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BRIEF REPORT

Atheist Horns and Religious Halos: Mental Representations of Atheists and Theists

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Theists often receive the benefit of being stereotyped as trustworthy and moral, whereas atheists are viewed as untrustworthy and immoral. The extreme divergence between the stereotypes of theists and atheists suggests that mental images of the two groups may also diverge. We investigated whether people have biased mental images of theists and atheists. The results suggest that mental images of theists are associated with more positive attributes than images of atheists (Study 1), and these mental images influence who is believed to behave morally and immorally (Study 2). Together the findings suggest that mental images may represent a subtle mechanism reinforcing group-based prejudices.

Keywords: psychology of religion, stereotypes, prejudice, social cognition, group processes

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> Sin is a thing that writes itself across a man's face. It cannot be concealed. . . . If a wretched man has a vice, it shows itself in the lines of his mouth, the droop of his eyelids, the molding of his hands even.
>
> —Oscar Wilde, *The Picture of Dorian Gray*

People often believe that personality traits are written in one's face. An evil man cannot hide his true nature because it will show "itself in the lines of his mouth" (Wilde, 1890/2017, p. 163). Research has demonstrated that atheists, similar to evil people, are often perceived to be untrustworthy and morally uninhibited (Gervais, 2014; Gervais, Shariff, & Norenzayan, 2011). However, theists often receive the benefit of being stereotyped as trustworthy and moral (Hall, Cohen, Meyer, Varley, & Brewer, 2015). The extreme divergence between the stereotypes of theists and atheists suggests that spontaneously generated mental images of the two groups may also diverge. These mental images are important because they may represent a subtle mechanism reinforcing group-based prejudices. The current research investigates the mental images of theists and atheists.

Perceiving Religiosity in a Face

Human beings are particularly motivated to identify trustworthy and untrustworthy individuals (e.g., Simpson, 2007). Humans need to cooperate to gain the benefits that the group produces, even if cooperation comes at a cost for the individual. Relatedly, people need to identify potential defectors because defectors may gain the benefits of the group without contributing to the group, and defectors can ultimately end up eroding group cohesion and cooperation (e.g., Sober & Wilson, 1998). Together, group living motivates the identification of trustworthy and cooperative individuals.

Religiosity may be used as a proxy for trustworthiness. Believers in a supernatural agent who is omniscient, monitors behavior, and punishes social norm violators may be especially motivated to cooperate and conform to social norms to avoid supernatural punishment (e.g., Bering, McLeod, & Shackelford, 2005; Johnson & Bering, 2006; Norenzayan et al., 2014). Thus, religious people are stereotypically thought to behave prosocially (e.g., Tan & Vogel, 2008). However, because atheists do not believe in a watchful, moralizing God, atheists are stereotypically thought to be untrustworthy, immoral, and uncooperative individuals (Cook, Cottrell, & Webster, 2015; Gervais, 2013).

Evidence for trust and morality relevant stereotypes of theists and atheists abounds in the literature. For example, people who signaled their religiosity, such as by fasting for religious reasons, were trusted more than people who did not signal their religiosity (Hall et al., 2015). Importantly, trust in the religious other did not depend on the religious affiliation of the other person: Overt religious displays promote interpersonal trust both within and across religious groups. In contrast, trust is largely withheld from

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All preregistrations, materials, and data have been made publicly available and can be accessed at https://aspredicted.org/xpaz2.pdf (Study 1 image generation preregistration), http://aspredicted.org/blind.php?x=wqnf28 (Study 1 image rating preregistration), http://aspredicted.org/blind.php?x=99i37t (Study 2 preregistration), and https://osf.io/3sakb/?view_only=877cc1e545ff45e89568cf9129c68ce8 (materials and data).

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nonbelievers (Gervais et al., 2011), and atheists are viewed as morally uninhibited (Gervais, 2014), even in largely secular countries and among atheists themselves (Gervais, et al., in press).

Religiosity can signal trust and lack of religiosity can signal distrust, and this relationship may be bidirectional. Trust (and other positive attributes) may be used as signals of religious belief (or lack thereof). One way that trust can signal religiosity is through a person's facial features (Todorov, Baron, & Oosterhof, 2008). We predict that mental images of theists would have gestalt facial physiognomies that display positive attributes, especially in the domains of morality and trustworthiness. The strong negative reaction to atheists suggests that people might spontaneously generate extremely negative mental images of atheists relative to theists.

