

Assessing Implicit Spirituality in a non-WEIRD Population: Development and Validation of an Implicit Measure of New Age and Paranormal Beliefs

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Abstract

There is a growing interest in the study of the cognitive processes underpinning New Age and Paranormal beliefs (NAPBs). However, there is a scarcity of research on this topic using non-WEIRD (Western, Educated, Industrialized, Rich and Democratic) populations. The main purpose of this study was to develop an implicit association test (IAT) of NAPBs using a non-WEIRD sample (from a general Brazilian population). In addition, the study also explored if the association between implicit and explicit beliefs would be stronger than previously reported for studies conducted with WEIRD populations. The sample consisted of 615 respondents, 65.2% male, with a mean age of 36.5. As expected, the IAT correlated positively with a self-report scale of NAPBs and of spiritual practices, but it presented a higher correlation coefficient ($r = .45, p < .001$) than usually found with WEIRD populations. Additionally, the IAT was able to discriminate between believers and skeptics. The paper ends by addressing the cultural implications of the present findings.

Keywords: New Age spirituality; New Age and Paranormal beliefs; implicit association test, culture and belief.

Assessing Implicit Spirituality in a non-WEIRD Population: Development and Validation of an Implicit Measure of New Age and Paranormal Beliefs

New Age spirituality is an umbrella term for syncretic and modern forms of religiosity that typically combine meditation, alternative medicine, and a variety of Eastern ideas adopted into a Western context (Farias & Granqvist, 2007). Although these ideas and practices are usually traced back to the 1960s counter-cultural movement, or the 1890s with the mass publication of Eastern spiritual book through the Theosophical Society, the rise of popular interest in meditation and mindfulness in the last decade suggests that these have partly become culturally mainstream (Hanegraff, 1996).

A number of studies suggest that concepts of spirituality overlap considerably with New Age and Paranormal beliefs (NAPBs) (Farias, Claridge & Lalljee, 2005; Willard and Norenzayan, 2017). In a study conducted by Lindeman and colleagues (2014), paranormal beliefs were much better predictors of spirituality than constructs such as well-being and purpose in life. Similarly, MacDonald (2000) found paranormal beliefs to be one of the main dimensions underlying different measures of spirituality. Despite the growing interest in studying spirituality and NAPBs from a psychological perspective, most research is still based on self-report measures and relying on data collected from Western Educated Industrialized Rich and Democratic (WEIRD) populations, particularly from the US, Canada,

and Western Europe. In order to address these limitations, in this article we sought to develop a new implicit measure of NAPBs using a sample from a non-WEIRD population.

Implicit associations and the measurement of NAPBs

Over the last two decades, there has been growing interest in the investigation of personality characteristics and cognitive processes associated with the endorsement of NAPBs (e.g., Farias, Claridge & Lalljee, 2005; Lindeman et al., 2016). However, in contrast with the body of research investigating traditional religiosity, the psychometric assessment of NAPBs remains an under-developed field (Francis et al., 2013). Most studies rely on questionnaire measures which only tap into explicit cognitive processes, are usually vulnerable to socially desirable responding, and the validity of the information provided depends, to a great extent, on the self-knowledge skills of respondents (Nisbett & Wilson, 1977), raising concerns about the role of response bias.

This is particularly problematic given the ideological disputes over the legitimacy of paranormal phenomena and the existence of negative social stereotypes toward New Age and Paranormal (NAP) believers, particularly in Western contexts (Northcote, 2007). Evidence indicating NAP believers as more prone to interrogative suggestibility (Haraldsson, 1985), narrative suggestions and source credibility (Ramsey, Venette & Rabalais, 2011) also draw attention to the role of demand characteristics and other response biases in research on NAPBs. Finally, little is known about the implicit cognitive processes – not usually accessible through introspection or self-scrutiny – involved in the formation and maintenance of paranormal attributions (Irwin, 2014).

To overcome problems associated with self-report and introspection, a handful of measures assessing implicit cognition have been developed (for a review see Gawronski and Paine, 2010). The most widely used is the Implicit Association Test (IAT) which is based on speeded responses to word association tasks (Greenwald et al., 1998.). In this test,

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participants have considerable less conscious control over their choices than in traditional self-report measures and are thus less prone to ‘faking’ their responses (Karpinski and Steinman, 2006; Steffens, 2004).

