

## **Being Agnostic, not Atheist: Personality, Cognitive, and Ideological Differences**

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**Abstract**

Why do several nonreligious people self-identify as agnostic and not as atheist? Beside epistemological differences regarding what is knowledgeable, we hypothesized that such a preference reflects (1) personality dispositions, i.e., prosocial orientation, open-mindedness, but also neuroticism, (2) cognitive preferences, i.e., lower analytic thinking, and (3) ideological inclinations, i.e., openness to spirituality. In a secularized European country (Belgium), we surveyed participants who self-identified as Christian, agnostic, or atheist (total  $N = 551$ ). Compared to atheists, agnostics were more neurotic, but also more prosocially oriented and spiritual, and less dogmatic. Strong self-identification as atheist, but not as agnostic, was positively related to analytic thinking and emotional stability but also dogmatism. Nevertheless, spiritual inclinations among both agnostics and atheists reflected low dogmatism and high prosocial orientation, and, additionally, among agnostics, social and cognitive curiosity. From a personality perspective, agnostics compose a distinct psychological category and are not just closet atheists.

*Keywords:* atheism, agnosticism, dogmatism, spirituality, prosociality, neuroticism

**Being Agnostic, not Atheist: Personality, Cognitive, and Ideological Differences**

Why do many religious nonbelievers self-identify as agnostics instead of atheists? At first glance, the distinction seems merely epistemological. Agnostics prefer not to affirm that God exists or that God does not exist and to affirm that *they* do not know or *we*, humans, cannot know (Lindeman et al., 2020). Atheists affirm that God does not exist. Beyond this epistemological difference, one though may conceive agnostics as being similar to, and live as if they were, atheists. For instance, as indicated in recent studies, both groups seem to think that God and religion have no importance in their lives (Uzarevic et al., 2017) and to affirm that religion has no role in motivating their behavior (Pew Research Center, 2018). It can even be argued that agnosticism and atheism may overlap (Gervais, 2017) or that agnostics are simply atheists who have not yet “come out” as such.

However, we argue that, from a personality perspective, being agnostic, not atheist, should reflect distinct psychological characteristics: not all non-believers are the same, many people self-identify as agnostics and not as atheists, and agnostics constitute a major subcategory of nonbelievers, in addition to atheists. Indeed, there may be several types of nonbelievers (Lindeman et al., 2020; Silver et al., 2014), and, in the US, in addition to atheists (4%) and agnostics (5%), many people report religion “means nothing in particular” (26%) (Pew Research Center, 2019). Nevertheless, across studies, nonbelievers easily self-identify as either atheist or agnostic and, in Europe, atheists (10%, but 21%-22% in Czech Republic and France) and agnostics (17%, but 34%-41% in Sweden and the Netherlands) cover the spectrum of nonbelievers (European Commission, 2019), with no important third category emerging when participants are offered the option “other” (Uzarevic et al., 2017; Uzarevic et al., 2020).

Who are the agnostics? No research, to our knowledge, has specifically and exclusively investigated this question from a personality psychology perspective. With

extremely few exceptions (e.g., Hunsberger & Altemeyer, 2006), research in the 2000s used the generic, combined, identification of “atheist/agnostic”, and it was only in the 2010s that studies started to offer participants the choice between these two identities.

We thought it particularly relevant to investigate the personality of agnostics versus atheists in a well secularized cultural context (Belgium), where atheists and agnostics constitute, respectively, 10% and 21% of the population (European Commission, 2019). In such contexts, personality characteristics of the two groups should be more unambiguous: nonbelievers do not constitute a thin social minority and include, in addition to those who have distanced themselves from religion, those who have been educated as nonbelievers.

### **Personality and Cognitive Characteristics**

#### ***Prosocial Orientation***

One possibility is that agnostics do not chose a side between believers and atheists because they are prosocially oriented. They may be genuine in respecting both convictional groups, try to understand them by taking both sides’ perspectives, be interested in and appreciate some value in both religious and atheist traditions, and/or want to maintain good relationships with people from both groups, which, especially in secularized contexts, constitute important and active segments of society.

Research shows a linear positive relationship between religiosity and prosocial traits, values, emotions, and, to some extent, behavior, with religious believers being somewhat more prosocially oriented than nonbelievers (Saroglou, 2013). Given the above arguments, we expected agnostics, even if less prosocial than believers, to be more prosocially oriented compared to atheists. Indirect evidence favoring this hypothesis comes from research showing that atheists, compared to agnostics, demonstrate stronger negative attitudes and prejudice against various religious groups (Uzarevic et al., 2021) and are more opposed to the expression of religion in the public sphere (Baker & Smith, 2009).

We investigated this question through three indicators of prosocial orientation. These included (1) *agreeableness* as a big five personality trait, i.e., being non-depreciative, polite, cooperative, and helpful (John et al., 2008), (2) *sincerity*, as an HEXACO facet of honesty-humility, i.e., being genuine in interpersonal relationships and not dishonest or flattering to achieve a desired outcome (Ashton et al., 2014), and (3) *social curiosity*, in its *overt*, not covert and unhealthy, form. Overt social curiosity means being interested in other people's behaviors, thoughts, and feelings in order to understand what makes people tick, and is correlated with agreeableness, compassion, need to belong, values of benevolence and universalism, interpersonal competency, and intellectual humility (Kashdan et al., 2020).

### ***Neuroticism***

Another possibility is that agnostics should be higher in neuroticism compared to both atheists and Christians. Research suggests some negative association between neuroticism and religiosity, though the link is not consistent across cultures (Saroglou, 2017). Furthermore, people who exit from religion have occasionally been found to be high in neuroticism (Streib, 2021) and insecure in their attachment (Granqvist & Kirkpatrick, 2016), but other research suggests that both deconverts and socialized nonbelievers are more neurotic compared to religious believers (Saroglou et al., 2020). The difference in aspects of emotional stability and well-being occasionally found between believers and nonbelievers is typically explained in terms of the social support believers benefit from the community (Hayward & Krause, 2014).

There is also evidence showing that religious doubt is typically related to emotional and relational turmoil (Fisher, 2017). Going further, researchers have suggested—and indeed found—a U-shape association between religiosity and well-being, with those certain about their (un)beliefs, i.e., strong religious believers and atheists, being higher in well-being and related constructs compared to those in the middle, such as the weakly religious or the weak nonbelievers (Baker et al., 2018; Galen & Kloet, 2011; but see Hayward et al., 2016).

It results that agnostics combine three potential sources of emotional instability: irreligion and the lack of the benefits of belonging (similarly to atheists); high uncertainty and doubt regarding existential issues (unlike atheists and believers); and possible higher rate of deconversion (unlike the two other groups). We thus expected agnostics to score higher on neuroticism compared to atheists and religious believers.

