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Are atheists undogmatic?

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Author Note

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Abstract

Previous theory and evidence favor the idea that religious people tend to be dogmatic to some extent whereas non-religious people are undogmatic: the former firmly hold beliefs, some of which are implausible or even contrary to the real world evidence. We conducted a further critical investigation of this idea, distinguishing three aspects of rigidity: (1) self-reported dogmatism, defined as unjustified certainty vs. not standing for any beliefs, (2) intolerance of contradiction, measured through (low) endorsement of contradictory statements, and (3) low readiness to take a different from one's own perspective, measured through the myside bias technique. Non-believers, at least in Western countries where irreligion has become normative, should be lower on the first, but higher on the other two constructs. Data collected from three countries (UK, France, and Spain, total $N = 788$) and comparisons between Christians, atheists, and agnostics confirmed the expectations, with agnostics being overall similar to atheists.

Are Atheists Undogmatic?

1. Introduction

Are nonreligious people open-minded, flexible, and undogmatic? Previous research has investigated the links between religiosity, or specific forms of it, and social cognitive tendencies reflecting various aspects of closed-mindedness. The results regarding religious fundamentalism are clear and consistent (Rowatt, Shen, LaBouff, & Gonzalez, 2013). However, even common religiosity, that is being high vs. low on common religious attitudes, beliefs, and practices, often reflects closed-minded ways of thinking to some extent. Indeed, religiosity is, to a modest degree, characterized by *dogmatism*, defined as an inflexibility of ideas, unjustified certainty or denial of evidence contrary to one's own beliefs (Moore & Leach, 2016; Vonk & Pitzen, 2016), the *need for closure*, i.e. the need for structure, order, and answers (Saroglou, 2002), and, in terms of broader personality traits, *low openness to experience*, in particular low openness to values (Saroglou, 2010). Experimental work provides some causal evidence, that religious beliefs increase when people are confronted with disorder, ambiguity, uncertainty, a lack of control, or a threat to self-esteem (Sedikides & Gebauer, 2014).

Not surprisingly thus, religiosity, though to a lesser extent and less consistently than fundamentalism, is often found to predict prejudice. This is certainly the case against moral (e.g., gay persons) and religious outgroups and atheists, but also against ethnic or racial outgroups, at least in monotheistic religious contexts (see Clobert, Saroglou, & Hwang, 2017, for limitations in the East) and when prejudice against a specific target is not explicitly socially/religiously prohibited (Batson, Schoenrade, & Ventis, 1993; Ng & Gervais, 2017; Rowatt, Carpenter, & Haggard, 2014).

From this line of research, it is often concluded that non-believers tend to be undogmatic, flexible, open-minded, and unprejudiced, or, to phrase it reversely, express

closed-minded tendencies to a lesser degree than religious believers (Streib & Klein, 2013; Zuckerman, Galen, & Pasquale, 2016). Beyond the above mentioned evidence which has typically been derived from analyses in which religiosity is treated as a continuum, thus assuming linearity from the low to the high end of the religiosity continuum, sociological work based on comparisons between groups who provide self-identification in terms of conviction/affiliation also suggests that atheists are indeed the lowest in the above-mentioned kinds of prejudice (Norris & Inglehart, 2004).

Can psychological research thus clearly and unambiguously affirm that atheists are undogmatic and flexible, at least to a greater degree than their religious peers? We argue that such a conclusion is premature. In the present work, we investigate specific domains of cognition where non-believers may show higher inflexibility in thinking, at least in secularized cultural contexts like those in Western Europe. We also examine whether the above holds for all non-religious persons (for brevity hereafter: non-believers) or only for the subtype who self-identify as atheists. Finally, we will examine the above questions using both self-reported and implicit measures of closed-mindedness. Below, we will first develop our rationale and then detail the study expectations.

1.1 Irreligiosity and Closed-Mindedness: A Plausible Relationship

It is possible to suspect that non-believers, in particular atheists, may, like the very religious, be closed-minded. It has been argued that irreligion and unbelief in general, and atheism in particular, implies attitudes, opinions, values, and possibly beliefs and worldviews, with regard to existential, moral, and societal issues (Streib & Klein, 2013; Zuckerman et al., 2016). In our view, this does not necessarily mean holding “answers” to the “big questions”, but it means holding strong ideas regarding the way these issues should be dealt with from a non-religious perspective. It can also be argued that, though irreligion and unbelief differ from religion in that beliefs and values are not solidified, amplified, or rigidified by corresponding

rituals, emotions, and communities with glorious narratives as it is the case in religion (Saroglou, 2014), they still imply some organization of attitudes, beliefs, and values into a system with some coherence, and in some cases, into a well-structured ideology.