Although explicit and implicit measures of NAPBs are not necessarily expected to correlate with each other the evidence is mixed in this regard, with some studies showing no significant correlation (e.g., Stieger & Hergovich, 2013), while others report positive associations (e.g., Irwin, 2014; Lindeman et al 2016). Implicit-explicit relations may vary according to a range of factors, such as the level of sociocultural acceptance toward a particular attitude accessed through the IAT (e.g. racial prejudice), and one’s level of personal experience with socially controversial topics (e.g. a physician accustomed to HIV-AIDS patients).

Sociocultural factors in the assessment of implicit associations

In contrast to explicit responses, implicit associations are often considered to reflect personal attitudes, though there is some debate regarding the role of extra-personal and cultural factors in the IAT (Greenwald & Nosek, 2008). For example, it is sometimes unclear whether the association of negative attributes with the faces of black people in a race IAT reflect personal racist attitudes or cultural attitudes unrelated to personal feelings, judgments, and behaviors (Uhlmann, Poehlman, & Nosek, 2012). Some researchers also found significant cultural differences in implicit associations (Szeto et al., 2009; Yang et al., 2017), suggesting that individuals from different cultures might present different implicit attitudes, as well as different implicit-explicit relations (Keating, 2017). Many of the factors involved in the cultural underpinnings of implicit associations are still unknown, and the reasons for association or dissociation between explicit and implicit measures “have not been formally distinguished, in part because it is a difficult problem” (Nosek, 2007, p. 68).

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Studies on implicit religiosity and NAPBs have exclusively relied on WEIRD samples (Henrich, Heine, & Norenzayan, 2010). Researchers usually assume that such beliefs rest upon widely distributed, universal properties, including cognitive defaults and general existential needs (Uhlmann et al., 2008), but there have been no systematic comparisons between cultures to back up such assumption. As Tobacyk and Tobacyk (1992, p. 312) have long observed, “both expectations and reinforcement values associated with different beliefs may vary across different sociocultural situations and individuals”. It is likely that the endorsement of NAPBs (both explicit and implicit) will vary according to their socio-cultural availability and reinforcement in diverse social contexts, so that in non-WEIRD cultures where there is a widespread acceptance of NAPBs, such as in Brazil (Brazilian Institute of Geography and Statistics, 2010), explicit and implicit measures of belief will show positive correlations. In WEIRD cultures, NAPBs might be less culturally accepted and more easily seen as idiosyncratic, which could be reflected in the absence of (or weak) correlation between explicit (i.e., cognitively accessible) and implicit (i.e., less accessible) beliefs (Stieger & Hergovich, 2013). In other words, we may be able to find a stronger association between explicit and implicit NAPBs when compared to WEIRD populations, since explicit endorsement of NAPBs is higher and likely to be consistent with implicit beliefs.

Aims of this study

The major aim of this study was to develop an implicit association test (IAT) of NAPBs in a non-WEIRD population; additionally, we wanted to explore if the association between implicit and explicit beliefs would be stronger than previously reported for studies conducted with WEIRD populations (e.g. Stieger & Hergovich, 2013; Irwin, 2014; Green et al., 2016; Lindeman et al., 2016).

We chose Brazil because of the widespread acceptance of both traditional religious beliefs and NAPBs. It is also one of the most religious countries in Latin-America, with a

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wide diversity of religious expressions (Moreira-Almeida et al., 2010, Brazilian Institute of Geography and Statistics, 2010). Although most people claim to be Roman Catholic and Protestant, there also are syncretic religions such as Spiritism (a spiritualist doctrine based on the writings of the French pedagogue Allan Kardec, 1804–1869, of which Brazil has the highest number of practitioners in the world), and Umbanda (an eminently Brazilian religion based on Indigenous, Christian, African, and New Age beliefs), both of which encourage mediumship (i.e., an experience during which individuals believe themselves to be under the mental and/or physical influence/control of deceased people or other supernatural beings), as well as a series of paranormal experiences and practices among their members (Maraldi, Ribeiro & Krippner, 2019). More than 4 million people in Brazil are members of mediumistic religions (Brazilian Institute of Geography and Statistics, 2010) but mediumistic practices are also frequently attended by members of other religions, such as Catholics (Weiss & Nunes, 2005). In contrast to what overall happens in the USA and European countries, people who claim to experience paranormal phenomena or to have psychic abilities are not only socially accepted but also highly valued. These cultural characteristics make this non-WEIRD population particularly relevant to test a new spiritual IAT and the association between implicit and explicit beliefs.