### ***Open- versus Closed-Mindedness***

A third possibility is that agnostics are higher in open-mindedness compared to both atheists and the religionists. Agnostics should prefer to have more questions than answers, be less certain about their own beliefs and existential attitudes, and finally be highly curious, find the world intriguing, and enjoy learning. We expected them to be, respectively, the (1) lowest in need for closure and (2) dogmatism and the (3) highest in joyous explorative curiosity in comparison to believers and atheists who are certain about their (un)beliefs and (ir)religious ideas and attitudes. These three psychological characteristics together should denote global open- versus closed-mindedness.

With regard to *dogmatism*, defined as a high certainty of one's own ideas and the unwillingness to question them, previous research has shown some hierarchy, with religious believers being the highest, atheists being lower, and agnostics being the least certain and dogmatic and the most ambivalent (Hunsberger & Altemeyer, 2006; Lindeman et al., 2020; see also Moore & Leach, 2016, and Uzarevic et al., 2017, UK sample, for similar mean differences). Religious believers may be dogmatic when holding ideas that conflict with external evidence. Atheists can be, to some extent, dogmatic because they are convinced believers are wrong, though the wrongness of such belief cannot be proven. Agnostics, as they are uncertain, are reasonably suspected to be the lowest in dogmatism.

With regard to the *need for closure* and *joyous explorative curiosity*, our hypotheses are fully original. Need for closure is defined as the motivation to have a definite answer or

knowledge instead of uncertainty, and a sense of order in one's own internal and external world (Kruglanski & Webster, 1996). Agnostics, compared to the two other convictional groups who hold more or less structured worldviews, should be located at the low pole of such a need. Furthermore, joyous exploration, a specific dimension of a broad disposition for curiosity, emphasizes the enjoyment in being interested in, learning, and deeply thinking about novel and challenging things, and is related to openness to experience, the need for competence, and valuing self-direction (Kashdan et al., 2020). It may be that agnostics not only dislike epistemic closure but even like and enjoy challenging and diverging ideas, beliefs, and worldviews.

### ***Cognitive Reflection***

Recent studies indicate that religious people, compared to nonbelievers, tend to adopt an intuitive thinking style, whereas nonbelievers tend to use more analytic thinking, i.e., cognitive reflection (Yilmaz, 2021). We investigated whether agnostics may be located midway between believers and atheists in terms of thinking style. By not endorsing religious ideas and practices, agnostics indicate a higher propensity, compared to religious believers, to use analytic, critical reasoning that is based more on logic and reflection than on experiential subjective evidence and holistic perception. But by not endorsing the atheistic perspective and keeping all, including opposite, possibilities open, agnostics may be reluctant to strictly apply the principle of excluded middle, and thus use analytic reasoning to a lesser extent.

Evidence favoring this expectation comes from studies that have compared nonbelievers who mostly self-identified as atheists with a group of “uncertain nonbelievers” or with nonbelievers who resembled to the “spiritual but not religious”. Atheists indicated a greater importance of science and stronger conflict between science and religion, and relied more on cognitive reflection (Lindeman et al., 2019; Van Elk & Naaman, 2021).

Nevertheless, such differences between agnostics and atheists may not exist. For instance, agnostics and atheists demonstrate similarly stronger pro-science attitudes by endorsing human evolution (96% and 95%) compared to the religiously indifferent (76%) and to the religiously affiliated (55%) (Pew Research Center, 2015). Thus, agnostics could be equal to atheists in analytic reasoning, even if the conclusion regarding the specific question of God's existence may be slightly different between the two groups.

### **Openness to Non-Religious Spirituality**

A final possibility is that agnostics are nonbelievers who nevertheless value (nonreligious) spirituality and do not self-identify as atheists not because they necessarily disagree that God (very likely) does not exist, but because do not want to “throw the baby [spirituality] out with the bathwater [institutional religion]”. Spirituality, in modern secular societies, denotes the individual search for meaning in one's life, belief in a transcendent entity or principle, and feelings of connectedness with others and the world (Piedmont, 1999).

We investigated the above question by testing four hypotheses. First, agnostics should consider spirituality to be important in their lives to a greater extent than atheists do—and, given the typical intercorrelation between religiosity and spirituality, should be less dismissive of religion than atheists. Second, a greater number of agnostics, compared to atheists, would self-identify as spiritual/not religious, whereas more atheists would self-identify as nonreligious/nonspiritual. Third, more agnostics, compared to atheists, would have received religious family socialization and today be deconverted, whereas more atheists, compared to agnostics, would have received non-religious family socialization. Finally, among agnostics, but not necessarily among atheists, the consideration of spirituality as important in life should be related to personality characteristics that imply self-transcendence in the interpersonal and epistemic domains, i.e., prosocial orientation and open-mindedness.



There is some evidence in favor of the above hypotheses. In Europe, agnostics have been found to fall midway between believers and atheists on measures of spirituality, religious beliefs, and (low) antireligious critique (Lindeman et al., 2019; Uzarevic et al., 2017, 2020; Uzarevic et al., 2021). In terms of sources of meaning in life, agnostics are more motivated by self-transcendence (social commitment, generativity), whereas atheists are more motivated by self-actualization (autonomy, achievement, fun, comfort) (Pedersen et al., 2018). In the US, only a minority consider money, hobbies, and travel as sources of meaning, but atheists do so more than agnostics, with religionists being the lowest on these considerations (Pew Research Center, 2018).

### **Overview of the Study**

We investigated several indicators of personality, cognitive, and ideological characteristics among Belgian young adults and adults self-identified as Christian, agnostic, or atheist. We expected agnostics to be located midway between the other two convictional groups on prosocial orientation, cognitive reflection, and spirituality, and to be the highest of the groups in open-mindedness and neuroticism. We expected agnostics' characteristics to emerge as between-group differences, but also as unique correlates of the intensity of self-identification as agnostic versus atheist.

Finally, the above characteristics of agnosticism may be interrelated to a slight extent. For instance, spirituality is typically related to prosocial orientation (Saroglou, 2013) and neuroticism-like constructs have been theorized and/or found to be related, either positively or negatively, to closed-mindedness (Kruglanski, 2004; Napier & Jost, 2008). In a regression analysis, we investigated whether being agnostic versus atheist is predicted uniquely and additively by the hypothesized psychological characteristics.

## **Method**

### **Participants and Procedure**

Participants were young adults and adults who completed the survey online after we posted announcements in various Belgian social groups that included students, groups of nonbelievers, and acquaintances. The study was advertised as an investigation of “attitudes, beliefs, and personality”. From the 600 participants who completed the survey, we retained 551 participants who self-identified as Christian (178; 92% Catholics and the others being Protestants or other Christians), agnostic (125), or atheist (248). In collecting data, the number of participants was determined to be at minimum 120 by convictional group, based on previous evidence on differences between these three convictional groups (Uzarevic et al., 2017, 2021). The 49 participants not included for the analyses were Buddhists, Muslims, or reported “other”. Participants were Belgian residents, with the majority having Belgian citizenship (75%) and the remaining participants being mostly French (20%). Women’s ratio was 69.5% (78%, 72%, and 63%, respectively for Christians, agnostics, and atheists). Mean (and SD), minimum, and maximum age was respectively 36.76 (17.92), 18, and 94, with only a slight difference in mean age between Christians and atheists ( $p = .055$ ), but not between atheists and agnostics. The study got approval from the Ethics Commission of the Research Institute at the authors’ University.