Going further, one can argue that even if religion is typically tempted by some kind of “integralism”, with other, possibly all, domains of life being subordinate to the central belief system (see Rokeach’s, 1960, definition of dogmatism), irreligion is not fully exempt from the “integralist” temptation. For instance, irreligion in general, and atheism in particular, often emphasizes human rationality and science as the only valuable means to access truth (Farias, 2013), placing it just one step away from dogmatic scientism. Interestingly, just as religious beliefs increase when believers are confronted with adversity (Sedikides & Gebauer, 2014, for review), the belief in science has been found to increase when non-believers are experimentally confronted with adversity (Farias, Newheiser, Kahane, & de Toledo, 2013). Similarly, an irreligious attitude in life may extend to the endorsement, sometimes in a militant way, of a societal vision (in communist regimes or in France’s “laïcité”), where religious expressions may be prohibited from the public sphere (Bayart, 2016).

Together, the above theoretical arguments and pieces of evidence suggest that positions held by non-believers may not be pure opinions and isolated cognitions. Some or many of these positions may be better considered as beliefs, that is firm positions without clear evidence that have a motivational dimension, can be organized into a set of worldviews, and that have the possibility to shape the way irreligious people think and behave in domains beyond than the existential and moral ones. In sum, non-believers may also be dogmatic.

1.2 Specific Aspects of Closed-Mindedness and Cultural Context

Going even further, in the present work we argue that at least in some cultural contexts and for some aspects of closed-mindedness, but not others, irreligious people may be even more dogmatic/inflexible than their religionist peers. As we will explain below, we argue that

this may be the case in highly secularized Western countries with regard to two aspects of closed-minded cognition: *tolerance and integration of contradictions* and readiness to *consider and appreciate others' perspective* in general—not limited to religious-moral issues. However, as far as *certainty in one's own existential and moral beliefs* is concerned, religious people may be more dogmatic than their nonreligious peers.

With regard to the latter construct, we make the hypothesis of stronger dogmatism among religious believers compared to non-believers given the very nature of religious beliefs. The latter are typically impossible to demonstrate; and though in principle not fully implausible, they are often, from a logical point of view, very implausible (Wolley, 2000). The most striking among them are often also counter-intuitive, not respecting naïve physics, biology, and psychology (Boyer, 2001). Nevertheless, religious beliefs have typically been “validated” throughout history by sources of religious authority (exemplary figures, sacred texts, or simply tradition). Thus, dogmatism, defined as unjustified certainty (Altemeyer, 2002), should be more present among the religious, especially if this refers to cognitions relative to the existential and moral domains. The same should be the case if dogmatism implies the unwillingness to question and change one's own basic beliefs: indeed, across the life-span, people remain relatively stable in their religious attitudes (Koenig, 2015), at least more stable in comparison to positions related to other domains such as political preferences (Abrahamson, Baker, & Caspi, 2002).

Being certain of one's own beliefs relative to the existential and moral domains, and thus unwilling to change them is one thing; being open to imagine, listen to, consider, understand, and appreciate others' perspective is, to some extent, something different. We argue that, in highly secularized religious contexts, non-believers, compared to their religionist peers, would be less prone to be interested in, consider, understand, and appreciate perspectives that oppose their own. In fact, living in highly secularized societies that socially

and/or politically value irreligion, or at least show a societal indifference with regard to religion, contemporary religious believers are faced with opinions, values, norms, and practices in their daily life that may significantly differ from their own. Thus, these individuals may be more prone to imagine and understand these alternative positions, and possibly to integrate them into their own in a complex way. This integration should imply a higher tolerance of contradictions. On the contrary, non-believers, often raised in non-religious families, have been socialized in a predominantly secular culture where indifference to, rather than interest in, religion is the norm. They thus have fewer opportunities to be faced with ideas that challenge their own.

Indirect evidence in favor of these expectations comes from a recent analyses of large international data by Gebauer et al. (2014). These authors found that the somewhat negative association between religiosity and openness to experience decreases, disappears, and may even be slightly reversed, when one shifts from religious to secular countries. They interpret this finding as reflecting the fact that, in the latter societies, religious believers “swim against the stream”, whereas non-believers “swim along the stream”. Additional indirect evidence comes from recent studies showing that those very low in religious fundamentalism, or very high in antireligious sentiments, have their own prejudices with regard to specific targets, that is religious people and moral conservatives (Brandt & Van Tongeren, 2017; Kossowska, Czernatowicz-Kukuczka, & Sekerdej, 2017).

In sum, we expected non-believers, compared to religious believers, to show, at least in a secular cultural context, a lower intolerance of contradiction as well as less readiness for perspective taking for positions alternative to their own. This should be the case even if religious believers score higher on dogmatism, defined as an unjustified certainty in one’s own beliefs.