In order to validate the new IAT, we would expect it to (1) correlate positively (moderately to highly) with an explicit measure of NAPBs, as well as spiritual and religious practices (convergent validity); and (2) to be able to discriminate between spiritual believers and skeptics (criterion validity). In this sense, we hypothesized that believers would present faster reaction times in the IAT when associating New Age and Paranormal stimuli with “real” attributes, when compared to the scores of skeptics (which were expected to associate the spiritual stimuli more rapidly with the imaginary attributes). Although previous research has identified significant differences between believers and skeptics in the way their explicit

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and implicit beliefs correlate (Irwin, 2014; Lindeman et al., 2016), these groups were established based on statistical criteria, such as separating those scoring above the median from those scoring below. In the present study, these groups were determined based on the affiliations provided by the respondents.

Development of the New Age and Paranormal Beliefs IAT

The available IATs using paranormal stimuli, designed with WEIRD populations, usually differentiate between religious and paranormal nouns, defining psychic/paranormal phenomena as a specific category of beliefs. By contrast, in Brazil there is a significant overlap between religious and paranormal ideas (Maraldi, 2016), and the term “paranormal” is not commonly used. Instead, believers describe paranormal phenomena as “spiritual” as the former often has a negative connotation, possibly indicating fictional or odd beliefs and experiences. We thus used the term ‘spiritual’ and not ‘paranormal’ in the new IAT.

The original IAT works by measuring reaction times on associations between nouns (e.g. black, white) and attributes (e.g. good, bad). The IAT blocks are sets of trials in which these different pairs of words are exchanged and associated in multiple ways (for example, black and good vs. white and bad or black and bad vs. white and good). The computerized task consists in associating a series of stimuli with their respective categories by pressing certain keys (e.g. Z for stimuli displayed on the left-hand side of the screen and M for attributes on the right-hand side). The order of categories (and, consequently, the associated keys) are then changed during the test. Since part of the results may be determined by individual variation in terms of practice and response speed, test trials are preceded by practice trials. The original IAT comprises a total of 7 blocks, five of which are practice blocks.

One of the problems with the original IAT is that a counter-category has necessarily to follow the category of interest. In many cases, the target will have a natural and distinct

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complement (male/female), but, in other cases, the choice will be highly subjective or ambiguous (for example, liberal/conservative, liberal/socialist). Additionally, the choice of four categories makes the test much longer and somewhat superfluous, if the purpose is to only contrast a target category with a series of attributes (Bluemke & Friese, 2008). For all these reasons, we used a Single-Target IAT in this study as has been previously done for religious IATs (e.g. Jong, Halberstadt, & Bluemke, 2012).

The new IAT comprised only one target category (NAPBs), and two attribute categories (real or imaginary). We used two practice blocks and two test trials where participants were instructed to associate the target either with the category ‘Real’ or ‘Imaginary’ words, as quickly and accurately as possible by pressing ‘Z’ for left-key responses and ‘M’ for right-key responses. In each trial, a fixation cross was first presented to participants (for 750 ms) to focus their attention on the part of the screen where the stimuli would subsequently appear. The fixation cross was then followed by the stimulus words. . Participants received immediate feedback on their performance; thus, when a wrong association was made an ‘X’ appeared on the screen, and the respondent had to press the other key (correct association) in order to move to the next trial. The order of stimuli presentation in each block was randomized.

