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RESEARCH

Anxiety Predicts Increases in Struggles with Religious/Spiritual Doubt Over Two Weeks, One Month, and One Year

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ABSTRACT

Struggles with religious/spiritual (r/s) doubt occur when uncertainty, questions, and hesitancy about aspects of r/s beliefs and experiences become a source of conflict. Cross-sectional research suggests that doubt-related struggles correlate with anxiety, yet no studies have investigated the temporal patterning of the associations between these constructs. We employed three large samples (*N*s = 268, 527, 292) to examine concurrent and prospective associations between struggles with r/s doubt and anxiety over three time frames: 2 weeks, 1 month, and 1 year. Analyses revealed that (a) each construct exhibited high cross-temporal stability; (b) there were moderate, positive concurrent associations between anxiety and doubt-related struggles; (c) anxiety predicted increases in doubt-related struggles over each time frame; and (d) there was mixed evidence regarding whether doubt-related struggles predicted changes in anxiety over time. The discussion focuses on how anxiety may begin to undermine confidence in one's r/s worldview, thus destabilizing one's r/s beliefs.

Most people in the United States report high levels of religious/spiritual (r/s) faith (Gallup, 2015), and yet it is common for doubt to pervade r/s life (Hunsberger, McKenzie, Pratt, & Pancer, 1993). Doubt encompasses uncertainty, questions, and hesitancy about aspects of r/s beliefs and experiences (Beck, 2007; Hunsberger et al., 1993; Puffer, 2013). *Doubt-related struggles* occur when doubts become a source of conflict or negative emotions (Exline, Pargament, Grubbs, & Yali, 2014). Research shows that struggles with doubt about r/s issues are related to a myriad of negative psychological outcomes such as interpersonal difficulties (Krause & Wulff, 2004), problems adjusting to traumatic events (Ellison, 1991), and depression (Galek, Krause, Ellison, Kudler, & Flannelly, 2007), among others. However, most of this research is cross-sectional, and thus the direction of the associations between doubt-related struggles and well-being is ambiguous at this stage. The purpose of the present research is to examine the relationships between doubt-related struggles and anxiety, both concurrently and over time; specifically we investigated the relationships between doubt-related struggles and anxiety over 2 weeks, 1 month, and 1 year.

There is a strong theoretical foundation linking struggles with r/s doubt to anxiety. In general, doubt may convey both conflict about endorsing one belief over another (Puffer, 2013) as well as uncertainty about the correctness of a particular belief (Sayre, 1997). From a neurophysiological standpoint, conflict and uncertainty are understood as arising from the activation of a biobehavioral system termed the Behavioral Inhibition System (Corr, 2008; Gray, 1982; Gray & McNaughton, 2000). When a person is in a state of conflict or uncertainty, the Behavioral Inhibition System

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produces the phenomenological experience of anxiety: worry, apprehension, and attention to negative outcomes (Corr, 2011). The experience of doubt-related struggle might be especially likely to lead to anxiety, as the conflicts and uncertainties related to struggles with doubt (e.g., doubting one's belief in God) are perceived as central to one's identity and highly meaningful (Pargament, 2013). Anxiety may lead to struggles with r/s doubt as well. Anxiety is related to viewing uncertainty in the environment as unsettling (Carleton et al., 2012); thus, perceiving the world as threatening and unpredictable may lead to questions and doubts about one's most fundamental beliefs.

Empirical evidence from cross-sectional studies suggests that there are concurrent relations between doubt-related struggles and anxiety. In an early study on this topic, it was determined that questioning r/s beliefs was related to anxiety in seminary students, university students, and church members (Kojetin, McIntosh, Bridges, & Spilka, 1987). A large (N = 8,500) web-based study (Galek et al., 2007) showed that doubts about religious faith were related to emotional/physical anxiety as well as to phobic anxiety, such as anxiety about leaving home or encountering a specific phobic stimulus. A recent study (Exline et al., 2014) determined that struggles with doubt were related with generalized anxiety at the zero-order level, although this association diminished when controlling for a variety of other r/s struggles (e.g., anger toward God, concern that one's life is not meaningful). Going beyond anxiety, doubt-related struggles are associated with a variety of other mental health difficulties such as higher levels of general distress and depression (Ellison & Lee, 2010; Krause, Ingersoll-Dayton, Ellison, & Wulff, 1999), as well as lower levels of life satisfaction and happiness (Ellison, 1991; Krause & Wulff, 2004).

The cross-sectional designs employed by the studies just described, although useful for establishing concurrent associations between variables, do not speak to the directionality of the associations between doubt and anxiety. Rather, longitudinal studies are needed to assess whether the direction of the associations flows from doubt to anxiety, anxiety to doubt, or in both directions. Using Pargament's (2009) terminology regarding causal relations between distress and r/s struggles, it has yet to be determined whether doubt-related struggles in these instances should be thought of as primary struggles (in which struggles lead to distress), secondary struggles (in which distress leads to struggles), or complex struggles (in which the effects are bidirectional). In addition, it may be that struggles and distress simply accompany one another concurrently with no directional effects.

Pirutinsky, Rosmarin, Pargament, and Midlarsky (2011) provided an elegant method for disentangling the directional associations between r/s struggles and mental health through the use of longitudinal design and structural equation modeling. Specifically, Pirutinsky et al. was interested in the associations between negative religious coping (anger at God and religious disengagement) and depressive symptoms in Orthodox Jews. Each of these constructs was assessed at two separate time points (2 weeks apart), and four structural equation models were compared to one another. The first model specified concurrent association between the constructs and autocorrelations across time periods (*accompaniment model*). The second model added to the first model a path from depression at Time 1 to negative religious coping at Time 2 (*secondary struggles model*). The third model added to the first model a path from negative religious coping at Time 1 to depression at Time 2 (*primary struggles model*). The fourth model included all paths between variables (*complex struggles model*). Pirutinsky et al. found support for the primary struggles model, suggesting that negative religious coping led to increases in depression over time.