1.3 Additional Advances of the Present Study

With regard to previous research, we made additional methodological advances in the present study. First, in order to ensure that the results could not be attributable to the particular historical and sociocultural conditions of one specific country, we gathered data from three Western European countries, that is the United Kingdom, France, and Spain. All three are significantly secularized, though they differ for their history and present situation regarding the dominant religion, state-Church relations, atheist movements, and their societal management of religious and cultural diversity.

Moreover, previous research in this area has been predominantly based on self-reported measures. Though these are not invalid, they present important limitations, especially with regard to the constructs under study, that is dogmatism, intolerance of contradiction, and low cognitive perspective taking. Given the importance of human rationality and scientific truth among atheists when perceiving the world and human existence, one can reasonably suspect that atheists perceive low dogmatism and open-mindedness to be highly desirable, as well as stereotypically characteristic of themselves--and the opposite for religious believers. Indeed, believers and non-believers share the stereotype and meta-stereotype of being, respectively, high vs. low on dogmatism (Saroglou, Yzerbyt, & Kaschten, 2011). Thus, while we measured dogmatism (unjustified certainty) using a self-reported scale, we measured the other two constructs, intolerance of contradiction and self-centeredness of opinions, through implicit measures.

Furthermore, conclusions drawn from previous research in favor of non-believers' open-mindedness almost always (but see Silver, Coleman, Hood, & Holcombe, 2014, for an exception) come from studies based on continuous religious measures. As noted by Galen (2012), it is thus unclear whether the low end of the religiosity continuum corresponds to people who are simply low in religiosity or definitively non-believers, in particular self-identified atheists. Therefore, we tested our expectations on participants who self-identify as

religious believers, specifically Christians, given the predominantly Christian background of the three countries involved in the study; and participants who self-identify as atheists or agnostics.¹

2. Method

2.1 Participants

The participants were 788 adults (18-71 years old, $M = 32.61$, $SD = 10.83$; 41% women) recruited mostly through the crowdsourcing platforms Crowdfunder and Prolific Academic, as well as through social networks. They were residents or nationals of the United Kingdom ($n = 242$), Spain (214), or France (332). The participants reported being atheist (302), Christian (255), agnostic (143), Muslim (17), Buddhist (17), Jewish (3), or “other” (51). The main comparisons of convictional groups were made on atheists, agnostics, and Christians (total $N = 700$). The other analyses, that is the psychometric qualities of, and inter-correlations between, measures, were carried out on the whole sample. Ten additional participants were not retained because they were either younger than 18 years of age or did not report their age.

2.2 Procedure and Measures

The study was advertised as “investigating thoughts and emotion”. Data were collected in early 2016. It took approximately 20 minutes to complete the survey. The survey administered in the UK and Spain was in English; that administered in France was in French.

2.2.1 Myside bias. To measure myside bias as a low propensity to take a different perspective into consideration, we used an arguments-generation task developed by Toplak and Stanovich (2003) and adapted by Van Pacterbeke, Keller, and Saroglou (2012). Participants were first asked to rate their agreement with three different opinion statements: (1) “Child adoption by homosexual couples is a positive advance for society”; (2) “The meaning of life is something entirely personal”; and (3) “In a house, rooms must be painted

with light colors” (8-point Likert scales). The order of presentation was counterbalanced. Afterwards, in a separate screen page, participants were asked to generate as many arguments as they could both in support for and in opposition to the statements reflecting the above opinions. The pro and con arguments were to be written in separate boxes of equal size; and their order was counterbalanced. Additionally, for each argument that they generated, participants were asked to report to what extent they found that argument convincing, using a scale from 1 (*not convincing at all*) to 10 (*extremely convincing*).

Following Toplak and Stanovich (2003), we considered arguments (pro or contra with regard to each statement) that were in favor of a participant’s position as “myside” arguments, and arguments that were in favor of an opposing position as “otherside” arguments. Thus, we computed an index of *myside bias in arguments* by subtracting the number of otherside arguments from the number of myside arguments. A higher score in this index indicates that a person is less prone to generate disapproving arguments than arguments in favor of their own opinion. We computed an additional index of *myside bias in conviction*, by subtracting the conviction scores of the otherside arguments from the conviction scores of the myside arguments; a higher score on this index indicates that a person finds arguments opposing their own opinion less convincing than the arguments favoring it.