The stimuli for the new IAT were chosen based on their potential to indicate spiritual, New Age and paranormal beliefs, including words such as “spiritual” and “transcendent”. Despite its many different interpretations, ‘energy’ is also a recurrent theme in New Age and spiritual groups, usually referring to spiritual energies and healing practices, such as Reiki. ‘Energy’ may also indicate anomalous bodily sensations, experiences of ‘environmental sensitivity’, and telepathic impressions. Other common themes are “soul” (mind/consciousness as independent of the brain), ‘clairvoyance’, and ‘premonition’

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(considered as spiritual gifts or abilities). The NAPBs IAT final structure is presented below in tables 1 and 2.

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Method

Participants and procedure

The data collection was conducted online using Qualtrics and was carried out between 3 July and 17 August 2016. Participants were recruited through social media. Potential believers and skeptics (atheists and agnostics) were targeted through Facebook groups. The only exclusion criterion was age (under 18-year olds were not eligible to take part). The study was presented to participants as a “Scientific study of religious and spiritual beliefs and experiences” and they received no compensation for their time.

After completing the IAT, participants filled in a number of self-report measures which order was randomized across the sample. To ensure participants were paying attention to the survey we used two control questions: ‘I am too distracted to pay attention to this questionnaire’ and ‘I am not paying attention to the questionnaire’. These questions were presented in random order and interspersed with other items in the questionnaire. Thirty-four participants were excluded for answering ‘true’ to at least one of the screening questions or showing a high number of errors in the IAT (above 10%, the same cut-off value employed by Stieger et al., 2011). Inattentive responding in surveys (Oppenheimer, Meyvis & Davidenko, 2009) and high error rates in the IAT (Greenwald, McGhee & Schwartz, 1998) are known to decrease the validity of the data. More specifically, error rates in the IAT have been associated with responding more rapidly than appropriate for the task (Greenwald, McGhee

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& Schwartz, 1998) Thus, the resulting sample consisted of 615 respondents, of which 65.2% were male, with a mean age of 36.53 (13.52), age range: 18-81.

Self-report measures

Religious affiliation, attendance and spiritual practices. We assessed participants' religious or non-religious affiliations based on an extensive list of options, including 'atheist', and 'agnostic'. Additionally, participants were asked about the frequency of spiritual practices, such as prayer, meditation and rituals (responses ranged from 1 = *never* to 5 = *more than once a day*), and how often they attended religious or spiritual services (ranging from 1 = *never* to 5 = *more than once a week*).

Explicit Paranormal Belief. We used an adapted version of the Revised Paranormal Belief Scale (RPBS; Tobacyk, 2004). The RPBS items cover different modalities of New Age and paranormal as well as traditional religious beliefs (Lange, Irwin & Houran, 2000), such as afterlife, reincarnation, psychokinesis, God, heaven, and hell. For our study, we used the version by Lindeman et al. (2016), which excludes items rarely scored positively by respondents – such as belief in cryptozoological creatures – except for an item on belief in extraterrestrial life, which we maintained for the present study, but with a new description. Instead of “There is life on other planets”, which might not indicate a paranormal belief, the item was rewritten as follows: “Extraterrestrial life forms have either visited the Earth or maintained direct personal contact with humans”. In addition to Lindeman's improvements, we have excluded three items of superstitious beliefs (“black cats can bring bad luck”, “if you break a mirror you will have bad luck”, “The number ‘13’ is unlucky”) which did not form a coherent factor in a previous exploratory analysis with a Brazilian sample (Maraldi, 2014). Finally, we have also rewritten some items which previously presented confusions between belief and experience — in two items of the original RPBS concerning out-of-body experiences, it was not clear whether those scoring higher believe or have experienced this

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phenomenon. The resulting revised scale included 21 items. An exploratory factor analysis conducted on a large unpublished dataset with a Brazilian sample ($N = 1678$, principal axis factoring, oblimin rotation, $KMO = .96$, Bartlett's Test of Sphericity, $p < .001$) extracted one factor accounting for 62.91% of variance (Maraldi, 2016). This finding was interpreted as consistent with Brazilian syncretic religiosity and spirituality. For our study, the scale showed excellent internal consistency ($\alpha = .96$). For the analyses below, we used the mean score of each participant.