## Measures

### *Neuroticism*

Neuroticism was measured through the eight Neuroticism items of the Big Five Inventory (John et al., 2008; Cronbach’s alpha of .86, in the present data). Two sample items are: “I see myself as someone who ...” “Is relaxed, handles stress well” (reverse) and “Worries a lot”. Possible answers were ranged from 1-*strongly disagree* to 5-*strongly agree*. During the analyses, we noticed that the three reverse items did not behave as the five pro-trait items. We thus provided the results both on total neuroticism level and on the pro-trait versus reverse items level.

***Prosocial Orientation***

Participants were administered eight items measuring *agreeableness* in the Big Five Inventory (John et al., 2008), the four items measuring *sincerity* in the HEXACO Personality Inventory-Revised-100 (Lee & Ashton, 2018), and the four items measuring *overt social curiosity* in the Revised Five-Dimensional Curiosity Scale (Kashdan et al., 2020). We additionally included the four items measuring the HEXACO facet of modesty, but we did not retain them for analyses as the relationship between religiosity and self-reported modesty is unclear.

For agreeableness and sincerity, participants marked their degree of agreement with the proposed self-descriptive items using Likert scales ranging from 1-*strongly disagree* to 5-*strongly agree*. For overt social curiosity, participants were asked to report how much the proposed statements describing people apply to themselves through Likert scales ranging from 1-*describes me not at all* to 7-*fully describes me*. Sample items were: “I see myself as someone who is considerate and kind to almost everyone” (agreeableness), “If I want something from a person I dislike, I will act very nicely toward that person in order to get it” (sincerity), and “I ask a lot of questions to figure out what interests other people” (overt social curiosity). Reliabilities (Cronbach’s alphas) were as follows: .72 (agreeableness), .59 (sincerity), and .72 (social curiosity),

For each participant, we computed a score for each of the three constructs, as well as an aggregate score of global prosocial orientation, by computing the mean of all 16 items across the three measures (the items of the social curiosity measure were adapted to a 5-point Likert scale). The reliability of the global prosocial orientation was .70. Using this global score allowed also for solidifying the results, given the modest reliability of sincerity.

***Closed- vs. Open-Mindedness***

We measured three indicators of closed-/open-mindedness, i.e., *need for closure* (a desire for definitive knowledge on various issues), *dogmatism* (excessive and unchangeable certainty in one's own beliefs), and *joyous explorative curiosity* (the pleasurable experience of finding the world intriguing). Participants filled in, respectively, the Need for Closure Scale-brief form (Roets & Van Hiel, 2011; 15 items), six items of the Dogmatism Scale (Altemeyer, 2002), and the four items of the Joyous Exploration subscale of the Revised Five-Dimensional Curiosity Scale (Kashdan et al., 2020).

The Need for Closure Scale encompasses five facets (three items by facet), i.e., preference for order, preference for predictability, intolerance of ambiguity, closed-mindedness, and decisiveness. The first four facets denote permanence and maintenance (“freezing”), whereas decisiveness denotes urgency (“seizing”) (Kruglanski & Webster, 1996). Participants marked their degree of agreement with the proposed self-descriptive items using Likert scales ranging from 1-*strongly disagree* to 6-*strongly agree*. Given that religiousness implies freezing but not necessarily seizing, probably to avoid making hasty erroneous decisions (Duriez, 2003; Saroglou, 2002), we did not include the three decisiveness items in the global score of need for closure. The reliability of the measure in the present data (12 items in total: three items  $\times$  four facets) was .82.

The Dogmatism scale includes 22 items, some of them being very similar in content. To avoid the protocol being too long, we selected six items (reliability: .79, in the present data), not overlapping in content with each other, and followed thus Uzarevic et al. (2017), a study on religionists, atheists, and agnostics. Participants marked their degree of agreement with the proposed self-descriptive items using Likert scales ranging from 1-*strongly disagree* to 7-*strongly agree*. Finally, for the four items of the Joyous Exploration subscale (reliability: .65), participants were asked to report how much the proposed statements describing people

apply to themselves through Likert scales ranging from 1-*describes me not at all* to 7-*fully describes me*.

Sample items are: “I dislike it when a person’s statement could mean many different things” (need for closure), “There are so many things we have not discovered yet, nobody should be absolutely certain his beliefs are right” (reverse; dogmatism), and “I enjoy learning about subjects that are unfamiliar to me” (joyous exploration). For each participant, we also computed a global score on closed-mindedness, by first reversing the joyous exploration items and then aggregating the scores on the 22 items across all three measures ( $\alpha = .80$ ).

### ***Cognitive Reflection***

To assess participants’ analytic thinking, we used three numerical questions from the Cognitive Reflection Test (Frederick, 2005) and two non-numerical questions from the revised version of this test (Thomson & Oppenheimer, 2016). These items are problems to be resolved which required analytic processing to be resolved correctly, by suppressing automatic, non-deliberative answers. A sample of the numerical questions is: “If it takes 5 machines 5 minutes to make 5 gadgets, how long would it take for 100 machines to make 100 gadgets?” (analytic answer = 5 minutes; common intuitive answer = 100 minutes). The other two, non-numerical, questions are: “If you run a race and overtake the person in second place, where do you stand?” (analytic answer: 2<sup>nd</sup> place; common intuitive answer: 1<sup>st</sup> place), and “One farmer had 15 sheep and all but 8 died, how many are left?” (analytic answer = 8; common intuitive answer = 7). Following S. Frederick (personal communication, February 25, 2020), we did not suggest specific answers to the participants. We computed two distinct scores for cognitive reflection, one on the numerical items and the other on the non-numerical ones, by simply adding the number of correct (analytic) answers.

### ***Religion and Spirituality***

*Religiosity* was measured through a widely used index of three items measuring the importance of God and the importance of religion in one's own life, as well as the frequency of prayer; and importance of *spirituality* was measured with a one-item index (7-point scales; Cronbach's alpha: .90). For the frequency of prayer, the Likert scale ranged from 1-*never* to 7-*a lot (almost every day)*, whereas for the other three items the scales ranged from 1-*not at all important* to 7-*very important*. In addition, for participants who self-identified as agnostic or atheist, immediately after making this choice, a respective to this choice question was asked: "To what extent do you define yourself as agnostic [atheist]?" This question measured the strength of the agnostic or atheistic identity through a 5-point Likert scale ranging from 1 (*Superficially*) to 5 (*Deeply*).