2.2.2 Intolerance of contradiction. This construct was measured using three pairs of short statements, each pair presenting two seemingly contradictory scientific findings (statements selected from Peng & Nisbett, 1999). Participants were asked to rate, on a 9-point Likert scale, the extent to which they thought each of the six findings was true. The rationale behind this measure is that people who are intolerant of contradiction will have more difficulty in accepting the seemingly contradictory findings as equally true (or false). Thus, if they evaluate one scientific finding of the pair as true, they will tend to judge the other as very false. We computed, for each pair, the absolute difference between the two agreements with

the two contradictory statements, and considered the mean of the three absolute differences as the index of intolerance of contradiction.

2.2.3 Dogmatism. We administered six items from Altemeyer's (2002) *Dogmatism scale* (6-point Likert scale, $\alpha = .75$). This scale measures unjustified certainty, specifically in one's own beliefs. A sample item is: "There are so many things we have not discovered yet, nobody should be absolutely certain his beliefs are right" (reverse). People scoring low on this measure show openness to the possibility of reassessing and changing their opinions.

2.2.4 Irreligious attitudes and religiosity. To capture an open-minded vs. closed-minded form of non-religious attitudes we administered the two subscales of irreligiosity that are part of the short version of the Post-Critical Belief Scale (Duriez, Soenens, & Hutsebaut, 2005) that measure (1) *antireligious critique*, that is literal disaffirmation of the (any) transcendence, also called "external critique", and (2) *symbolic unbelieving*, also called "historical relativism" (9 items in total; 6-point Likert scales; respective α s = .77 and .63). People high on antireligious, external critique view religion as rationally indefensible and are fully critical of it. A sample item is: "Faith is an expression of a weak personality". People high on symbolic unbelieving/historical relativism, although not accepting religious belief, still recognize some value of religion from an historical/anthropological perspective. A sample item is: "Each statement about God is a result of the time in which it is made". Furthermore, a three-item index of *religiosity* (importance of God, importance of religion in life, and frequency of prayer; $\alpha = .90$) was administered.²

3. Results

The descriptive statistics of all measures are presented in Table 1, distinctly for each convictional group. Seven one-way ANOVAs were conducted in order to investigate differences between atheists, agnostics, and Christians on the measures. The results of the ANOVAs, as well as the subsequent significant post-hoc Tukey tests, are also presented in

Table 1. (Note that controlling for all the sociodemographic variables--gender, age, education, and SES--did not change the ANOVAs results). As far as attitudes toward religion were concerned, the expected hierarchies were observed: in religiosity, Christians were higher than agnostics ($p < .001$), who were higher than atheists ($p < .001$). The opposite was observed with external critique: both atheists and agnostics were higher than Christians on symbolic unbelief ($ps < .001$), but did not significantly differ from each other.

Regarding the measures of closed-mindedness, significant differences between the convictional groups were observed, though not all in the same direction³. Christians were significantly higher than atheists in self-reported dogmatism ($p = .017$). However, atheists were higher than Christians on the intolerance of contradiction, myside bias in arguments, and myside bias in conviction ($ps = .037, .071, .013$). Similarly, agnostics were higher than Christians on myside bias in arguments ($ps = .004$), but did not significantly differ from Christians on intolerance of contradiction or myside bias in arguments, and from atheists on the myside bias indexes.

To control for the risk of Type 1 error, we also conducted an omnibus MANOVA analysis, simultaneously comparing the three groups on seven measures, which also provided a significant result, $F(14, 798) = 29.07, p < .001$, Wilk's $\Lambda = 0.439$, partial $\eta^2 = .34$. Note that the total N in that analysis was lower given that many participants had not performed the myside bias task; the result was also significant when computing the MANOVA on the total simple of participants who had completed all of the remaining five measures, $F(10, 1386) = 62.19, p < .001$, Wilk's $\Lambda = 0.476$, partial $\eta^2 = .31$.

Finally, when using continuous measures of religiosity and irreligious attitudes, the results revealed the same pattern (see Table 3). Religiosity correlated positively with dogmatism, but negatively with intolerance of contradiction and myside bias measures;

conversely, both antireligious critique and religious relativism correlated negatively with dogmatism, but positively with myside bias in conviction.

As some of the measures of closed-mindedness were slightly inter-correlated (see Table 3), we thought it necessary to specify the effect of each variable, while controlling for the overlap between them. We thus conducted a SEM analysis to check whether the above found differences between nonbelievers and believers are real and not merely an artifact of some overlap between measures. In this analysis we treated atheists and agnostics as a single group (non-believers) since the two were highly similar in how they differed from Christians. A model including religious conviction (-1 = Christians; 1 = non-believers) as a predictor, and dogmatism, intolerance of contradiction, and the two myside bias indexes as outcomes, was tested using the AMOS structural equation modeling software, Version 20s. In addition, gender, age, education level, socio-economic status (SES), and country of data collection were added as control variables. Prior to this analysis, all variables of interest were standardized (Z-transformed). Overall, the model presented an acceptable fit to the data (NFI = .882; CFI = .879; RMSEA = .066), except for the chi-square ($\chi^2 = 216.299$, $df = 6$, $p < .001$). Self-identification as a Christian, compared to a non-believer, was related to higher dogmatism, but self-identification as non-believer (atheist or agnostic) was related to a higher intolerance of contradiction and myside bias (both in terms of number of arguments and degree of conviction). Unstandardized coefficients for this model are presented in Figure 1.