The NAPBs Implicit Association Test. Following guidelines specified by Bluemke and Friese (2008), participants' NAPBs-IAT scores were calculated as the difference between the mean standardized response latencies in the two test phases, thus excluding the practice trials (analogous to the IAT D-score; Greenwald, Nosek, & Banaji, 2003). The same procedure was employed by Jong, Halberstadt & Bluemke (2012) for an implicit measure of religious beliefs. A positive value reflected faster reaction times when Spiritual and Imaginary words were presented together, and a negative value indicated a faster reaction time to associating Spiritual with Real words. However, to help interpretability, we refer to faster or slower IAT association scores as stronger or weaker endorsement of New Age and Paranormal beliefs.

The stimuli, data, questionnaire material (including the Brazilian Portuguese version of the Revised Paranormal Belief Scale), and the Qualtrics version of the NAPBs IAT developed for this study can all be found in the Open Science Framework repository through the following link:

https://osf.io/8cw24/?view_only=e12ef6fb02464ee5ba5e342b91554489

According to Bluemke and Friese (2008) there are three ways of establishing the reliability and validity of an IAT: 1) construct validity (convergent and discriminant validity), 2) temporal stability (test-retest reliability), and 3) internal consistency. Given the cross-

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sectional methodology employed in the present study, retest data was not obtained. The focus was on construct validity (as discussed before) and internal consistency. To determine internal consistency, the same procedure conducted by Stieger et al. (2011) was employed: differences were calculated for each response time in the relevant blocks (e.g. first response time in Block 2, first response time in Block 3 and so on). The resulting Cronbach's α was .83, a similar value to the one found by other researchers (Bluemke & Friese, 2008). Split-half reliability was also confirmed based on the Spearman-Brown coefficient (.84) and the Guttman Split-Half coefficient (.83).

Results

Demographic characteristics

Table 3 presents the Pearson correlation coefficient between variables, including gender and age. There was no age difference between male, $M_{age} = 36.13$ (13.40), and female participants, $M_{age} = 37.26$ (13.75). Females scored significantly higher than males on all self-report scales. They also presented faster reaction times than males on the IAT, indicating a stronger implicit endorsement of NAPBs. The self-report measure of belief showed a weak but positive correlation with age. The same pattern was not found for the implicit measure.

Correlations between variables

The NAPBs IAT correlated significantly with the RPBS score. Further, the more an individual engaged with spiritual practices, the faster they associated Spiritual stimuli with Real attributes. The same result was found for frequency of religious attendance.

>> Insert table 3 around here <<

Differences between groups

Table 4 presents the mean and standard deviation of scores for each group. Of those who answered the survey, 327 defined themselves as either atheist or agnostic. This group is hereby called "Skeptics". A second group, named "Believers", was formed of members of

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diverse religions, including Christian, Spiritualist, Afro-Brazilian, and New Age groups, comprising a total of 288 participants.

The groups differed in age, $t(587.71) = -3.66, p < .001$. Skeptics were significantly younger than Believers. The groups also differed in relation to gender (Fisher's exact test, $p < .001$). Women were more prevalent among Believers (69.2%, adjusted residual = 8.1), while men were more prevalent among Skeptics (79.8%). In view of these findings, gender and age were controlled in the subsequent analyses. A series of one-way analyses of covariance were carried out.

There were significant differences between groups in terms of spiritual practice, $F(1,605) = 240.49, p < .001, \eta^2_p = .28$, and religious attendance, $F(1, 607) = 253.12, p < .001, \eta^2_p = .29$. As expected, Skeptics scored significantly lower ($p < .001$) than Believers, both on spiritual practice and religious attendance.

In relation to the IAT score, $F(1, 611) = 43.76, p < 0,001, \eta^2_p = .07$, Believers significantly associated Spiritual with Real faster than Skeptics ($p < .001$). The groups also differed in relation to their scores on the Revised Paranormal Belief scale, $F(1,611) = 440.53, p < .001, \eta^2_p = .42$, with Believers scoring significantly higher than Skeptics ($p < .001$).

>> Insert table 4 around here <<

The strength of the correlations between explicit and implicit NAPBs beliefs also differed between groups. Believers presented a higher coefficient ($r = .40, p < .001$) than Skeptics ($r = .24, p < .001$). The difference between the two correlation coefficients was significant, $Z = -2.20, p = .01$.