We also measured *religious trajectory* by having participants select one of four propositions (Saroglou et al., 2020): (1) "I grew up in a family that gave me a religious education, and today I believe in God", (2) "I grew up in a family that gave me a religious education, but today I do not believe in God", (3) "I did not grow up in a family with religious education, but today I believe in God", and (4) "I did not grow up in a family with religious education, and today I do not believe in God". Participants were then considered as socialized religious ( $n = 115$ ), deconverts ( $n = 234$ ), converts ( $n = 15$ ), and socialized nonreligious ( $n = 187$ ), respectively. Finally, to measure participants' relative *preference for (ir)religion and/or (non)spirituality*, we asked them to select one of four propositions: "I self-identify as (1) religious rather than spiritual, (2) equally religious and spiritual, (3) spiritual rather than religious, or (4) nonreligious and nonspiritual". Respective  $N$ s were 13, 51, 221, and 266.

## Results

Descriptive statistics for all measures are detailed in Table 1. For all analyses, i.e. mainly one-way ANOVAs for the between-group comparisons, correlations between variables, and regressions of the agnostic versus atheist self-identification on the relevant

individual differences, a two-tailed significance level was adopted, but for specific between-group comparisons (typically Tukey tests and, in exceptional cases, *t*-tests), involving clear in direction hypotheses, we also included, for information reasons, results with one-tailed significance. For the key results regarding the comparisons between agnostics and atheists, we, in addition, provide the 95% CIs.

### **Attitudes Toward Religion and Spirituality**

Agnostics were located midway between Christians and atheists on religious attitudes, i.e., lower than Christians on religiosity and spirituality, and higher, more exactly less low, given the mean scores, than atheists on these two orientations. Moreover, agnostics' self-identification as agnostic was weaker than atheists' self-identification as atheist.

When participants expressed their relative preference of being (non)religious or (non)spiritual, about half of Christians (52.2%) reported being “spiritual rather than religious”, and slightly less than a third of them (28.7%) reported being “religious and spiritual”. Almost half of the agnostics (46.4%) reported being “spiritual rather than religious”, with the other half (52.8%) being “nonreligious and nonspiritual”, whereas 71.8% of atheists selected the latter option, with the remaining 28.2% reporting being “spiritual rather than religious”. The distribution of these two options differed significantly between agnostics and atheists,  $\chi^2 = 12.60$ ,  $p < .001$ ,  $\phi = 0.18$ .

### **Personality and Cognitive Differences**

As also detailed in Table 1, agnostics were higher in *neuroticism*, when neuroticism was measured with the positive items (but not when measured with the reverse items), compared to both Christians and atheists. When taking all items together, positive and negative, agnostics turned out to be higher in neuroticism compared to the other participants as a whole.

Both Christians and agnostics turned out to be higher than atheists on global *prosocial orientation*. Specifically, agnostics fell midway between Christians and atheists on agreeableness, with the significant difference being evident for Christians compared to agnostics and, clearly, atheists. Agnostics were also higher than Christians and atheists, taken together, on sincerity, and higher than atheists, on social curiosity.

Furthermore, agnostics seemed to be the lowest compared to the two other groups in *closed-mindedness* as a global construct, with atheists still being lower than Christians on this dimension. This pattern was particularly evident for the need for closure. Moreover, agnostics, compared to the two other groups, were the lowest on dogmatism and the highest on joyous exploration. Finally, there was no difference between the three groups on *cognitive reflection* in the non-numerical questions, but nonbelievers, be they agnostic or atheist, were higher compared to Christians on cognitive reflection in the numerical questions. Agnostics did not differ from atheists on this construct.

When including the absence of zero in the 95% CIs as the strictest criterion of the significance of the differences between non-believers (in *t*-tests), it was confirmed that agnostics, compared to atheists, were higher in neuroticism (positive items),  $d = 0.27$ , 95% CI [.05, .48], prosocial orientation,  $d = 0.25$ , 95% CI [.01, .21], religiosity,  $d = 0.64$ , 95% CI [.38, .76], and spirituality,  $d = 0.64$ , 95% CI [.33, 1.68], and lower in closed-mindedness,  $d = 0.40$ , 95% CI [-.40, -.12], and intensity of self-identification (as agnostic vs. atheist),  $d = 0.59$ , 95% CI [-.83, -.38].

Differences between the three groups were not due to potential gender differences. Computing *F*s when controlling for gender confirmed group differences on neuroticism-positive items ( $3.69, p = .035, \eta^2 = .012$ ), prosocial orientation ( $3.93, p = .020, \eta^2 = .014$ ), agreeableness ( $8.09, p < .001, \eta^2 = .029$ ), closed-mindedness ( $19.80, p < .001, \eta^2 = .068$ ), need for closure ( $14.13, p < .001, \eta^2 = .049$ ), dogmatism ( $14.45, p < .001, \eta^2 = .050$ ), joyous



exploration (4.30,  $p = .014$ ,  $\eta^2 = .015$ ), cognitive reflection in the numerical questions (3.91,  $p = .021$ ,  $\eta^2 = .018$ ), religiosity (335.76,  $p < .001$ ,  $\eta^2 = .551$ ), spirituality (102.21,  $p < .001$ ,  $\eta^2 = .272$ ), and intensity of self-identification (39.99,  $p < .001$ ,  $\eta^2 = .976$ ).

The major personality variables of interest were slightly intercorrelated. Specifically, neuroticism was negatively related to prosocial orientation and numerical cognitive reflection ( $rs = -.14, -.15$ ,  $ps < .001$ ), whereas closed-mindedness was positively related to neuroticism and negatively to prosocial orientation and numerical cognitive reflection ( $rs = .22, -.25, -.17$ ,  $ps < .001$ ). We subsequently computed a logistic regression analysis to investigate whether being agnostic versus atheist was uniquely predicted by each of these variables. As detailed in Table 2, being agnostic rather than atheist was uniquely and additively predicted by increased neuroticism, increased prosocial orientation, and decreased closed-mindedness. Controlling for age and gender did not have an impact on the above results. Including spirituality and religious socialization as two additional predictors in a next step showed that spirituality and religious socialization were additional unique significant predictors of agnostic versus atheist status. The unique effects of personality remained, suggesting that these effects were not an artefact of current spirituality or past family religious socialization.

### **Nonbelievers' Strength of Self-Identification, Spiritual Inclinations, and Religious Trajectory: Personality Characteristics**

Table 3 details the results of correlational analyses between the strength of self-identification as agnostic/atheist and the importance of spirituality, on the one hand, and the personality constructs, on the other hand. Since these analyses were exploratory, one-tailed significant results were not taken into account. Intensity in being agnostic or atheist was associated with a low need for closure. Intensity of being atheist was additionally associated with increased emotional stability (low neuroticism), joyous exploration, and numerical cognitive reflection, but also with increased dogmatism. Furthermore, for both agnostics and

atheists, finding some importance of spirituality in their life was related to low closed-mindedness in general and low dogmatism in particular. Among agnostics, spirituality was also associated with increased social curiosity and joyous exploration.