Finally, to examine whether the differences found between the three groups were consistent across the three countries and respective samples, we first conducted the same ANOVA analyses that we had carried out on the entire sample, separately for each country (for descriptive statistics, see Table 2). The differences found were in similar direction, although they were often nonsignificant, what is very likely due to the decreased sample size of the convictional groups by country.

Second, in order to ensure that the model described above was really equivalent across countries, multi-group analyses using AMOS, Version 20s, were conducted, controlling for gender, age, education, and SES. Given that the three countries differ for the presence, history, and current role of religion, secularity, and atheism, it is important that the findings of the model described above do not heavily reflect only one country, but hold across the three countries, UK, Spain, and France. Moreover, controlling for socio-demographics helps to avoid possible confounds of country/samples differences. We followed the analytical strategy described by Cheung and Rensvold (2002) and used several appropriate indices (the Chi-square, the Root Mean Square Error of Approximation, the Comparative Fit Index, the McDonald's Non-Centrality Index, and the Gamma Hat) while comparing between an unconstrained model ($\chi^2 = 35.678$, $df = 18$, $p = .008$; CFI = .832, RMSEA = .035, McDonald's NCI = .988, Gamma Hat = .999) and a model constrained to present equal structural weights ($\chi^2 = 97.948$, $df = 58$, $p = .001$; CFI = .621, RMSEA = .030, McDonald's NCI = .9754, Gamma Hat = .998) across the three countries. Results showed that the model was significant across the three countries, at least according to several indexes, that is Δ RMSEA = -.005 (difference < .01), Δ McDonald's NCI = -.013 (difference < -.02), Δ gamma Hat = -.001 (difference < -.005), but not two other indexes, $\Delta\chi^2 = 62.270$, $\Delta df = 40$, $p = .01$ (should be nonsignificant); Δ CFI = -.211 (difference should be < .01).

Overall, though not firm, given the low sample size for each country comparatively to the total N , the evidence from both the SEM analysis controlling for country and the multi-group ANOVA analyses favors the idea that the model described in Figure 1 is overall valid across the three countries of study. The results of the current work are not due to a single country. Nevertheless, the model seems to provide a better fit to the data from Spain, a sample with a more balanced proportion of Christians and non-believers (see Table 2).

4. Discussion

Gathering and analyzing data from three Western European countries, all with important levels of secularization, and comparing participants who self-identified as agnostic or atheist to those who self-identified as Christians, we found that Christian participants scored higher on dogmatism, that is they explicitly reported high certainty in their beliefs--even when these beliefs may be questioned by contradicting evidence. This finding is in favor of the idea that holding religious beliefs implies, at least for some, a firm endorsement of ideas that seem implausible or contrary to evidence (e.g., miraculous phenomena, creationism) (e.g., Boyer, 2001; Woolley, 2000). Nevertheless, and given the fact that the mean dogmatism score of religious believers was particularly low (below the mid-point of the scale), this finding can also be understood in inverse terms, starting from the low end of Altemeyer's (2002) Dogmatism scale: it is the non-believers who, by scoring lower, differ from religious believers in that they report not holding any belief or not standing firmly for any opinion. In other words, the religious participants of our study may have been the ones who expressed *some* certainty in their beliefs, whereas the nonreligious expressed total detachment from all beliefs. A final interpretation can be based on the self-reported character of the measure used: part of the effect may not reflect a "real" difference on dogmatism, but result from the activation, by either or both believers and non-believers, of the stereotypical perception (see Saroglou et al., 2011) of being, respectively, dogmatic vs. non-dogmatic. Similarly, reporting low dogmatism may be highly socially desirable among nonbelievers.

Second, to some extent, and seemingly contrary to the above finding at first glance, the direction of the results seemed to change when measuring, through implicit, behavior-like tendencies, (1) the intolerance of contradiction, that is regarding seemingly opposite positions as fully incompatible, and (2) myside bias, that is propensity to imagine many arguments contrary to one's own position and find them somewhat convincing—in fact, a proxy for integrative complexity of thinking. It was non-believers who turned out to show greater,

compared to Christians, intolerance of contradiction and myside bias. These two constructs do not parallel dogmatism--note that the three constructs were unrelated, if not even negatively related to each other. However, the results, in line with our rationale in the introduction, seem to question, to some extent, the global idea that rigidity and inflexibility characterize only religious believers but not nonbelievers. The results further suggest that, at least in secularized Western countries, where unbelief has progressively become normative, nonbelievers may be less socialized and less motivated to imagine, understand, and appreciate others' perspectives. (It cannot be excluded that results may differ in societies where mean religiosity is high and religionists do not often interact with the, few, non-believers).