Discussion

As expected, the implicit measure was moderately to strongly correlated with the RPBS mean score ($r = .45, p < .001$). To the best of our knowledge, this is the strongest correlation coefficient between implicit and explicit NAPBs reported in the literature to date.

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Studies with WEIRD populations usually report correlation coefficients ranging from .01 to .36 (Stieger & Hergovich, 2013; Irwin, 2014; Green et al., 2016; Lindeman et al, 2016). In contrast to what was observed with a sample of Austrian participants (Stieger and Hergovich, 2013), our NAPBs IAT showed a significant association with the Revised Paranormal Belief Scale. This suggests that in this study the explicit endorsement of NAPBs is not inconsistent with implicit beliefs, and that implicit-explicit correlation patterns for measures of spiritual beliefs may differ across cultures.

Stieger & Hergovich (2013) have argued that traditional religious beliefs (such as God, Heaven and Hell) reflect culturally accepted beliefs, while New Age and Paranormal beliefs represent more idiosyncratic and less accepted ideas — this could explain the discrepancy found by the authors between explicit and implicit NAPBs, as these would be less socially acceptable or desirable. However, this might differ according to the cultural context. In a non-WEIRD country like Brazil that is receptive to a variety of paranormal and religious ideas, the endorsement of New Age and Paranormal beliefs is culturally acceptable, which probably explains the strong association between explicit and implicit beliefs. Thus, the lower associations found in WEIRD cultures between explicit and implicit measures is probably more reflective of particular cultural biases than of any universal cognitive dissociation between explicit and implicit endorsement of such beliefs.

An alternative hypothesis for the correlation found is that we recruited a more polarized sample (in terms of religious/non-religious affiliation) than other studies, which may have inflated the correlation between explicit and implicit NAPBs. In this sense, it is important to consider the potential role of methodological as well as cultural differences in the results. In any case, the findings seem to corroborate the impact of group factors in the relationship between explicit and implicit NAPBs. Interestingly, the correlation between implicit and explicit beliefs differed between groups, with skeptics presenting a weaker

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correlation. This finding indicates different degrees of association between implicit and explicit beliefs as a function of group membership. It is likely that our skeptic group adopted a highly critical attitude towards New Age and Paranormal beliefs which closely resembles that of WEIRD cultures, though at an implicit level they were more accepting of these beliefs given their cultural prominence (see also discussion on ‘foxhole’ atheism by Jong, Halberstadt, & Bluemke, 2012). Future research should carefully consider that the predominance of either spiritual or skeptic individuals in convenience samples, if not appropriately acknowledged, may eventually lead to the wrong conclusions (e.g. by suggesting a lack of association or a weak relationship between explicit and implicit beliefs).

Overall, the results attest to the validity of our new IAT. As hypothesized, the IAT presented weak to moderate positive correlations with religious attendance and spiritual practice. Finally, the test was able to discriminate Believers from Skeptics (criterion validity).

The study also had limitations. First, although restricting the number of targets to only 8 might be a defensible approach for the sake of brevity and simplicity, Irwin (2014, p. 14) has pointed out that “frequent repetition of a relatively small number of targets may compromise the IAT effect size”, since participants become accustomed to the stimuli. This could eventually explain the small effect size (partial eta-squared) for the IAT, compared to the explicit and behavioral measures (but see Greenwald, Banaji and Nosek, 2015 for a discussion of statistically small effects of the IAT). Second, the hypotheses for the present study were not pre-registered. Pre-registration is important to help determine the replicability and validity of the findings (Nelson, Simmons, & Simonsohn, 2018; Simmons, Nelson, & Simonsohn, 2011) and thus are strongly recommended for future investigations. Third, using a convenience sample from an online survey might have limited the generalizability of the present findings to the Brazilian population. Four, our explicit measure of NAPBs was submitted to a significant revision concerning item inclusion and item rewording, which

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could have increased the correlation between explicit and implicit NAPBs. Future studies employing similar versions of the scale we used are required to provide greater support for our cultural hypothesis. Finally, while the purpose of this study was to validate a new belief IAT with a non-WEIRD population, it could be argued that the study would be more convincing if it had included a second country with an equally religious population but from a different culture (e.g. with an Islamic or Hindu majority).

