies rated their agreement with the statement "Atheists are very common" on a 7-point scale (1 = *strongly disagree, 7 = strongly agree*).

Suspicion probe

We included a suspicion probe at the end of the survey. We asked participants "What do you think was the aim of this study?" to probe the extent to which participants are aware that the prevalence manipulation was intended to influence their attitudes toward atheists.[1] If participants expressed suspicion of our hypotheses (i.e., if participants believe that the vignette they read was meant to influence their attitudes toward atheists), they were excluded from analysis.

Believability check

Participants were asked at the end of each study, "When reading the material for this study, did you believe that atheists made up the percentage of the population you were given?" on a 7-point scale (1 = *I didn't believe the statistic was true at all*, 7 = *I totally believed the statistic to be true*).

[1]We originally stated that we would ask another set of questions to probe suspicions of deception: "Do you think you have been deceived in any way?" as a yes-no question and if participants indicated that they were deceived, "How do you think you were deceived?" in the Stage 1 manuscript. We did not actually do this. However, the relative lack of exclusions based on our first suspicion check gives us reason to believe that the data for this research was high-quality.

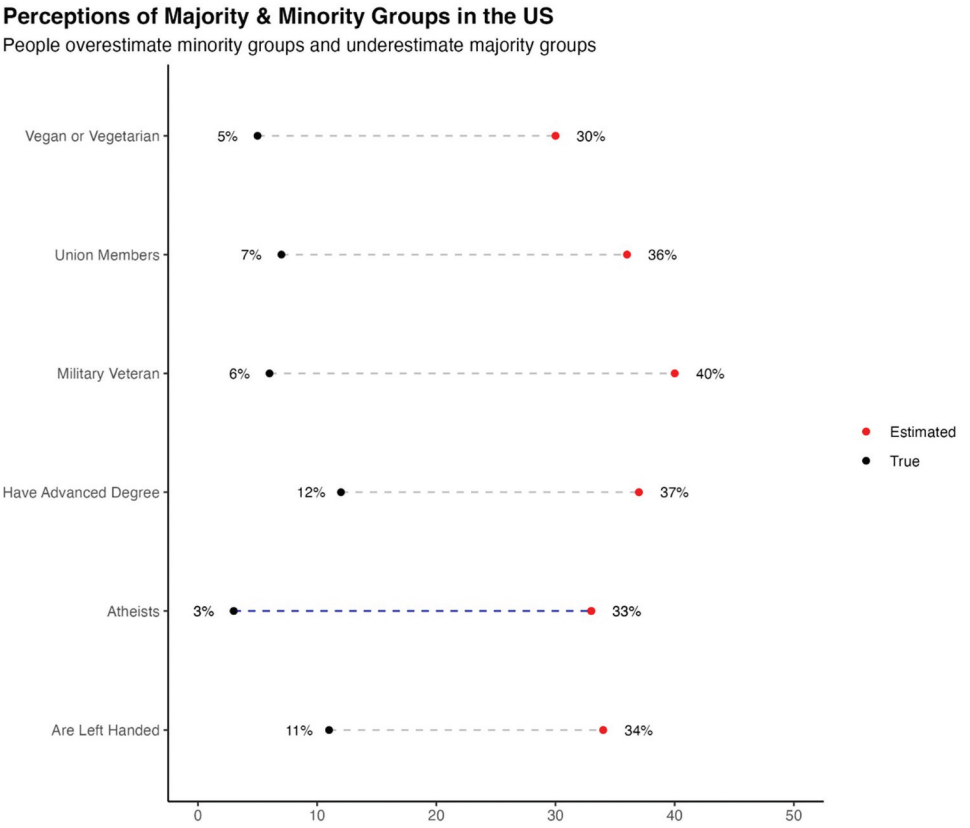

Figure 2. Prototype graphic for the atheists rare condition (study 3).

Outcome measures (Gervais, 2011)

Distrust

Atheist distrust was measured on a 7-point scale (*strongly disagree* to *strongly agree*) with two items: "Atheists are dishonest" and "Atheists are trustworthy." The latter item was reverse-scored. These items were averaged together (Gervais, 2011).

General attitudes toward atheists

General attitudes toward atheists were assessed with a 101-point feeling thermometer (0 = *coolest feelings*, 100 = *warmest feelings*).

Perceived contact

Participants provided an open-ended estimate of how many atheists they know. Then, participants rated their agreement with two items: "I often come into contact with atheists" and "I rarely, if ever, come into contact with atheists." The latter item was reverse-scored and was averaged together to form a composite measure of contact with atheists.

Additional outcome variables

Negative attitudes toward atheists

The Negative Attitudes Toward Atheists (NATA) scale (Gervais, 2011) was used as a multi-item measure of anti-atheist prejudice, as the original study (Study 3) only used single-item

measures of anti-atheist prejudice. This seven-item measure was on a 7-point scale (*strongly disagree* to *strongly agree*). An example item is "Religion facilitates moral behavior in a way that nothing else can." This measure correlates positively with other anti-atheist measures (e.g., feeling thermometers; Simpson et al., 2019).