Additionally, we investigated the differences between nonbelievers (agnostics and atheists taken together) who reported being “spiritual rather than religious” ( $N = 128$ ) and those who reported being “nonreligious and nonspiritual” ( $N = 244$ ). The former, compared to the latter, were higher in prosocial orientation (respective  $M_s = 3.94, 3.84$ , and  $SD_s = 0.55, 0.58$ ),  $t(1,370) = 2.10, p = .036, d = 0.23$ , and in particular social curiosity (respective  $M_s = 5.49, 5.14$ ;  $SD_s = 0.91, 1.08$ ),  $t(1,370) = 3.22, p = .001, d = 0.34$ , as well as lower in closed-mindedness ( $M_s = 2.90, 3.11$ ;  $SD_s = 0.60, 0.66$ ),  $t(1,370) = -3.03, p = .003, d = 0.33$ , in particular lower in dogmatism ( $M_s = 2.25, 2.72$ ;  $SD_s = 0.91, 1.08$ ),  $t(1,370) = -4.74, p < .001, d = 0.48$ , and higher in joyous exploration ( $M_s = 5.50, 5.21$ ;  $SD_s = 0.88, 0.92$ ),  $t(1,370) = 2.93, p = .004, d = 0.32$ . (Note that almost all differences disappeared when the analyses were conducted distinctly for agnostics and atheists, very likely due to the small size of the subsamples).

We also investigated whether differences existed, among either agnostics or atheists, between those who had exited from religion though religiously socialized and those who were socialized as nonreligious. The majority of Christians was composed by people socialized as religious (109; 61.2%), with an additional subgroup nevertheless reporting to be deconverted (53; 29.8%). The agnostic and atheist groups were each exclusively composed of two almost equal halves: those socialized as nonbelievers, i.e., respectively, 55 (44%) and 125 (50.4%), and those who had exited from religion, i.e., respectively, 62 (49.6%) and 119 (47.98%). It turned out first that agnostics socialized as nonbelievers were more dogmatic than deconverted agnostics, respective  $M_s$  ( $SD_s$ ) = 2.34 (1.00) and 2.05 (0.72),  $t(1, 115) = 1.81, p = .073, d = 0.32$ . Second, atheists socialized as nonbelievers had higher social curiosity than

deconverted atheists,  $M_s (SDs) = 5.39 (0.93)$  and  $4.99 (1.11)$ ,  $t(1, 242) = 2.99$ ,  $p = .003$ ,  $d = 0.38$ . Finally, the strength of self-identification as either agnostic or atheist was higher among those who were socialized as nonbelievers than those who exited from religion,  $M_s (SDs) = 4.29 (1.00)$  and  $4.00 (1.09)$ ,  $t(1, 359) = 2.62$ ,  $p = .009$ ,  $d = 0.28$ .

## Discussion

### **Agnostics Compared to Atheists and Religious Believers**

Among young adults and adults living in a secularized European country (Belgium) who self-identified as either Christian, agnostic, or atheist, we found first that agnostics were different from the two other convictional groups by showing lower closed-mindedness in general, and dogmatism and need for closure in particular, but also higher neuroticism. Second, agnostics fell midway between religious believers (high end) and atheists (low end) in current spiritual inclinations, past religious upbringing, and prosocial tendencies. With regard to the latter, depending on the specific construct, they seemed closer either to the more prosocial and higher in social curiosity religious believers or to the lower in agreeableness atheists. Third, atheists and agnostics, compared to Christians, were higher in cognitive reflection (analytic thinking) in the numerical domain and joyous explorative curiosity. In sum, agnostics resembled to atheists in reasoning and curiosity, but tended to be more prosocial and spiritual, less dogmatic, and more neurotic. Finally, it was the strength of atheistic self-identification but not the strength of agnostic self-identification that was positively related to analytic thinking and emotional stability, but also dogmatism.

The above findings offer indirect cross-sectional evidence in favor of our theorization. From a personality perspective, being agnostic reflects a distinct psychological category, not reducible, for instance, to being a closet atheist. Nonbelievers who prefer to self-identify as agnostic and not as atheist may be (1) more anxious and hesitant about the best answer to give to the fundamental existential questions, (2) more interested in, and respectful of, people from

opposite sides and their (un)beliefs and values, (3) less certain and more flexible regarding their own beliefs and worldviews, and/or (4) more religiously socialized and today more valuing (nonreligious) spirituality. The latter possibly allows agnostics “not to throw the baby [spirituality] out with the bathwater [religion]”. Finally, high analytic thinkers may turn out to self-identify strongly as atheists but not necessarily as agnostics.

As shown by the regression analysis, open-mindedness, prosocial orientation, neuroticism, spirituality, and religious upbringing all uniquely and additively contributed to the agnostic versus atheist identity. This also indicates that the personality predictors have their own role and are not an artefact of religious education and spirituality, which may have some overlap with prosociality or, under conditions, open-mindedness (Saroglou, 2017). Being agnostic but not atheist is thus not (simply) a residue of religious education or current spirituality but corresponds to deeper personality dispositions among certain nonbelievers.

The differences found between agnostics and atheists on dogmatism, cognitive reflection, and spirituality/religiosity were in line with previous research (Hunsberger & Altemeyer, 2006; Lindeman et al., 2019, 2020; Uzarevic et al., 2017, 2020), but the present work extends past research and is fully original in several ways. First, it included additional, more nuanced, aspects of closed- versus open-mindedness, i.e., the need for closure and joyous exploration, and of spirituality/religion, i.e., religious upbringing and spiritual over religious preferences. Second, it included relevant big personality traits, i.e., neuroticism and agreeableness, and specific, focused constructs, i.e., sincerity and social curiosity. Third, the hypotheses were investigated in terms of both between-group differences and correlates of the intensity of self-identification as agnostic or atheist. Finally, the regression analysis clarified the unique role of the individual predictors on the agnostic versus atheist status, i.e., personality, socio-cognitive preferences, and ideological/existential attitudes.

### **Major, Not Unlimited, Varieties of Nonreligious Experiences**

The findings of the regression analysis indicate two possible scenarios. Given some intercorrelation between predictors, it may be that certain agnostics are characterized by most, if not all, of the individual differences mentioned above—they may thus have a specific “profile”. Given though that these predictors were also unique, it may also be that there exist different psychological forms of or motives for being or becoming agnostic. On the basis of the present findings, these could be a neurotic agnosticism, a socially warm agnosticism, an intellectual explorative agnosticism, a spiritual agnosticism, or a religious residue agnosticism.

Beyond this variation among agnostics, from a pragmatic scientific approach with a concern for a positive costs/benefits ratio in terms of number of categories and explained variance, one should be cautious not to generate too numerous types of nonbelievers (seven types in Lindeman et al., 2020, and six types in Silver et al., 2014). For instance, we found almost no differences between the deconverted agnostics and agnostics socialized as nonbelievers—except for stronger dogmatism among the latter. Furthermore, agnostics were overall more similar to atheists, compared to religious believers, in being lower in spirituality, agreeableness, and dogmatism, and higher in social curiosity, joyous exploration, and analytic thinking. The major personality gap seems to be between believers and non-believers.