Although the results were somewhat clearer when comparing atheists to religious people, agnostics were similar to atheists when compared to religious believers. Atheists and agnostics scored similarly lower than Christians on dogmatism and higher than them on intolerance of contradiction and myside bias. (The former result is not necessarily in conflict with Silver et al., 2014, since in that study it was the militant antireligious that scored higher on dogmatism than any other type of non-believer.) This suggests that the basic difference in (1) certainty in beliefs and (2) the propensity to consider, appreciate, and integrate different perspectives, even when in opposition to one's own, lies essentially in the distinction between those who believe and those who do not. The only observed difference concerned the attitudes toward religion: whereas atheists and agnostics endorsed equally an understanding of religion from an historical relativism perspective (a main component of the symbolic unbelief measure), atheists endorsed the anti-religious, called "external", critique, that is disqualifying religion as irrational and outdated, to a greater extent than agnostics.

Finally, the effects are clearly small in size. However, the results seem to show some consistency: they applied to three different countries (UK, France, and Spain). Moreover, and importantly, they did not seem to be an artifact of sociodemographic variables (age, gender,

education, and socioeconomic level) when comparisons were made in the total sample as well as across countries. Nevertheless, we consider our findings to be suggestive and the study exploratory. Before being generalized, these findings need replication and extension, also in terms of samples, measures, and alternative constructs.

First, in this study the Christian samples may not have been fully representative of a highly religious population. These samples scored overall moderately on religiosity and were particularly “liberal” or “questers”, judging from the high scores on symbolic unbelief (lower than non-believers, but still higher than the midpoint of the scale) and from the fact that liberal religious participants are typically overrepresented in online surveys (Lewis, Djupe, Mockabee, & Su-Ya Wu, 2015). Second, as mentioned earlier, the idea that nonbelievers may show some rigidity, low cognitive perspective-taking, and/or low integrative complexity particularly or only in secular countries has yet to be confirmed through studies in countries other than the Western secularized ones.

Finally, alternative measures and constructs denoting various aspects of closed-mindedness and inflexibility should be used in other studies in order to solidify the present conclusions. For instance, it may be that atheists’ intolerance of contradiction is limited to opinions with which they critically self-identify (importance of scientific rationality; defense of gay rights) but does not necessarily extend to other issues. It can also be argued that the present work does not unambiguously show *nonbelievers’ rigidity* in holding exclusively their own positions, but suggest religious *believers’ defensive incorporation* of opinions contradicting their own ones, and subordination to, their own “belief system” (to use Rokeach’s, 1960, terminology), thus denying the contradiction itself. We doubt this is the case--otherwise, the concept itself of “integrative complexity of thought” becomes questionable, but we mention this argument for future research.

Beyond the above-mentioned limitations and suggestions for further research, the current work, modestly but critically, contributes to an ongoing broader debate on whether liberals may parallel conservatives on at least some aspects denoting dogmatic thinking and/or submission to some kind of authority (e.g., Altemeyer, 1996; Conway et al., 2016). Obviously, the link between (ir)religion and rigidity offers a much more complex area of research than had appeared at first glance.

Footnotes

¹ Note also, that there exists an important body of research on (ir)religion and closed-mindedness-related constructs, having used the so-called Post-Critical belief scale (Duriez, Dezutter, Neyrinck, & Hutsebaut, 2007). This measure distinguishes between believing and non-believing, both of which may be literal or symbolic—making four quadrants of attitudes. However, with regard to the objectives of our work here, that model presents some limitations. In addition to the correlation-related problem mentioned above, treating religious attitudes as a continuum (where the low end of religiosity may mean low or no religious), most of that research used simply the two broad dimensions, that is (1) symbolic vs. literal thinking and (2) inclusion vs. exclusion of a transcendence (instead of the four quadrants), making it impossible to know whether believers' literalism reflects more closed-mindedness and prejudice than non-believers' literalism. Finally, it is a bit circular to find that the literal, but not the symbolic, believers and non-believers show closed-minded attitudes. From a psychology of (ir)religion perspective, we still need to study whether the “content” of (un)beliefs per se, and not only their “structure”, makes any difference.

² We additionally included a measure of global-local processing through a task originally developed by Kimchi and Palmer (1982) and adapted by Fredrickson and Branigan (2005). We had expected that religious people would be more inclined toward global processing, compared to the non-religious, expected to be characterized by a more local (analytic) tendency. However, the measure failed to show any significant differences between the three convictional groups.