Magee and Hardin (2010) anti-atheist prejudice measure

We added the 5-item anti-atheist prejudice measure created by Magee and Hardin (2010). This measure was on a 7-point scale (*strongly disagree* to *strongly agree*) and an example item is "I feel uncomfortable around atheists."

Semantic differential scale

We added a semantic differential scale from Franks and Scherr (2014) measuring on a 7-point scale the extent to which atheists are seen as untrustworthy (vs. trustworthy), threatening (vs. comforting), and disgusting (vs. appealing).

Additional measures for hypothesis testing.

Religious affiliation

Gervais (2011) did not indicate the religious affiliation of the participants in their study. However, more recent research (e.g., Van Cappellen & LaBouff, 2022) has demonstrated that Christians are more likely to express prejudice against atheists than against other religious and nonreligious groups. In our demographics section, we asked participants "What is your religious affiliation?" with the options Christian-Catholic, Christian-Protestant, Christian-Other, Jewish, Muslim, Hindu, Buddhist, Atheist, Agnostic, Spiritual but not religious, Other religious affiliation (with the ability to specify this affiliation), and "I do not consider myself affiliated with any religion" (i.e., religious nones). Thus, in each study, we compared results between religious individuals (Christians, Jews, Muslims, Hindus, Buddhists) and nonreligious individuals (spiritual but not religious, Atheist, Agnostic, and "religious none").

Religiosity

We examined religiosity as an exploratory moderator using the Supernatural Beliefs Scale (Jong et al., 2013), which measures participants' tendencies toward religious belief with ten items on a 9-point scale (1 = *strongly disagree*, 9 = *strongly agree*). An example item is "there exists an all-powerful, all-knowing, all-loving God."

Christian nationalism

We additionally assessed Christian Nationalism (CN) as a moderator of the relationship between atheist prevalence and distrust/general attitudes toward atheists (Whitehead & Perry, 2020). The measure includes six items on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). An example item is "The success of the United States is part of God's plan." Recent work (Al-Kire et al., 2021) has demonstrated that presenting Christians with information about Christian demographic decline and the subsequent increase in religiously unaffiliated individuals (including atheists) evoked increased religious threat, which in turn predicted higher levels of CN.

Analyses

In accordance with the original research (Gervais, 2011, Study 3), after testing the manipulation check, we followed the guidelines of previous replication research (Gervais et al., 2020) to define replication success according to the following criteria: a) producing statistically significant results in the same direction as the original findings, b) a "small telescopes" approach for assessing the replicability of effects (Simonsohn, 2015), and c) Bayes Factors comparing a null hypothesis with an alternative

hypothesis informed by the original effect size ($d = .41$; Gronau et al., 2020). All analyses were conducted in R (R Core Team, 2023). We conducted additional exploratory analyses in Studies 2–3 examining the "paradox" whereby religiosity is negatively associated with prejudice at the state-level but positively correlated at the individual level upon reviewer request using the *lme4* package (Bates et al., 2015). We also examined the factor structure of the anti-atheist prejudice measures used in the original analysis. Because these analyses are considered exploratory, they are not in the main manuscript. Please see the Supplemental Materials for these analyses.

Results

Manipulation and believability check

Before testing our main hypotheses, we tested our manipulation check to ensure the manipulation worked as intended. Across all studies, participants in the common condition (Study 1: $M = 4.87$, $SD = 1.18$; Study 2: $M = 5.58$, $SD = 1.21$; Study 3: $M = 4.30$, $SD = 1.56$) believed atheists were more common than participants in the rare condition (Study 1: $M = 3.99$, $SD = 1.55$; Study 2: $M = 2.19$, $SD = 1.51$; Study 3: $M = 2.40$, $SD = 1.42$, all $ps < .001$).

For the believability check, across studies, participants rated the common condition's 33% estimate as more believable (Study 1: $M = 4.29$, $SD = 1.29$; Study 2: $M = 4.35$, $SD = 1.65$; Study 3: $M = 4.23$, $SD = 1.75$) than the rare condition (Study 1: $M = 4.22$, $SD = 1.31$; Study 2: $M = 4.03$, $SD = 1.71$; Study 3: $M = 4.00$, $SD = 1.76$); however, only in Study 2 was this difference statistically significant ($p = .03$; all other $ps > .19$).