Nevertheless, when studying nonbelievers, the distinction between agnostics and atheists seems important given the variations found in personality and other individual differences and the fact that these two categories typically, across studies, cover a large majority of nonbelievers. Should we consider the spiritual/not religious or the antireligious as distinct categories of nonbelievers to add next to agnostics and atheists (Lindeman et al., 2019, 2020; Silver et al., 2014)? It may be conceptually coherent—to keep the classification criterion constant—and psychologically meaningful—to take into account the personality characteristics—, to maintain as a major distinction the one between agnostics and atheists,

and introduce spirituality as an orthogonal dimension, preferably as a continuous variable. Several agnostics (half of them here), but also several atheists (a bit less than a third of them here), were open to spirituality while others were not. Spirituality had notable psychological relevance given the personality differences and correlates that were partly common to agnostics and atheists, i.e., low dogmatism, high prosocial orientation, and partly unique to the agnostics, i.e., social and joyous explorative curiosity. The same argument can be made for “being antireligious”: it seems more coherent to consider it as an orthogonal, continuous, dimension—agnostics and atheists may be anti-religious or not—rather than as a distinct, additional, group of nonbelievers.

### **Limitations, Further Questions, and Generalizability Issues**

Though novel in its aim and results, the present study presents the typical limitation of the cross-sectional design, which is not the optimal way to investigate, for instance, how personality longitudinally shapes people’s convictions. Similarly, self-report measures cannot be the unique measures of constructs such as several ones examined here, known to be marked, to some extent, by social desirability. Ideally too, one should also consider in future research the possible role of education and socio-economic status on personality differences between religious believers, agnostics, and atheists.

Several of our findings taken together converge on the conclusion that being atheist and not agnostic, strongly identifying as atheist, or being a non-spiritual atheist, reflects both high analytic thinking and dogmatism. This is not necessarily contradictory: excessive reliance on analytic reasoning, which is at the heart of the scientific approach, may enhance excessive certainty and inflexibility in one’s own ideas. Alternatively, the two may be independent correlates of atheism that may facilitate both rigorous reasoning and low consideration for alternative convictions. However, more research is needed to investigate nonbelievers’ dogmatism with subtler measures than the Altemeyer’s (2002) self-reported

scale (see, e.g., Uzarevic et al., 2017). Though the highest scores on this scale correspond to unjustified certainty, unambiguously denoting dogmatism, simply higher scores compared to lower scores may denote simply some or justified certainty, compared to uncertainty or not holding any firm opinions. Our findings regarding the need for closure and explorative curiosity, indicating differences between agnostics and atheists that were similar to those found for dogmatism, importantly reduce the above concern, but the question of the very nature of dogmatism remains open.

Furthermore, self-identification as agnostic or atheist may not be the only or the optimal way to assess agnosticism or atheism. We attenuated this limitation by using also a continuous measure of the strength of self-identification as agnostic/atheist, and the correlational results converged with the between-group differences. Nevertheless, more theory and research are needed to clarify, for instance, whether agnosticism is a personal existential stance (*I do not know*) or a mere epistemological attitude (*we cannot know*) (Lindeman et al., 2020). Moreover, if we adopt the four basic dimensions of religiousness model (believing, bonding, behaving, and belonging; Saroglou, 2011), it has yet to be clarified whether agnosticism and atheism imply low consideration and rejection of some or all four aspects of religion, i.e., beliefs, rituals, values, and tradition.

Another question is whether various psychological characteristics, when studied among agnostics, atheists, and the religionists, follow a linear relationship, with agnostics falling midway or, in a U/inverted-U shape, with agnostics being on the high or low peak. Some of our findings, i.e., those concerning agreeableness and spirituality, favor the first model, whereas others, i.e., those related to neuroticism and open-mindedness, favor the second. The former are in line with a linear pattern regarding the personality correlates of religiousness (Saroglou, 2012). The latter confirm the idea that certainty in belief or nonbelief is related to positive emotionality, whereas uncertainty is related to emotional instability and

low well-being (Baker et al., 2018; Galen & Kloet, 2011). In principle, agnostics could also be certain about their agnosticism, like atheists about their atheism, but the present work indicated less intensity in agnostics' self-identification compared to the stronger identification of atheists.

Finally, the present results come from a convenient sample in which men were underrepresented. Further research with larger and more heterogeneous samples is needed. Several of the results replicated and extended previous findings in secularized countries, but psychological characteristics of nonbelief and its forms may be sensitive to cultural factors. The percentage of nonbelievers varies across societies, as does the relative proportion of agnostics and atheists within nonbelievers (European Commission, 2019; Pew Research Center, 2019). The two groups may differ not only in terms of majority versus minority status, but also in terms of (family) socialization, with more atheists than agnostics having been raised in nonreligious families in secular countries as suggested by the present work.

## **Conclusion**

The present study offers evidence that agnostics and atheists are characterized by individual differences that make it difficult to infer for which of the two groups the costs/benefits ratio is more positive—or less negative. Agnostics seem more curious about people and more open to others and others' ideas, including opposing views, but also seem less emotionally stable. Atheists, especially the strong identifiers, seem more emotionally stable and more rigorous in reasoning, but also too certain and inflexible about their ideas and less attentive to people—at least to those whose beliefs they dismiss. In both groups of nonbelievers, spirituality reflects open-mindedness and a prosocial orientation.



### References

- Altemeyer, B. (2002). Dogmatic behavior among students: Testing a new measure of dogmatism. *The Journal of Social Psychology, 142*(6), 713-721.
- Ashton, M. C., Lee, K., & de Vries, R. E. (2014). The HEXACO Honesty-Humility, Agreeableness, and Emotionality Factors: A review of research and theory. *Personality and Social Psychology Review, 18*(2), 139-152.
- Baker, J. O., & Smith, B. G. (2009). None too simple: Examining issues of religious nonbelief and nonbelonging in the United States. *Journal for the Scientific Study of Religion, 48*(4), 719-733.
- Baker, J. O., Stroope, S., & Walker, M. H. (2018). Secularity, religiosity, and health: Physical and mental health differences between atheists, agnostics, and nonaffiliated theists compared to religiously affiliated individuals. *Social Science Research, 75*, 44-57.
- Duriez, B. (2003). Vivisecting the religious mind: Religiosity and motivated social cognition. *Mental Health, Religion and Culture, 6*(1), 79-86.
- European Commission (October 2019). *Special Eurobarometer 493: Discrimination in the EU*.  
  
<https://ec.europa.eu/commfrontoffice/publicopinion/index.cfm/survey/getsurveydetail/instruments/special/surveyky/2251>
- Fisher, A. R. (2017). A review and conceptual model of the research on doubt, disaffiliation, and related religious changes. *Psychology of Religion and Spirituality, 9*(4), 358-367.
- Frederick, S. (2005). Cognitive reflection and decision-making. *Journal of Economic Perspectives, 19*(4), 25-42.
- Galen, L. W., & Kloet, J. D. (2011). Mental well-being in the religious and the non-religious: Evidence for a curvilinear relationship. *Mental Health, Religion and Culture, 14*(7), 673-689.