Previous research has relied on associations created by the experimental materials to link atheism with immorality/untrustworthiness. The current research takes a different approach by asking participants to spontaneously generate mental representations of atheists and theists. Thus, the participants are free to represent atheists and theists any way they see fit, free of informational constraints created by the experimental materials. This experimental approach provides a conservative test of our hypothesis through a data-driven methodology. Thus, if mental images of atheists differ from theists, this would suggest that the atheist (or theist) label leads participants to spontaneously generate images that carry a stigma that is written in the face of the image. These spontaneous mental images of atheists and theists are important because they suggest a subtle mechanism that can reinforce anti-atheist prejudice and protheist attitudes.

Overview of Current Studies

We used a procedure to visually estimate participants' mental images of atheists and theists to test two hypotheses. First, we hypothesized that mental images of a typical theist individual would depict an individual who exudes trust and other positive attributes, but mental images of a typical atheist individual would depict an individual who exudes distrust and other negative attributes (Study 1). Second, we hypothesized that an independent group of people, naïve to how the images were generated, would assume the typical atheist image was more likely to act immorally, and the typical theist image was more likely to act morally. All studies were preregistered, approved by the university institutional review board, and study materials and data are publicly available.

Study 1 Method

We conducted Study 1 in two phases: the image generation phase and the image rating phase. In the image generation phase, participants completed the reverse correlation task to generate the mental images (e.g., Brown-Iannuzzi, Dotsch, Cooley, & Payne, 2017; Dotsch & Todorov, 2012; Imhoff & Dotsch, 2013; Mangini & Biederman, 2004). The advantage of using the reverse correlation procedure is that this data-driven method allows us to infer perceivers' internal mental representations of an atheist and theist.

In the image rating phase, we had a separate sample of participants rate the average images on several attributes. Importantly, the participants in this phase did not know how the images were generated, and the survey did not mention a/theism in reference to the images. Thus, any effects of religiosity could emerge spontaneously.

Image Generation Phase

Participants. We recruited 377 American participants from Amazon Mechanical Turk (MTurk). Only 223 participants completed the entire survey (120 women, 103 men). All partial data were included in the analyses. The average age was 35.71 years (SD = 10.75), and 141 reported believing in God or a higher power (82 reported not believing in God or a higher power). All measures and manipulations are reported below.

Procedure. The reverse correlation task consisted of 400 critical trials. This task begins with a single base face, which was a morphed composite of a Black man, Black woman, White man, and White woman (see Figure 1).[1] Then random visual noise was added to create 800 variants. On each trial, participants were presented with image pairs and were asked to select the image that most looks like a person who does (not) believe in God, in a between-subject design.

After completing the reverse correlation task, participants were asked whether they believed in God or a higher power (1, *yes*). For exploratory purposes, we created separate images for participants who did and did not believe in God. These images and analyses are presented in the Supplemental Materials. In all studies, we asked the following demographic measures for descriptive purposes: age, gender, race/ethnicity, socioeconomic status, income, education, political party affiliation, and political ideology.

Image Processing

Using the R package rcicr 0.3.0 (Dotsch, 2015), we computed the average atheist and theist image (see Figure 2). Averaging amplifies the features shared with participants' mental representations and reduces the random variation in unshared features.

Image Rating Phase

To gauge the characteristics of the classification images, we had a separate sample rate the average atheist and theist images. To avoid rating fatigue, participants were randomly assigned to one of two rating conditions.

Participants. Given this mixed design, we needed at least 156 participants in each condition to have adequate power (1-$\beta \geq .80$) to detect a small effect (f = .10; G*Power software; Faul, Erdfelder, Buchner, & Lang, 2009). An attention check was included as the first question because past research suggests that an attention check can improve data quality (Oppenheimer, Meyvis, & Davidenko, 2009).

Participants (N = 351) were recruited from MTurk. We excluded 19 participants who failed the attention check.[2] The final sample included 332 participants (186 women, 140 men' six declined to answer). The average age was 37.17 years (SD = 12.83), and 253 reported believing in God or a higher power (73 reported not believing in God or a higher power, six declined to answer).

Procedure. Participants were told they would rate a few images on a series of dimensions. Six of the images were filler

[1] The stimuli used in the reverse correlations procedure are the same as used in a previous publication (Brown-Iannuzzi et al., 2017).