Statistical significance

Figure 3 presents the results for Hypotheses 1–4 through a forest plot where if the confidence interval crosses the midpoint line, the effect is nonsignificant. See the Supplemental Materials

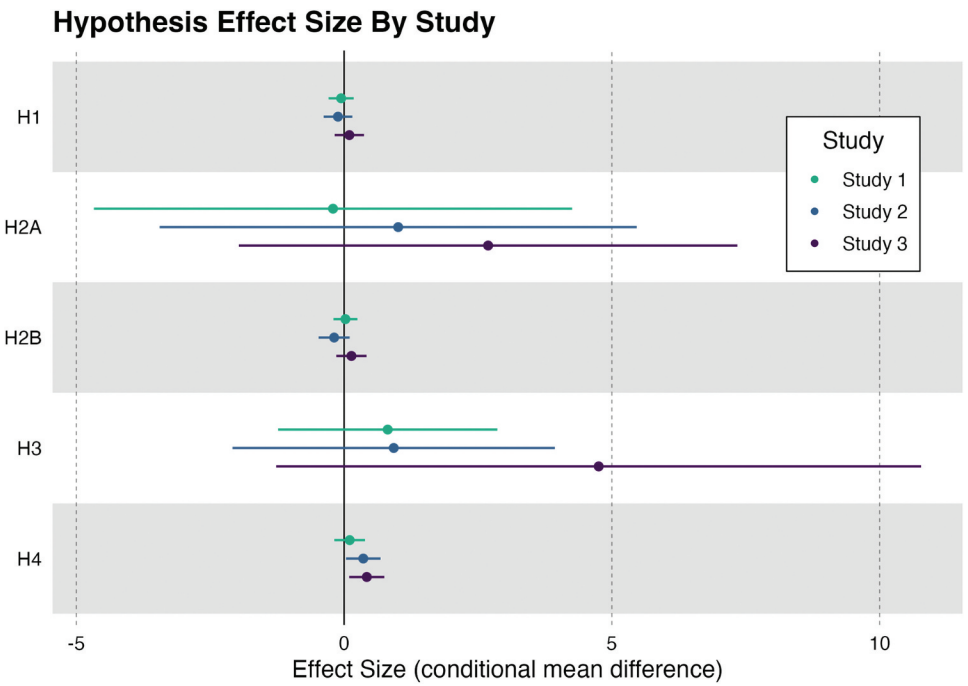

Figure 3. Forest plot of mean differences for hypotheses 1–4.

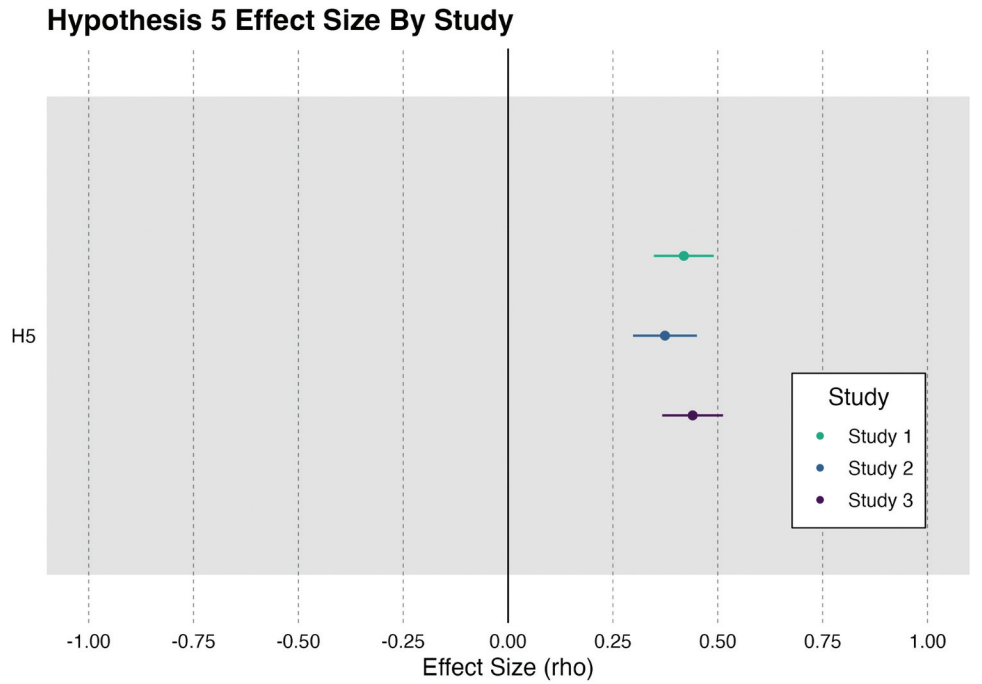

Figure 4. Forest plot of mean differences for hypothesis 5.

for the descriptive statistics for these hypotheses as well as additional hypotheses that were not officially pre-registered. As the figure demonstrates, there was no evidence for Hypothesis 1. Thus, Gervais (2011) original hypothesis that presenting atheists as common will reduce distrust of atheists was not supported. Hypothesis 2 replicated Gervais (2011) original hypothesis that prevalence would *not* influence participants' perceptions of atheists' warmth. Hypotheses 3–4 predicted that actual contact (measured by how many atheists participants knew) and perceived contact (measured by how many atheists participants thought they came in contact with) would not differ between conditions. For Hypothesis 3, participants did not know more atheists between conditions, replicating Gervais (2011). However, in Studies 2–3, participants perceived more contact with atheists in the common condition than the rare condition (Study 2: common condition $M = 4.29$, $SD = 1.85$, rare condition $M = 3.93$, $SD = 1.80$; Study 3 common condition $M = 4.48$, $SD = 1.80$, rare condition $M = 4.05$, $SD = 1.85$), inconsistent with Hypothesis 4. See the Supplemental Materials for means and standard deviations for these analyses across all studies. Finally, Hypothesis 5 replicated: more perceived contact was associated with more warmth toward atheists across all studies (see Figure 4 for a visualization of these effects).