Gervais, W. (2017, January 24). "I'm not an atheist ... I'm an agnostic".

<http://willgervais.com/blog/2017/1/24/im-not-an-atheistim-an-agnostic>

Granqvist, P., & Kirkpatrick, L. A. (2016). Attachment and religious representations and behavior. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment: Theory, research, and clinical applications* (3rd ed., pp. 856–878). Guilford.

Hayward, D., & Krause, N. (2014). Religion, mental health, and well-being: Social aspects. In V. Saroglou (Ed.), *Religion, personality, and social behavior* (pp. 254-280). Psychology Press.

Hayward, R. D., Krause, N., Ironson, G., Hill, P. C., & Emmons, R. (2016). Health and well-being among the non-religious: Atheists, agnostics, and no preference compared with religious group members. *Journal of Religion and Health*, 55(3), 1024-1037.

Hunsberger, B., & Altemeyer, B. (2006). *Atheists: A groundbreaking study of America's nonbelievers*. Prometheus Books.

John, O. P., Naumann, L. P. & Soto, C. J. (2008). Paradigm shift to the integrative Big-Five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 114-158). Guilford.

Kashdan, T. B., Disabato, D. J., Goodman, F. R., & McKnight, P. E. (2020). The Five-Dimensional Curiosity Scale Revised (5DCR): Briefer subscales while separating overt and covert social curiosity. *Personality and Individual Differences*, 157, 109836.

Kruglanski, A.W. (2004). *The psychology of closed mindedness*. Psychology Press.

Kruglanski, A. W., & Webster, D. M. (1996). Motivated closing of the mind: "Seizing" and "freezing." *Psychological Review*, 103(2), 263-283.

Lee, K., & Ashton, M. C. (2018). Psychometric properties of the HEXACO-100. *Assessment*, 25(5), 543-556.

- Lindeman, M., van Elk, M., Lipsanen, J., Marin, P., & Schjoedt, U. (2019). Religious unbelief in three Western European countries: Identifying and characterizing unbeliever types using latent class analysis. *International Journal for the Psychology of Religion*, 29(3), 184-203.
- Lindeman, M., Marin, P., Schjoedt, U., & van Elk, M. (2020). Nonreligious identity in three Western European countries: A closer look at nonbelievers' self-identifications and attitudes towards religion. *International Journal for the Psychology of Religion*, 30(4), 288-303.
- Moore, J. T., & Leach, M. M. (2016). Dogmatism and mental health: A comparison of the religious and secular. *Psychology of Religion and Spirituality*, 8(1), 54-64.
- Napier, J. L., & Jost, J. T. (2008). Why are conservatives happier than liberals? *Psychological Science*, 19(6), 565-572.
- Pedersen, H. F., Birkeland, M. H., Jensen, J. S., Schnell, T., Hvidt, N. C., Sørensen, T., & La Cour, P. (2018). What brings meaning to life in a highly secular society? A study on sources of meaning among Danes. *Scandinavian Journal of Psychology*, 59(6), 678-690.
- Pew Research Center (2015, November 3). *U.S. public becoming less religious*.  
<https://www.pewforum.org/2015/11/03/chapter-4-social-and-political-attitudes/>
- Pew Research Center (2018, November 20). *Where Americans find meaning in life*.  
<https://www.pewforum.org/2018/11/20/where-americans-find-meaning-in-life/>
- Pew Research Centre (2019, October 17). *Decline of Christianity continues at rapid pace*.  
<https://www.pewforum.org/2019/10/17/in-u-s-decline-of-christianity-continues-at-rapid-pace/>
- Piedmont, R. L. (1999). Does spirituality represent the sixth factor of personality? Spiritual transcendence and the five-factor model. *Journal of Personality*, 67(6), 985-1013.

- Roets, A. & Van Hiel, A. (2011). Item selection and validation of a brief, 15-item version of the Need for Closure Scale. *Personality and Individual Differences*, 50(1), 90-94.
- Saroglou, V. (2002). Beyond dogmatism: The need for closure as related to religion. *Mental Health, Religion, and Culture*, 5(2), 183-194.
- Saroglou, V. (2011). Believing, bonding, behaving, and belonging: The big four religious dimensions and cultural variation. *Journal of Cross-Cultural Psychology*, 42(8), 1320-1340.
- Saroglou, V. (2012). Is religion not prosocial at all? Comment on Galen (2012). *Psychological Bulletin*, 138(5), 907-912.
- Saroglou, V. (2013). Religion, spirituality, and altruism. In K. I. Pargament, J. Exline, & J. Jones (Eds.), *APA Handbook of psychology, religion and spirituality* (Vol. 1, pp. 439-457). American Psychological Association.
- Saroglou, V. (2017). Culture, personality, and religiosity. In A. T. Church (Ed.), *The Praeger handbook of personality across cultures* (Vol. 2, pp. 153-184). Praeger.
- Saroglou, V., Karim, M., & Day, J. M. (2020). Personality and values of deconverts: A function of current nonbelief or prior religious socialization? *Mental Health, Religion, and Culture*, 23(2), 139-152.
- Silver, C. F., Coleman, T. J., III, Hood, R. W., Jr., & Holcombe, J. M. (2014). The six types of nonbelief: A qualitative and quantitative study of type and narrative. *Mental Health, Religion and Culture*, 17(10), 990-1001.
- Streib, H. (2021). Leaving religion: Deconversion. *Current Opinion in Psychology*, 40, 139-144.
- Thomson, K.S., & Oppenheimer, D. M. (2016). Investigating an alternate form of the cognitive reflection test. *Judgment and Decision Making*, 11(1), 99-113.

- Uzarevic, F., Saroglou, V., & Clobert, M. (2017). Are atheists undogmatic? *Personality and Individual Differences, 116*, 164-170.
- Uzarevic, F., Saroglou, V., & Muñoz-García, A. (2021). Are atheists unprejudiced? Forms of nonbelief and prejudice toward antiliberal and mainstream religious groups. *Psychology of Religion and Spirituality, 13*(1), 81-93.
- Uzarevic, F., Saroglou, V., & Pichon, I. (2020). Rejecting opposite ideologies without discriminating against ideological opponents? Understanding nonbelievers' outgroup attitudes. *Basic and Applied Social Psychology, 42*(1), 62-77.
- Van Elk, M., & Naaman, L. (2021). Religious unbelief in Israel: A replication study identifying and characterizing unbelievers using Latent Class Analysis. *International Journal for the Psychology of Religion, 31*(2), 51-56.
- Yilmaz, O. (2021). Cognitive styles and religion. *Current Opinion in Psychology, 40*, 150-154.