³ Since myside bias in arguments was computed based on counts, we additionally employed a non-parametric test, Kruskal-Wallis H . Again, the three groups differed significantly, $H(2) = 12.34, p < .002$. Subsequent post-hoc pairwise comparisons with Bonferroni correction showed, identically to the Tukey tests, significant differences between

Christians and atheists (now fully significant, $p = .024$) as well as agnostics ($p = .003$), but not between atheists and agnostics ($p = .764$).

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Table 1

Means and Standard Deviations of All Measures, by Convictional Group

	Atheists <i>n</i> = 302	Agnostics <i>n</i> = 143	Christians <i>n</i> = 255	Group Comparisons		
Variables	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>F</i>	<i>p</i>	η^2
Attitudes t. Religion						
Religiosity	1.33 (0.73)	1.79 (0.92)	3.80 (1.54)	354.71	.000 ^{1, 2, 3}	.50
Antireligious Critique	4.46 (0.85)	3.98 (0.90)	3.55 (0.98)	68.73	.000 ^{1, 2, 3}	.17
Symbolic Unbelief	4.46 (0.87)	4.44 (0.88)	4.07 (0.76)	17.17	.000 ^{1, 2}	.05
Closed-Mindedness						
Dogmatism	2.34 (0.71)	2.37 (0.67)	2.50 (0.70)	3.94	.020 ¹	.01
Intoler. of Contradiction	2.28 (1.30)	2.20 (1.40)	2.01 (1.22)	3.10	.046 ¹	.01
Myside Bias: Arguments	0.43 (0.58)	0.52 (0.67)	0.31 (0.58)	5.56	.004 ^{1(†), 2}	.02
Myside Bias: Conviction	2.94 (2.17)	2.80 (2.46)	2.20 (2.29)	4.20	.016 ¹	.02

Note. For all measures, *N* = 700, except for Myside Bias (Arguments: *N* = 663; Conviction: *N* = 408). Tukey post-hoc tests: ¹ = significant between Christians and atheists; ² = significant between Christians and agnostics; ³ = significant between atheists and agnostics.

Table 2

Means and Standard Deviations of All Measures, by Country and Convictional Group

Variables	Atheists	Agnostics	Christians
United Kingdom (<i>ns</i> = 102, 56, 58)			
Attitudes t. Religion			
Religiosity	1.17 (0.52)	1.49 (0.70)	3.79 (1.71)
Antireligious Critique	4.57 (0.81)	3.90 (0.88)	3.24 (1.00)
Symbolic Unbelief	4.43 (0.79)	4.41 (1.00)	4.16 (0.69)
Closed-Mindedness			
Dogmatism	2.32 (0.74)	2.23 (0.58)	2.40 (0.58)
Intolerance of Contradiction	2.25 (1.18)	2.02 (1.44)	2.20 (1.32)
Myside Bias: Arguments	0.40 (0.57)	0.38 (0.65)	0.33 (0.62)
Myside Bias: Conviction	3.19 (1.86)	3.13 (2.23)	2.26 (2.06)
France (<i>ns</i> = 137, 42, 107)			
Attitudes t. Religion			
Religiosity	1.47 (0.88)	2.17 (1.04)	3.77 (1.52)
Antireligious Critique	4.26 (0.84)	3.76 (0.83)	3.59 (1.02)
Symbolic Unbelief	4.40 (0.91)	4.41 (0.80)	4.03 (0.76)
Closed-Mindedness			
Dogmatism	2.33 (0.71)	2.38 (0.80)	2.46 (0.79)
Intolerance of Contradiction	2.34 (1.45)	2.29 (1.32)	2.10 (1.19)
Myside Bias: Arguments	0.43 (0.61)	0.77 (0.68)	0.31 (0.59)
Myside Bias: Conviction	2.64 (2.26)	2.01 (2.44)	1.99 (2.14)
Spain (<i>ns</i> = 63, 45, 90)			
Attitudes t. Religion			
Religiosity	1.27 (0.60)	1.80 (0.92)	3.83 (1.46)
Antireligious Critique	4.70 (0.85)	4.27 (0.92)	3.70 (0.87)
Symbolic Unbelief	4.61 (0.90)	4.49 (0.79)	4.05 (0.80)
Closed-Mindedness			
Dogmatism	2.37 (0.65)	2.54 (0.60)	2.60 (0.65)
Intolerance of Contradiction	2.21 (1.13)	2.35 (1.42)	1.79 (1.18)
Myside Bias: Arguments	0.46 (0.56)	0.45 (0.63)	0.29 (0.55)
Myside Bias: Conviction	3.07 (2.58)	3.25 (2.70)	2.38 (2.72)