We also tested several moderation analyses using PROCESS in R (Hayes, 2017). Most of the analyses do not achieve significance. One exception was found in Study 3: religious affiliation (religious vs. nonreligious) moderated the relationship between condition and atheist attitudes measured by the NATA. In the rare condition, nonreligious individuals ($M = 1.92$) reported less prejudice than religious individuals ($M = 3.70$). This pattern repeated in the common condition (nonreligious: $M = 1.75$; religious: $M = 3.98$). See the Supplemental Materials for additional hypotheses tests.

Table 3. Small telescopes results for analyses, studies 1–3.

		Study 1			Study 2			Study 3			
Study	Hypothesis	Original N	Replication effect size	Resulting Power	Original N	Replication effect size	Resulting Power	Original N	Replication effect size	Resulting Power	Likely replicable?
1	**Distrust**	56	0.08	0.07	56	0.00254	0.05	56	0.09	0.076	No
2	**Atheist Contact**	56	0.07	0.066	56	0.00265	0.05	56	0.14	0.114	No
3	**Perceived Contact**	56	0.06	0.061	56	0.20	0.182	56	0.24	0.242	No
4	**Atheist Contact – Feeling Thermometer Correlation**	112	0.25	0.763	112	0.25	0.763	112	0.25	0.763	Yes
5	**Perceived Contact – Feeling Thermometer Correlation**	112	0.42	0.997	112	0.37	0.983	112	0.44	0.999	Yes

Table 4. Bayes factors for hypotheses 1–5 across all studies.

Hypothesis	Hypothesis Description	Study 1 Bayes Factors	Study 2 Bayes Factors	Study 3 Bayes Factors
Hypothesis 1	Atheist prevalence -> less distrust	β_{est} = −.10, 95% HDI −.29, .11, BF_{01} = .153, ROPE = −.12, .12	β_{est} = .003, 95% HDI −.22, .24, BF_{01} = .100, ROPE = −.13, .13	β_{est} = −.11, 95% HDI −.33, .11, BF_{01} = .160, ROPE = −.12, .12
Hypothesis 2a	Atheist prevalence -> more warmth toward atheists	β_{est} = −.22, 95% HDI −4.65, 4.20, BF_{01} = .098, ROPE = −2.57, 2.57	β_{est} = .97, 95% HDI −3.49, 5.44, BF_{01} = .11, ROPE = −2.51, 2.51	β_{est} = 2.76, 95% HDI −1.96, 7.24, BF_{01} = .201, ROPE = −2.60, 2.60
Hypothesis 2b	Atheist prevalence -> more positive attitudes toward atheists (NATA)	β_{est} = .02, 95% HDI −.20, .24, BF_{01} = .100, ROPE = −.13, .13	β_{est} = −.18, 95% HDI −.47, .10, BF_{01} = .216, ROPE = −.16, .16	β_{est} = .13, 95% HDI −.14, .41, BF_{01} = .151, ROPE = −.16, .16
Hypothesis 3	No difference in condition in knowing atheist	β_{est} = .77, 95% HDI −1.31, 2.77, BF_{01} = .142, ROPE = −1.09, 1.09	β_{est} = −.03, 95% HDI −1.49, 1.36, BF_{01} = .102, ROPE = −.80, .80	β_{est} = 4.60, 95% HDI −1.11, 10.45, BF_{01} = .334, ROPE = −3.31, 3.31
Hypothesis 4	No difference in perceived contact between conditions	β_{est} = .10, 95% HDI −.18, .39, BF_{01} = .126, ROPE = −.17, .17	**β_{est} = .35, 95% HDI .03, .67, BF_{01} = .987, ROPE = −.18, .18**	**β_{est} = .42, 95% HDI .09, .74, BF_{01} = 2.53, ROPE = −.18, .18**
Hypothesis 5	More contact related to warmth toward atheists	**β_{est} = .42, 95% HDI .34, .48, BF_{01} = 1.62 10^20, ROPE = −.05, .05**	**β_{est} = .37, 95% HDI .29, .44, BF_{01} = 8.09 10^14, ROPE = −.05, .05**	**β_{est} = .44, 95% HDI .37, .51, BF_{01} = 2.04 10^21, ROPE = −.05, .05**

Bolded statistics are meaningfully different from the null.

Small telescopes approach

Table 3 shows the results of our small telescopes analysis for the original analyses that had effect sizes reported in the original article using the *pwr* package (Champely, 2020). None of the analyses examining prevalence influencing distrust or warmth across conditions was supported, but the analyses examining how contact predicts warmth were supported.