**Table 1***Descriptive Statistics of all Measures, by Group, and Between-Group Comparisons*

|                               | Christians |           | Agnostics |           | Atheists |           | Comparisons |          |                                    |
|-------------------------------|------------|-----------|-----------|-----------|----------|-----------|-------------|----------|------------------------------------|
|                               | <i>M</i>   | <i>SD</i> | <i>M</i>  | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>F</i>    | $\eta^2$ | Post-hoc                           |
| Neuroticism                   | 2.85       | 0.82      | 2.99      | 0.90      | 2.83     | 0.90      | 1.46        | 0.005    | 2 > (1+3) <sup>†</sup>             |
| Positive items                | 2.76       | 0.94      | 3.01      | 0.96      | 2.75     | 1.02      | 3.35*       | 0.012    | 2 > (1 <sup>†</sup> & 3*)          |
| Reverse items                 | 2.98       | 0.89      | 2.96      | 1.03      | 2.98     | 0.94      | 0.03        | 0.000    |                                    |
| Prosocial orientation         | 3.95       | 0.40      | 3.95      | 0.41      | 3.83     | 0.46      | 4.76**      | 0.017    | (2 & 1) > 3*                       |
| Agreeableness                 | 4.15       | 0.54      | 4.01      | 0.57      | 3.92     | 0.57      | 8.85***     | 0.031    | 1 > (2 <sup>†</sup> & 3*)          |
| Sincerity                     | 3.83       | 0.72      | 3.98      | 0.72      | 3.85     | 0.77      | 1.66        | 0.006    | 2 > (1+3) <sup>†</sup>             |
| Social curiosity              | 5.28       | 0.90      | 5.38      | 0.98      | 5.19     | 1.06      | 1.57        | 0.006    | 2 > 3 <sup>†</sup>                 |
| Closed-/open-mindedness       | 3.33       | 0.54      | 2.87      | 0.66      | 3.13     | 0.63      | 20.65***    | 0.070    | 2 < (3 & 1)***, 3 < 1**            |
| Need for closure <sup>a</sup> | 3.80       | 0.70      | 3.29      | 0.84      | 3.46     | 0.91      | 15.89***    | 0.055    | 1 > (2 & 3)***, 2 < 3 <sup>†</sup> |
| Dogmatism                     | 2.63       | 0.96      | 2.19      | 0.88      | 2.75     | 1.00      | 14.60***    | 0.051    | 2 < (1 & 3)***                     |
| Joyous exploration            | 5.05       | 0.84      | 5.35      | 1.00      | 5.29     | 0.87      | 5.16**      | 0.019    | 1 < (2 & 3)*                       |
| Cognitive reflection          |            |           |           |           |          |           |             |          |                                    |
| Numerical                     | 1.42       | 0.43      | 1.58      | 0.42      | 1.53     | 0.41      | 4.56*       | 0.021    | 1 < (2 & 3)*                       |
| Non-numerical                 | 1.76       | 0.34      | 1.82      | 0.29      | 1.79     | 0.32      | 1.23        | 0.005    |                                    |

## Religious measures

|   |      |      |      |      |      |      |           |       |                    |
|---|------|------|------|------|------|------|-----------|-------|--------------------|
| Religiosity                                       | 4.40 | 1.79 | 1.85 | 1.21 | 1.28 | 0.97 | 340.86*** | 0.554 | 2 < 1***, 2 > 3*** |
| Spirituality                                      | 5.16 | 1.72 | 3.72 | 2.20 | 2.47 | 1.84 | 105.38*** | 0.278 | 2 < 1***, 2 > 3*** |
| Intensity (identification<br>as atheist/agnostic) | —    |      | 3.72 | 1.13 | 4.33 | 0.97 | 28.82***  | 0.072 | 2 < 3***           |

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*Note.* Christians: 1 ( $N = 178$ ). Agnostics: 2 ( $N = 125$ ). Atheists: 3 ( $N = 248$ ). Post-hoc comparisons: Tukey tests. In italics:  $t$ -tests. &: for both groups. +: for the two other groups taken together.

<sup>a</sup> The facet of decisiveness is not included.

\*  $p < .05$ , two-tailed. \*\*  $p < .01$ , two-tailed. \*\*\*  $p < .001$ , two-tailed. †  $p < .05$ , one-tailed.

**Table 2***Hierarchical Logistic Regression of Being Agnostic Versus Atheist on Personality Predictors*

| Personality variables            | <i>B (SE)</i> | Wald  | <i>p</i> |
|----------------------------------|---------------|-------|----------|
| Step 1                           |               |       |          |
| Neuroticism                      | .48 (.15)     | 9.58  | .002     |
| Prosocial orientation            | .67 (.31)     | 4.70  | .030     |
| Closed-mindedness                | -.82 (.23)    | 12.87 | .000     |
| Numerical cognitive reflection   | .27 (.32)     | 0.70  | .404     |
| Step 2                           |               |       |          |
| Neuroticism                      | .45 (.16)     | 7.83  | .005     |
| Prosocial orientation            | .63 (.33)     | 3.78  | .052     |
| Closed-mindedness                | -.65 (.24)    | 7.44  | .006     |
| Numerical cognitive reflection   | .31 (.34)     | 0.85  | .357     |
| Spirituality                     | .25 (.06)     | 15.95 | .000     |
| Religious (family) socialization | .30 (.13)     | 4.85  | .028     |

*Note.*  $R^2 = .13$  (Step 1),  $.21$  (Step 2).  $N = 373$ .



**Table 3**

*Correlations of Personality Indicators with Intensity of Self-Identification and Spirituality, Distinctly for Agnostics and Atheists*

|                         | Intensity (identification as) |          | Spirituality |          |
|-------------------------|-------------------------------|----------|--------------|----------|
|                         | Agnostics                     | Atheists | Agnostics    | Atheists |
| Neuroticism             | -.06                          | -.14*    | .01          | -.01     |
| Positive items          | .01                           | -.11     | -.01         | -.00     |
| Reverse items           | -.16                          | -.17**   | .04          | -.02     |
| Prosocial orientation   | .09                           | .05      | .16          | .09      |
| Agreeableness           | .04                           | -.02     | .04          | .08      |
| Sincerity               | .16                           | .08      | .09          | -.01     |
| Social curiosity        | -.05                          | .07      | .27**        | .11      |
| Closed-/open-mindedness | -.16                          | -.12     | -.21*        | -.13*    |
| Need for closure        | -.22*                         | -.18**   | -.08         | -.07     |
| Dogmatism               | .08                           | .20**    | -.19*        | -.15*    |
| Joyous exploration      | .16                           | .24***   | .30***       | .05      |
| Cognitive reflection    |                               |          |              |          |
| Numerical               | -.02                          | .29***   | .13          | -.08     |
| Non-numerical           | .01                           | .05      | .07          | .08      |
| Religious measures      |                               |          |              |          |
| Religiosity             | -.03                          | -.30***  | .55***       | .39***   |
| Spirituality            | -.01                          | -.16**   | —            | —        |

*Note.*  $N_s = 125$  (Agnostics) and 248 (Atheists).

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ . (two-tailed).