[2] In all studies, including all participants does not substantively change the results.

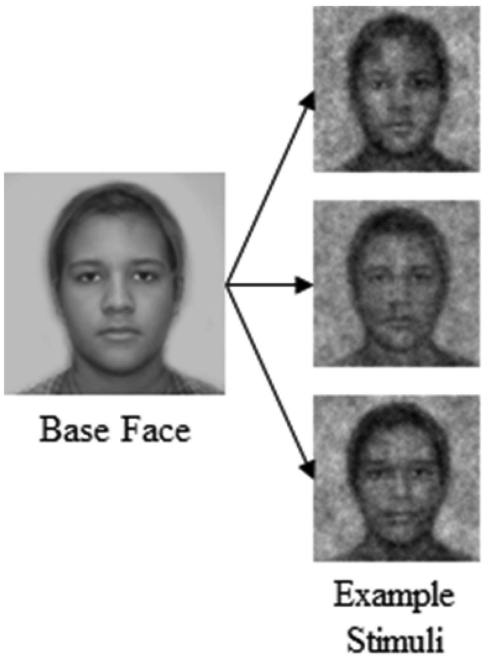

Figure 1. The base image used in the reverse correlation task and three examples of the stimuli.

images so that the comparison between the two images of interest, the average theist and atheist images, would not be salient to participants. All images were randomly presented.

Participants were randomly assigned to one of two conditions. In one condition, participants rated each image on gender, race, attractiveness, happiness, work ethic, likability, competence, and warmth. In the other condition, participants rated each image on perceived religiousness, which served as a manipulation check, and perceived trustworthiness, morality, humanness, and hostility. All items were measured on a 1–6 scale; higher numbers meant more White American, female, and higher on the listed attributes. In addition to the previously stated demographic items, participants also completed two religious behavior questions (frequency of praying and attending church), reported their religious group affiliation, and reported their certainty that God exists (0, *God does not exist*; 100, *God does exist*).

Results

We investigated whether the ratings of the average atheist image differed from the average theist image using repeated-measures ANOVAs. Figure 3 presents the means and 95% confidence intervals for the ratings of each image. Table 1 presents the specific mean values, effect sizes, and Bayes factors (using the default priors set in JASP; JASP version 0.8.0.0, 2016; Love et al., 2015; Morey & Rouder, 2015; Rouder, Morey, Speckman, & Province, 2012) for each set of ratings.

First, as a manipulation check, we investigated whether the theist image was perceived as more religious than the atheist image. As predicted, participants rated the theist image as appearing significantly more religious than the atheist image, $F(1, 169) = 166.18$, $p < .001$.

We also investigated the stereotypes associated with each image. Consistent with our hypotheses and previous work (Gervais, 2014), the atheist image was rated as significantly more untrustworthy, immoral, incompetent, and cold than the theist image, all F's > 130, p's $< .001$. Furthermore, participants rated the atheist image as significantly more hostile, inhuman, and lazy than the theist image, all F's > 86, p's $< .001$. Finally, we found that participants rated the atheist image as less likable, happy, and attractive than the theist image, all F's > 295, p's $< .001$.

For exploratory purposes, we investigated the perceived gender and race of the images. We had no specific hypotheses but found that the theist image was rated as significantly more feminine and White than the atheist image, all F's > 44, p's $< .001$. We are hesitant to interpret these findings because they were not predicted but may warrant future research.

Overall, the results suggest that participants were less positive toward the atheist image than the theist image. These findings are particularly noteworthy, given that the participants did not know how the images were created. The attributes stereotypically associated with atheists and theists were apparent in the images. In fact, participants rated the atheist image as untrustworthy and immoral, and these effect sizes were larger than the perceived religiosity effect size. This finding suggests that when people imagine a theist (vs. atheist), a naïve sample can clearly identify traits commonly associated with religiosity. Next, we investigated whether mental images of the average atheist and theist informed judgments about the behaviors of these individuals.

Study 2 Method

Using a within-subjects design, participants were presented with two photos and read short scenarios describing moral and immoral behaviors. Participants were asked to determine which pictured person they believed was most likely to have done the behavior. On critical trials, the two photos were the average atheist and theist image. We hypothesized that participants would attribute immoral behaviors to the average atheist image and moral behaviors to the average theist image.