Bayes factors

Table 4 presents the Bayesian analyses associated with our first five analyses. We used JASP's default priors (Cauchy, with rscale value of .707, one-sided in the predicted direction; JASP Team, 2022) and interpreted an effect to support the alternative hypothesis when the 95% HDI (credibility interval) was not encapsulated by the region of practical equivalence (ROPE; Lüdecke et al., 2022; Morey & Rouder, 2022). Mirroring the results of our null hypothesis findings, most of our findings provided support for the null hypothesis. In Studies 2–3, Hypothesis 4 (i.e., that perceived prevalence of atheists would predict perceived contact) was marginally supported. Finally, our analyses demonstrated strong support for the alternative hypothesis that there is a relationship between contact and warmth toward atheists.

General discussion

Across three studies, we found no evidence for Gervais (2011) prevalence hypothesis – that participants who read that atheists are common would exhibit less prejudice toward atheists. We also found across our Prolific studies that perceived prevalence was higher in the common condition than the rare condition, which is inconsistent with Gervais (2011) findings that contact does not have any relation between perceived atheist prevalence and/or prejudice. These findings held across three forms of analysis: null hypothesis statistical testing, Bayesian analysis, and a small telescopes approach.

Failed replications can occur for a variety of reasons. However, with our multiple methods of analysis, we can narrow down why our current work did not replicate Gervais (2011) results. One reason why replications may fail include not having enough power to detect an effect. Using the small telescopes approach (Simonsohn, 2015), we demonstrated that our studies were appropriately powered to detect effects equivalent to those found in the original research (see Table 3).

One possible reason our replication studies failed was that the original manipulation falsely detected a significant effect (i.e., Type I error). The original work was conducted before the "replication crisis" and therefore did not follow many of the best practices encouraged today such as preregistering hypotheses (Brandt et al., 2014) or recruiting adequate sample sizes to achieve specific effect sizes (Anderson et al., 2017). Furthermore, the original paper did not mention the religious affiliation of the samples for either experiment (Gervais, 2011), making comparisons between the current work's samples and the past work's samples difficult.

Another potential reason our replication studies failed is because of the demographic changes that have taken place in the United States (where we conducted our studies) and Canada (where the original studies were conducted). The United States and Canada have grown in their proportion of nonreligious residents (Cornelissen, 2021; Smith, 2021). As the (non)religious demographics of these countries has changed, perhaps the validity of the prevalence manipulation has changed as well. Previous work (e.g., Van Cappellen & LaBouff, 2022) has shown that nonreligious individuals (e.g., agnostics) exhibit less discriminative behaviors toward atheists than Christians. Thus, as the proportion of nonreligious individuals increases, their influence may reduce the expression of anti-atheist prejudice. The original work (Gervais, 2011) did not describe the religious demographics of their sample, so we cannot speculate on how religious affiliation or religiosity impacted the original sample. However, our small and inconsistent moderation effects in the current sample provide evidence that religious affiliation or religiosity played little to no role in the current studies.

Other research has shown that Americans typically overestimate the size of minority groups (including atheists; Orth, 2022), so perceptions of minority as prevalent is true regardless of its veracity. Thus, our manipulation may have been weak because of a convergence of actual demographic changes (i.e., atheists *have* become more prevalent) and perceptions of these changes (i.e., atheists are *already* perceived to be prevalent).

Limitations and future directions

Studies 2 and 3 were fielded on Prolific, an online participant recruitment site. Recent work (Stagnaro et al., 2024) has demonstrated that Prolific samples are high-quality (i.e., participants are less likely to fail attention checks and more likely to respond seriously to study materials) but less nationally representative than other sources of online recruitment. Even using the "nationally-representative" panel provided by Prolific produces less representative samples in terms of religious identity, political affiliation, and education level compared to Bovitz-Forthright and Lucid (Stagnaro et al., 2024).

The believability check used to determine whether participants believed the prevalence of atheists was common or rare indicated no significant differences except in Study 2. However, across all studies, a population consisting of 33% atheists (in a university in Study 1 and in the general population in Studies 2–3) was perceived to be more believable than 3% of the population being atheist. There are several possibilities for the inconsistency of the believability check. One possibility is that participants were ambivalent about the prevalence population presented to them, not being fully convinced that the percentage of atheists they read was the actual number. However, given that participants across all studies believed that the common condition's percentage was more believable than the rare condition's percentage, it is also possible that participants could have believed that atheists were even *more* prevalent than 33% of the population (see Table 1). Finally, participants could have been confused about what the believability check was intended to do. Psychologists rarely ask about the believability of demographic information, so future work may want to incorporate similar checks to see if people are responding to demographic shifts in the ways researchers intend.

Samples in psychology are typically recruited from WEIRD (White, Educated, Industrial, Rich, and Democratic) contexts (Henrich et al., 2010). Research on anti-atheist prejudice – including this work – is no exception. As Western countries secularize (Inglehart, 2021), our focus should shift from creating new anti-atheist prejudice interventions and aim to replicate findings in non-WEIRD contexts (e.g., India; Gervais et al., 2017). Recent work examining anti-atheist prejudice has been an international task (Gervais et al.,

2017, 2025) yet manipulations intended to reduce such prejudice have been administered in the United States (e.g., Mallinas & Conway, 2022) or in other Western contexts (e.g., Australia; Simpson et al., 2019).