Table 3

Intercorrelations Between Measures

	Irreligiosity		Closed-Mindedness			
	Antirelig. Critique	Symbolic Unbelief	Dogma- tism	Intoler. of Contradict.	Myside Bias: Arguments	Myside Bias: Conviction
Attitudes t. Religion						
Religiosity	-.46**	-.27**	.16**	-.12**	-.10**	-.16**
Antireligious Critique		.38**	-.14**	-.03	.05	.15**
Symbolic Unbelief			-.38**	.06	.05	.17**
Closed-Mindedness						
Dogmatism				-.08*	-.08*	-.12*
Intoler. of Contradiction					.03	.07
Myside Bias: Arguments						.17**

$N = 788$.

* $p < .05$. ** $p < .01$.

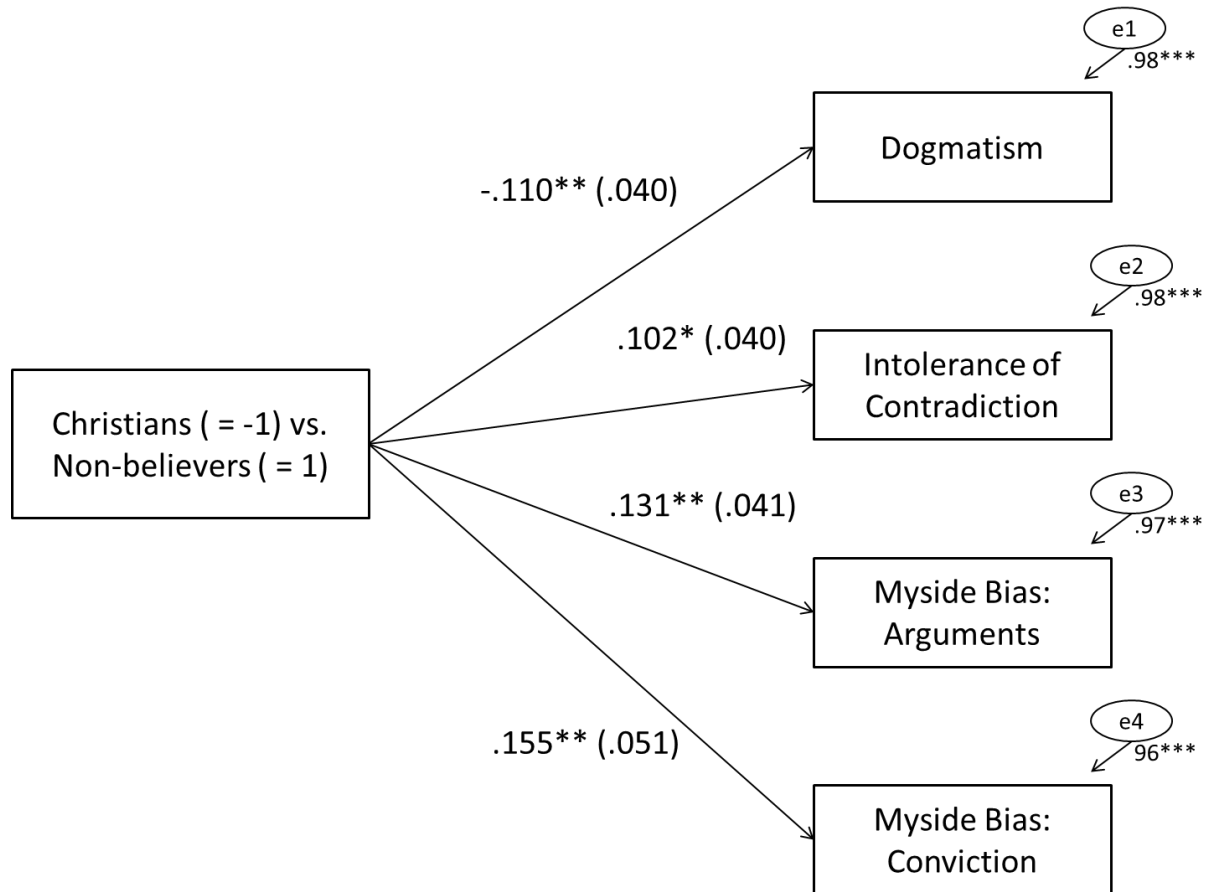


Figure 1. Convictional status (Christians vs. non-believers) as related to various aspects of closed-mindedness. Numbers on paths represent unstandardized regression coefficients; standard errors are in parentheses. Age, gender, education, SES, and country are controlled.

*** $p < .001$. ** $p < .01$. * $p < .05$.