Participants

We needed at least 265 participants to have adequate power ($1\text{-}\beta \geq .90$) to detect a small effect ($f = .10$; Faul, Erdfelder,

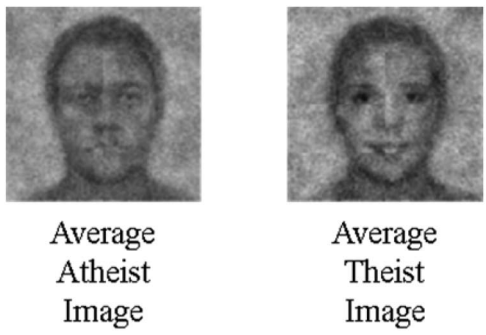

Figure 2. Average classification images.

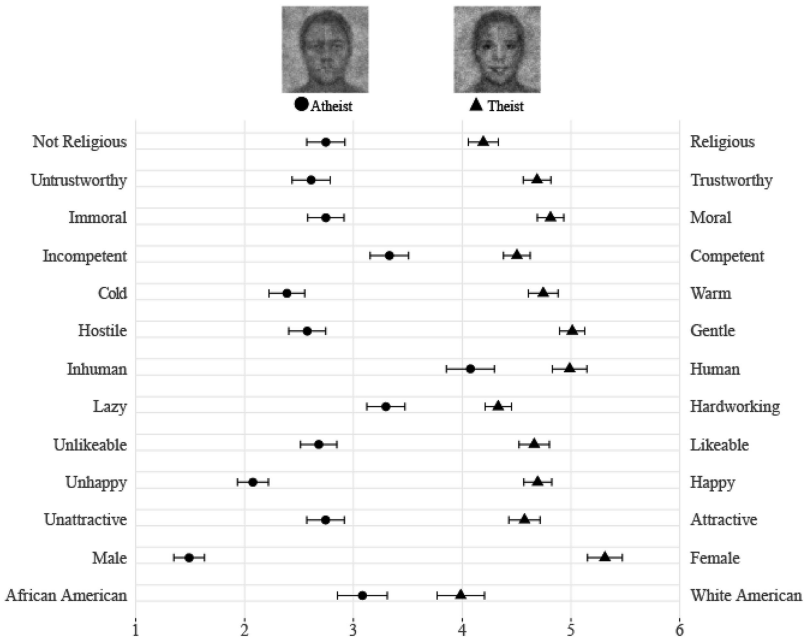

Figure 3. Ratings of the average atheist and theist image. Error bars represent 95% confidence intervals.

Buchner, & Lang, 2009). Participants (N = 296) were recruited from MTurk. Excluding participants who failed the attention check left a total sample of 273 (158 women, 114 men; 1 reported other). The average age was 37.96 years (SD = 12.35), and 166 reported believing in God or a higher power (107 reported not believing in God or a higher power).

Procedure

On each trial, one scenario was presented with two images, and participants were asked to determine which pictured person they believed was most likely to have done the behavior. The scenarios represented both moral behaviors (e.g., "left food out for a stray cat") and immoral behaviors ("kicked a dog for no reason"; for a full list of scenarios, see the Supplemental Materials). Participants completed 10 critical trials (five moral and five immoral scenarios) in which the pictured people were the average atheist and theist images created in Study 1. We also included filler images so that the comparison of interest would not be salient. For this reason, participants also completed 20 noncritical trials (10 moral and 10 immoral) in which the pictured people were four randomly chosen stimuli used in the reverse correlation procedure in Study 1.

After the ratings, participants also reported whether they believed in God or a higher power. For exploratory purposes, we investigated whether participants' religious belief moderated our findings (see Supplemental Materials).

Table 1
Mean, 95% Confidence Interval, Effect Size, and Bayes Factor for Each Rating in Study 1