Conclusion

The original Gervais (2011) paper is one of the foundational pieces in anti-atheist prejudice research. However, Gervais' counterintuitive finding that increased atheist prevalence decreases anti-atheist prejudice was unsupported across three replications. Fortunately, perceived contact was positively associated with less anti-atheist prejudice, dovetailing with past work (LaBouff & Ledoux, 2016). Therefore, contact-related interventions are a potentially fruitful avenue of research. Equally important is the need for researchers to test existing anti-atheist interventions in non-Western contexts. It is our hope that interested researchers pick up where this work has left off.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Open scholarship

This article has earned the Center for Open Science badges for Open Data, Open Materials and Preregistered. The data and materials are openly accessible at https://osf.io/tczqd

References

Al-Kire, R. L., Pasek, M., Rowatt, W. C., & Tsang, J. A. (2021). Christian no more: Christian Americans are threatened by their impending minority status. *Journal of Experimental Social Psychology*, *97*, Article 104223. 10.1016/j.jesp.2021.104223

Anderson, S. F., Kelley, K., & Maxwell, S. E. (2017). Sample-size planning for more accurate statistical power: A method adjusting sample effect sizes for publication bias and uncertainty. *Psychological Science*, *28*(11), 1547–1562. https://doi.org/10.1177/0956797617723724

Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using *lme4*. *Journal of Statistical Software*, *67*(1), 1–48. https://doi.org/10.18637/jss.v067.i01

Brandt, M. J., IJzerman, H., Dijksterhuis, A., Farach, F. J., Geller, J., Giner-Sorolla, R., Van't Veer, M., Spies, J. R., van 't Veer, A., & Grange, A. (2014). The replication recipe: What makes for a convincing replication? *Journal of Experimental Social Psychology*, *50*, 217–224. https://doi.org/10.1016/j.jesp.2013.10.005

Brown-Iannuzzi, J. L., Najle, M. B., & Gervais, W. M. (2019). The illusion of political tolerance: Social desirability and self-reported voting preferences. *Social Psychological & Personality Science*, *10*(3), 364–373. https://doi.org/10.1177/1948550618760147

Champely, S. (2020). *Pwr: Basic functions for power analysis. R package version 1.3-0*. https://CRAN.R-project.org/package=pwr

Cimino, R., & Smith, C. (2007). Secular humanism and atheism beyond progressive secularism. *Sociology of Religion*, *68*(4), 407–424. https://doi.org/10.1093/socrel/68.4.407

Cook, C. L., Cottrell, C. A., & Webster, G. D. (2015). No good without god: Antiatheist prejudice as a function of threats to morals and values. *Psychology of Religion and Spirituality*, *7*(3), 217–226. https://doi.org/10.1037/rel0000013

Cornelissen, L. (2021). *Religiosity in Canada and its evolution from 1985 to 2019*. Statistics Canada. https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2021079-eng.htm

Cottrell, C. A., Neuberg, S. L., & Li, N. P. (2007). What do people desire in others? A sociofunctional perspective on the importance of different valued characteristics. *Journal of Personality & Social Psychology*, *92*(2), 208–231. https://doi.org/10.1037/0022-3514.92.2.208

Cox, D. A. (2022, March 24). *Generation Z and the future of faith in America*. Survey Center on American Life. https://www.americansurveycenter.org/research/generation-z-future-of-faith/

Craig, M. A., & Richeson, J. A. (2014). On the precipice of a "majority-minority" America: Perceived status threat from the racial demographic shift affects White Americans' political ideology. *Psychological Science*, *25*(6), 1189–1197.

Crawford, J. (2018). *Replication of Gervais & Norenzayan (2012) study 3*. PsyArxiv. https://doi.org/10.31234/osf.io/th9bp

Edgell, P., Hartmann, D., Stewart, E., & Gerteis, J. (2016). Atheists and other cultural outsiders: Moral boundaries and the non-religious in the United States. *Social Forces*, *95*(2), 607–638.

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G* power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149–1160. https://doi.org/10.3758/BRM.41.4.1149

Franks, A. S., & Scherr, K. C. (2014). A sociofunctional approach to prejudice at the polls: Are atheists more politically disadvantaged than gays and blacks? *Journal of Applied Social Psychology*, *44*(10), 681–691. https://doi.org/10.1111/jasp.12259

Gervais, W. M. (2011). Finding the faithless: Perceived atheist prevalence reduces anti-atheist prejudice. *Personality & Social Psychology Bulletin*, *37*(4), 543–556. https://doi.org/10.1177/0146167211399583

Gervais, W. M. (2014). Everything is permitted? People intuitively judge immorality as representative of atheists. *PLOS ONE*, *9*(4), Article e92302. https://doi.org/10.1371/journal.pone.0092302