Conclusion

The psychological study of religion and spirituality has, for over one hundred years, attempted to construct theories of universal or quasi-universal scope, despite it relying almost exclusively on Christian Western samples, particularly US and UK-based. At the 2016 conference of the American Academy of Religion, in the section on Cognitive Science of Religion, a number of critical comments were raised about the potential ‘colonialist-like’ endeavor of the field, i.e. the attempt of an elite of Western academics to formulate what religion is and how it works at a universal level, thus imposing upon non-Western cultures their ideologies.

Such criticisms, regardless of the extent of their truthfulness or accuracy, remind us that the psychological study of belief is inherently sensitive to cultural variation — and that socio-cultural factors are far more powerful in explaining belief, or lack of, than cognitive or personality dispositions (Willard and Cingl, 2017). A powerful example of how lack of cultural sensitivity in this field has led to wrong conclusions is the portrayal of believers as more intuitive and less analytical than skeptics (e.g. Gervais & Norenzayan; Shenhav, Rand, and Greene, 2012); recent studies, using neuroscience paradigms and wider cultural samples, have falsified a growing literature that mostly relied on WEIRD samples (Farias et al., 2017; Gervais et al., 2018).

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The present study aimed to contribute, in a modest way, to assess belief at an implicit and explicit level with a population that is removed from the usual geography of psychological studies of belief. Our findings highlight the importance of looking beyond cognitive variables and individual differences in NAPBs to investigate cultural factors potentially involved in the emergence and maintenance of beliefs. Socialization processes, enculturation and other psychosocial variables (such as group membership) might be equally important in the development of implicit spiritual beliefs.

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Table 1. Sequence of trial blocks in the NAPBs IAT

Block	N° of trials	Task function	Words assigned to left-key response	Words assigned to right-key response
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1	42	Practice	Real	Imaginary
2	84	Test	Real	Imaginary + Spiritual
3	84	Test	Real + Spiritual	Imaginary

NAPBs IAT = New Age and Paranormal Beliefs Implicit Association Test

Table 2. Words (stimuli) used in the NAPBs IAT (English translations are between brackets)

Target words	Attributes	
Espiritual (Spiritual),	Real	Imaginary
Alma (Soul),	Real (Real),	Imaginário (Imaginary),
Premonição (Premonition),	Genuíno (Genuine),	Falso (False),
Clarividência (Clairvoyance),	Existente (Existent),	Fictício (Fictitious),
Telepatia (Telepathy),	Efetivo (Effective),	Fantasiado (Fanciful),
Energia (Energy),	Verdadeiro (True),	Enganoso (Mistaken),
Espiritual (Spiritual),	Válido (Valid), Factual	Irreal (Unreal),
Transcendente (Transcendent)	(Factual).	Ilusório (Illusory)

Table 3. Pearson correlations between variables ($N = 615$)

	1	2	3	4	5	6
1.NAPBs IAT	-	.45**	.33**	.26**	.08	.25**
2.RPBS		-	.63**	.60**	.23**	.41**
3.Spiritual Practice			-	.54**	.12*	.25**
4.Religious Attendance				-	.17	.26**

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5.Age	-	.04
6.Gender		-

Notes. Gender = 1 (Male), 2 (Female), RPBS = Revised Paranormal Belief Scale, NAPBs

IAT = New Age and Paranormal Beliefs Implicit Association Test

* $p < .01$ (two-tailed)

** $p < .001$ (two-tailed)

Table 4. Means and standard deviations (between brackets) for Believers ($n = 288$),
Skeptics ($n = 327$), and the total sample ($N = 615$)

	Believers	Skeptics	Total
NAPBs IAT	.10 (.24)	.27 (.24)	.19 (.26)
RPBS	3.91 (1.50)	1.61 (.79)	2.69 (1.64)
Spiritual Practice	3.02 (1.15)	1.57 (.90)	2.25 (1.25)
Religious Attendance	2.62 (1.28)	1.21 (.55)	1.87 (1.20)
Age	38.64 (13.95)	34.66 (12.87)	36.53 (13.52)

Notes. RPBS = Revised Paranormal Belief Scale, NAPBs IAT = New Age and Paranormal Beliefs Implicit Association Test.