	Atheist image		Theist image			
Rating	Mean	95% CI	Mean	95% CI	η_p^2	Bayes factor$_{10}$
Religious	2.75	[2.57, 2.92]	4.19	[4.06, 4.33]	.50	1.48e + 30
Trustworthy	2.61	[2.44, 2.79]	4.69	[4.56, 4.82]	.69	1.52e + 55
Moral	2.75	[2.58, 2.91]	4.81	[4.69, 4.93]	.67	1.80e + 57
Competent	3.33	[3.15, 3.51]	4.50	[4.38, 4.63]	.46	3.84e + 22
Warm	2.39	[2.23, 2.55]	4.75	[4.61, 4.88]	.73	7.11e + 63
Gentle	2.58	[2.41, 2.75]	5.01	[4.90, 5.13]	.76	9.41e + 71
Human	4.08	[3.86, 4.30]	4.99	[4.83, 5.15]	.34	7.11e + 13
Hardworking	3.30	[3.12, 3.48]	4.33	[4.21, 4.45]	.38	7.64e + 17
Likeable	2.68	[2.52, 2.85]	4.66	[4.52, 4.80]	.66	1.68e + 49
Happy	2.08	[1.93, 2.22]	4.69	[4.57, 4.82]	.78	6.10e + 81
Attractive	2.75	[2.57, 2.92]	4.57	[4.43, 4.72]	.68	4.70e + 44
Female	1.49	[1.35, 1.63]	5.31	[5.15, 5.47]	.87	3.08e + 110
White	3.08	[2.85, 3.31]	3.99	[3.77, 4.20]	.22	3.98e + 7

Note. CI = confidence interval.

Results

First, we averaged the number of times participants chose the average atheist image (1) *versus religious image* (0) *to create a proportion*. Then, using a paired *t* test, we investigated whether participants were more likely to choose the atheist image when the scenario was immoral. Consistent with our hypothesis, participants were significantly more likely to choose the atheist image when the scenario was immoral (M = .83, 95% confidence interval [CI] [.80, .86]) than moral (M = .18, 95% CI [.15, .20]), $t[272]$ = 27.78, $p < .001$, M_{diff} 95% CI [.61, .70], BF_{10} = 5.45e + 77. Overall, the results provide evidence that people's mental images of atheists and theists influence their perceptions of moral and immoral conduct.

General Discussion

The current research investigated whether people created biased mental images of atheists and theists. Consistent with our hypotheses, mental images of atheists appeared, to a naïve sample, less trustworthy, moral, and warm than mental images of theists. In addition, participants were more likely to think the average atheist committed immoral acts and the average theist committed moral acts. Together this suggests that mental images of theists are associated with more positive attributes than images of atheists, and these mental images influence perceptions of potential moral and immoral conduct.

This research, however, is not without limitations. First, we did not manipulate what type of God theists believed in, or the extent of the theist's devotion. It may be that mental representations of theists who believe in a monitoring/punishing God are different from mental representations of theists who believe in an accepting/loving God. Relatedly, if theological belief is represented psychologically as a continuum from lack of belief to extreme belief, we would expect that participants would create extremely trustworthy images of devout theists and trustworthiness would fade as a function of the reduction in devotion to the belief in God (e.g., Hall et al., 2015). As such, a good Christian may look extremely trustworthy, whereas a bad Christian may look less trustworthy. Future research should investigate these theoretical questions because it would shed light on how religious belief is psychologically represented.

Second, we utilized U.S. samples of convenience and did not precisely measure participants' religious beliefs. It may be that participants' specific religious beliefs moderate their mental representations of theists and atheists. In addition, some countries (e.g., Finland, New Zealand) report very little antiatheist prejudice relative to most other countries (Gervais et al., 2017). We would expect these countries to have more neutral mental images of theists and atheists. Future research should investigate mental images of theists and atheists using representative samples inside and outside the United States.

Context of the Research

The current research represents an important progression from the previous research on stereotypes of theists and atheists. Previous research suggests that trustworthiness is a key dimension underlying antiatheist prejudice and protheist attitudes (Gervais et al., 2011). However, research has not investigated whether this attribute (along with many others) are spontaneously generated when participants imagine atheists and theists. Our findings suggest that the atheist and theist labels carry a stigma that is "written in the face" of the image. These spontaneous mental images may be a subtle mechanism that reinforces antiatheist prejudice and protheist attitudes.

Conclusion

Although data suggest that the relationship between religion and morality is complex, the present research presents a clear picture: People tend to imagine devilish atheists and angelic theists. Moreover, these biased mental images influence judgments of behavior—atheists are more immoral than theists. These mental images may contribute to the persistent division between those who do and do not believe in God.