Gervais, W. M., McKay, R., Brown-Iannuzzi, J. L., Ross, R. M., Pennycook, G., Jong, J., & Lanman, J. A. (2025). Belief in belief: Even atheists in secular countries show intuitive preferences favoring religious belief. *Proceedings of the National Academy of Sciences 122*(3), e2404720122. https://doi.org/10.31234/osf.io/nv2ge

Gervais, W. M., McKee, S. E., & Malik, S. (2020). Do religious primes increase risk taking? Evidence against "anticipating divine protection" in two preregistered direct replications of Kupor, Laurin, and Levav (2015). *Psychological Science*, *31*(7), 858–864. https://doi.org/10.1177/0956797620922477

Gervais, W. M., & Najle, M. B. (2018). How many atheists are there? *Social Psychological & Personality Science*, *9*(1), 3–10. https://doi.org/10.1177/1948550617707015

Gervais, W. M., & Norenzayan, A. (2012). Reminders of secular authority reduce believers' distrust of atheists. *Psychological Science*, *23*(5), 483–491. https://doi.org/10.1177/0956797611429711

Gervais, W. M., Shariff, A. F., & Norenzayan, A. (2011). Do you believe in atheists? Distrust is central to anti-atheist prejudice. *Journal of Personality & Social Psychology*, *101*(6), 1189–1206. https://doi.org/10.1037/a0025882

Gervais, W. M., Xygalatas, D., McKay, R. T., Van Elk, M., Buchtel, E. E., Aveyard, M., Schiavone, S. R., Dar-Nimrod, I., Svedholm-Häkkinen, A. M., Riekki, T., Klocová, E. K., Ramsay, J. E., & Bulbulia, J. (2017). Global evidence of extreme intuitive moral prejudice against atheists. *Nature Human Behaviour*, *1*(8), 1–5. https://doi.org/10.1038/s41562-017-0151

Giddings, L., & Dunn, T. J. (2016). The robustness of anti-atheist prejudice as measured by way of cognitive errors. *The International Journal for the Psychology of Religion*, *26*(2), 124–135. https://doi.org/10.1080/10508619.2015.1006487

Gronau, Q. F., Ly, A., & Wagenmakers, E. J. (2020). Informed bayesian t-tests. *American Statistician*, *74*(2), 137–143. https://doi.org/10.1080/00031305.2018.1562983

Grove, R. C., Rubenstein, A., & Terrell, H. K. (2020). Distrust persists after subverting atheist stereotypes. *Group Processes and Intergroup Relations*, *23*(7), 1103–1124. https://doi.org/10.1177/1368430219874103

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Press.

Henrich, J., Heine, S. J., & Norenzayan, A. (2010). The weirdest people in the world? *Behavioral and Brain Sciences*, *33*(2–3), 61–83. https://doi.org/10.1017/S0140525X0999152X

Inglehart, R. (2021). *Religion's sudden decline: What's causing it, and what comes next?*. Oxford University Press. https://doi.org/10.1093/oso/9780197547045.001.0001

JASP Team. (2022). *JASP (Version 0.16.1). Computer software*. https://jasp-stats.org/

Jong, J., Bluemke, M., & Halberstadt, J. (2013). Fear of death and supernatural beliefs: Developing a new supernatural belief scale to test the relationship. *European Journal of Personality*, *27*(5), 495–506. https://doi.org/10.1002/per.1898

Koger, J. (2018). *Power and coherence matters: Does perceived group organization increase atheist prejudice?* [Master's thesis]. California State University - San Bernardino. CSUSB ScholarWorks. https://scholarworks.lib.csusb.edu/etd/751

LaBouff, J. P., & Ledoux, A. M. (2016). Imagining atheists: Reducing fundamental distrust in atheist intergroup attitudes. *Psychology of Religion and Spirituality*, *8*(4), 330–340. https://doi.org/10.1037/rel0000066

Lai, C. K., & Wilson, M. E. (2021). Measuring implicit intergroup biases. *Social and Personality Psychology Compass*, *15*(1), Article e12573. https://doi.org/10.1111/spc3.12573

Lüdecke, D., Patil, I., Ben-Shachar, M. S., Wiernik, B. M., Bacher, E., Thériault, R., & Makowski, D. (2022). *Easystats: Framework for easy statistical modeling, visualization, and reporting*. https://doi.org/10.32614/CRAN.package.easystats

Mackey, C. D., & Rios, K. (2025). Do demographic increases in LGBT and nonreligious Americans increase threat? *Personality & Social Psychology Bulletin*, *51*(2), 253–267. https://doi.org/10.1177/01461672231188278

Magee, M. W., & Hardin, C. D. (2010). In defense of religion: Shared reality moderates the unconscious threat of evolution. *Social Cognition*, *28*(3), 379–400. https://doi.org/10.1521/soco.2010.28.3.379

Mallinas, S. R., & Conway, P. (2022). If you don't believe in god, do you at least believe in Aristotle? Evaluations of religious outgroup members hinge upon moral perceptions. *The International Journal for the Psychology of Religion*, *32*(2), 127–149. https://doi.org/10.1080/10508619.2021.1916240