References

Bering, J. M., McLeod, K., & Shackelford, T. K. (2005). Reasoning about dead agents reveals possible adaptive trends. *Human Nature, 16,* 360–381. http://dx.doi.org/10.1007/s12110-005-1015-2

Brown-Iannuzzi, J. L., Dotsch, R., Cooley, E., & Payne, B. K. (2017). The relationship between mental representations of welfare recipients and attitudes toward welfare. *Psychological Science, 28,* 92–103. http://dx.doi.org/10.1177/0956797616674999

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,* 217–226. http://dx.doi.org/10.1037/rel0000013

Dotsch, R. (2015). *rcicr: Reverse correlation image classification toolbox* (R package version 0.3.0.).

Dotsch, R., & Todorov, A. (2012). Reverse correlating social face perception. *Social Psychological & Personality Science, 3,* 562–571. http://dx.doi.org/10.1177/1948550611430272

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,* 1149–1160. http://dx.doi.org/10.3758/BRM.41.4.1149

Gervais, W. M. (2013). In godlessness we distrust: Using social psychology to solve the puzzle of anti-atheist prejudice. *Social and Personality Psychology Compass, 7,* 366–377. http://dx.doi.org/10.1111/spc3.12035

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

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

Gervais, W. M., Xygalatas, D., McKay, R. T., van Elk, M., Buchtel, E. E., Aveyard, M., . . . Bulbulia, J. (2017). Global evidence of extreme intuitive moral prejudice against atheists. *Nature Human Behaviour, 1,* 0151. http://dx.doi.org/10.1038/s41562-017-0151

Hall, D. L., Cohen, A. B., Meyer, K. K., Varley, A. H., & Brewer, G. A. (2015). Costly signaling increases trust, even across religious affiliations. *Psychological Science, 26,* 1368–1376. http://dx.doi.org/10.1177/0956797615576473

Imhoff, R., & Dotsch, R. (2013). Do we look like me or like us? Visual projection as self- or ingroup-projection. *Social Cognition, 31,* 806–816. http://dx.doi.org/10.1521/soco.2013.31.6.806

Johnson, D. D. P., & Bering, J. M. (2006). Hand of God, mind of man: Punishment and cognition in the evolution of cooperation. *Evolutionary*

Psychology, 4, 219–233. http://dx.doi.org/10.1177/1474704906004001119

Love, J., Selker, R., Marsman, M., Jamil, T., Dropmann, D., Verhagen, A. J., . . . Wagenmakers, E.-J. (2015). JASP (version 0.7.1) [computer software]. Retrieved from https://jasp-stats.org/

Mangini, M. C., & Biederman, I. (2004). Making the ineffable explicit: Estimating the information employed for face classification. *Cognitive Science, 28,* 209–226. http://dx.doi.org/10.1207/s15516709cog2802_4

Morey, R. D., & Rouder, J. N. (2015). Bayes factor (version 0.9.11-3) [computer software].

Norenzayan, A., Shariff, A. F., Gervais, W. M., Willard, A. K., McNamara, R. A., Slingerland, E., & Henrich, J. (2014). The cultural evolution of prosocial religions. *Behavioral and Brain Sciences, 39,* 1–86.

Oppenheimer, D. M., Meyvis, T., & Davidenko, N. (2009). Instructional manipulation checks: Detecting satisficing to increase statistical power. *Journal of Experimental Social Psychology, 45,* 867–872.

Rouder, J. N., Morey, R. D., Speckman, P. L., & Province, J. M. (2012). Default Bayes factors for ANOVA designs. *Journal of Mathematical Psychology, 56,* 356–374. http://dx.doi.org/10.1016/j.jmp.2012.08.001

Simpson, J. A. (2007). Psychological foundations of trust. *Current Directions in Psychological Science, 16,* 264–268. http://dx.doi.org/10.1111/j.1467-8721.2007.00517.x

Sober, E., & Wilson, D. S. (1998). *Unto others: The evolution and psychology of unselfish behavior*. Cambridge, MA: Harvard University Press.

Tan, J. H. W., & Vogel, C. (2008). Religion and trust: An experimental study. *Journal of Economic Psychology, 29,* 832–848. http://dx.doi.org/10.1016/j.joep.2008.03.002

Todorov, A., Baron, S. G., & Oosterhof, N. N. (2008). Evaluating face trustworthiness: A model based approach. *SCAN, 3,* 119–127. http://dx.doi.org/10.1093/scan/nsn009

Wilde, O. (2017). *The picture of dorian gray*. Seattle, WA: Amazon Classics. (Original work published 1890)

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