Morey, R., Rouder, J. (2022). *BayesFactor: Computation of Bayes factors for common designs.* R package version 0.9.12-4.4. https://CRAN.R-project.org/package=BayesFactor

Mudd, T. L., Najle, M. B., Ng, B. K. L., & Gervais, W. (2015). The roots of right and wrong: Do concepts of innate morality reduce intuitive associations of immorality with atheism? *Secularism and Nonreligion*, *4*(1), 10. https://doi.org/10.5334/snr.bc

Orth, T. (2022, March 15). *From millionaires to Muslims, small subgroups of the population seem much larger to many americans*. YouGov. https://today.yougov.com/topics/politics/articles-reports/2022/03/15/americans-misestimate-small-subgroups-population

Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality & Social Psychology*, *90*(5), 751–783. https://doi.org/10.1037/0022-3514.90.5.751

Pew. (2013, June 27). *Canada's changing religious landscape*. Pew. https://www.pewresearch.org/religion/2013/06/27/canadas-changing-religious-landscape/

Pew. (2019, October 17). *In U.S. decline of Christianity continues at rapid pace*. Pew. https://www.pewforum.org/2019/10/17/in-u-s-decline-of-christianity-continues-at-rapid-pace/?fbclid=IwAR0jraGpSkhwZY3kApma5FWnls0AmOKlDZUg84FQpYcZ6heaubl1a83Yon4

Pew. (2022, September 13). *Modeling the future of religion in America. Pew*. https://www.pewresearch.org/religion/2022/09/13/modeling-the-future-of-religion-in-america/

Ponce de Leon, R., Rifkin, J. R., & Larrick, R. P. (2022). "They're everywhere!": Symbolically threatening groups seem more pervasive than nonthreatening groups. *Psychological Science*, *33*(6), 957–970.

R Core Team. (2023). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing: https://www.R-project.org/.

Rios, K., Sosa, N., & Osborn, H. (2018). An experimental approach to intergroup threat theory: Manipulations, moderators, and consequences of realistic vs. symbolic threat. *European Review of Social Psychology*, *29*(1), 212–255. https://doi.org/10.1080/10463283.2018.1537049

Schlueter, E., & Scheepers, P. (2010). The relationship between outgroup size and anti-outgroup attitudes: A theoretical synthesis and empirical test of group threat- and intergroup contact theory. *Social Science Research*, *39*(2), 285–295. https://doi.org/10.1016/j.ssresearch.2009.07.006

Simonsohn, U. (2015). Small telescopes: Detectability and the evaluation of replication results. *Psychological Science*, *26*(5), 559–569. https://doi.org/10.1177/0956797614567341

Simpson, A., McCurrie, C., & Rios, K. (2019). Perceived morality and antiatheist prejudice: A replication and extension. *The International Journal for the Psychology of Religion*, *29*(3), 172–183. https://doi.org/10.1080/10508619.2019.1568142

Simpson, A., & Rios, K. (2017). The moral contents of anti-atheist prejudice (and why atheists should care about it). *European Journal of Social Psychology*, *47*(4), 501–508. https://doi.org/10.1002/ejsp.2219

Simpson, A., & Rios, K. (2019). Is science for atheists? Perceived threat to religious cultural authority explains US Christians' distrust in secularized science. *Public Understanding of Science*, *28*(7), 740–758. https://doi.org/10.1177/0963662519871881

Smith, G. A. (2021, December 14). *About three-in-ten U.S, adults are now religiously unaffiliated*. Pew Research Center. https://www.pewforum.org/2021/12/14/about-three-in-ten-u-s-adults-are-now-religiously-unaffiliated/

Stagnaro, M. N., Druckman, J., Arechar, A. A., Willer, R., & Rand, D. (2024). Representativeness versus attentiveness: A comparison across nine online survey samples. *PsyArxiv Preprints*. https://doi.org/10.31234/osf.io/h9j2d

Turner, R. N., Crisp, R. J., & Lambert, E. (2007). Imagining intergroup contact can improve intergroup attitudes. *Group Processes and Intergroup Relations*, *10*, 427–441. https://doi.org/10.1177/1368430207081533

Van Cappellen, P., & LaBouff, J. P. (2022). Prejudice toward Christians and atheists among members of nonreligious groups: Attitudes, behaviors, and mechanisms. *Group Processes and Intergroup Relations*, *25*(1), 3–25. https://doi.org/10.1177/1368430220906860

Van Elk, M. (2019). Replication and open science in the psychology of religion: Editorial to the special issue. *The International Journal for the Psychology of Religion*, *29*(4), 227–229. https://doi.org/10.1080/10508619.2019.1687189

Whitehead, A. L., & Perry, S. L. (2020). *Taking America back for god: Christian nationalism in the United States*. Oxford University Press.

Zuckerman, P. (2007). Atheism: Contemporary numbers and patterns. In M. Martin (Ed.), *The Cambridge companion to atheism* (pp. 47–65). Cambridge University Press.