Building on the precedent in Pirutinsky and colleagues' (2011) work, these four conceptual models are illustrated for doubt-related struggle and anxiety in Figure 1. From the literature just reviewed, we expected positive, concurrent associations between anxiety and doubt-related struggles (Paths 1 and 2 in Figure 1). Anxiety and r/s doubt have been shown to exhibit moderate degrees of temporal stability (Delgadillo et al., 2012; Krause & Ellison, 2009), and thus we expected positive, prospective associations within-constructs (Paths 3 and 4). These paths together (1–4) constitute the accompaniment model. Each other model (secondary struggles, primary struggles, complex) specifies

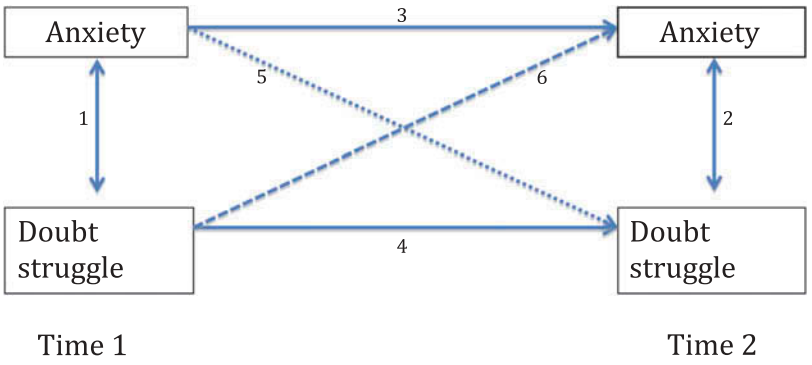

Figure 1. Models of the relations between anxiety and doubt struggles concurrently and over time. *Notes*. The accompaniment model includes only the solid arrows (Paths 1–4). The secondary struggles model includes all solid arrows and the dotted arrow (Paths 1–5). The primary struggles model includes all solid arrows and the dashed arrow (Paths 1–4, 6). The complex struggles model includes all arrows (Paths 1–6).

at least one additional longitudinal association between anxiety and doubt-related struggles; we clarify the meaning of each model next.

The secondary struggles model specifies that anxiety at Time 1 will predict increases in doubt-related struggles at Time 2 (Path 5), above and beyond doubt struggles at Time 1 and anxiety at Time 2. Support for this model would mean that anxiety is a precursor of later confusion and questioning around r/s beliefs. The primary struggles model makes the reverse prediction, namely, that doubt-related struggles at Time 1 will predict increases in anxiety over time (Path 6), above and beyond initial anxiety and concurrent doubt-related struggles. The complex struggles model specifies that prospective associations should flow both from anxiety to doubt and from doubt to anxiety.

It is important to distinguish between these models not only for theoretical reasons but also for practical reasons. For instance, the secondary model suggests that treating anxiety may directly allay struggles with r/s doubt. The primary model suggests that the struggles may need to be addressed more directly. The complex model suggests that both aspects need to be considered when people seek out help. In this article, we test these models against each other in the context of longitudinal designs spanning different lengths of time.

Method

Participants and procedure

This project consisted of three samples of U.S. participants. Participants in each sample completed an initial survey (hereafter: T1) and a follow-up survey (hereafter: T2). In each sample, we employed a different time frame over which to examine longitudinal associations: 2 weeks, 1 month, and 1 year. Thus, the samples will be referred to hereafter at the *two-week* sample, the *one-month* sample, and the *one-year* sample. Participant ethnicities and religious affiliations for each sample are presented in Table 1.

The two-week sample consisted of 268 undergraduates (167 women, 101 men) attending a private research university in the Great Lakes region of the United States, with a mean age of 19.3 (SD = 2.6). All participants received partial credit in introductory psychology for completing the T1 and T2 surveys.

The one-month sample consisted of 527 adults (307 women, 220 men) recruited via Amazon's Mechanical Turk (MTurk) website, with a mean age of 36.0 (SD = 11.6). MTurk is an online labor market where researchers (or any individual or company) may post tasks. A growing body of

Table 1. Participant Characteristics.

Sample	Ethnicity	Religious Affiliation
Two-week	• Caucasian (58%) • Black/African American (8%) • Latino/Hispanic (3%) • Asian/Pacific Islander (30%) • Other ethnicities/preferred not to say (3%) • Black/African American (8%) • Black/African American (8%) • Black/African American (8%) • Black/African American (8%)	• Christian (43%; 20% Catholic, 10% Protestant, 15% unspecified Christian) • Jewish (3%) • Hindu (5%) • Muslim (2%) • Buddhist (3%) • Atheist (1%) • Agnostic (8%) • "Spiritual," "Other," or "unsure" (6%) • None (15%)
One-month	• Caucasian (81%) • Black/African American (9%) • Latino/Hispanic (5%) • Asian/Pacific Islander (6%) • Other ethnicities/preferred not to say (5%)	• Christian (43%; 10% Catholic, 20% Protestant, 13% unspecified Christian) • Jewish (2%) • Hindu (1%) • Muslim (1%) • Buddhist (2%) • Atheist (15%) • Agnostic (19%) • "Spiritual" or "Other" (6%) • None (10%)
One-year	• Caucasian (68%) • Black/African American (7%) • Latino/Hispanic (9%) • Asian/Pacific Islander (20%) • Other ethnicities/preferred not to say (5%)	• Christian (72%; 16% Catholic, 18% Protestant, 37% unspecified Christian) • Jewish (2%) • Hindu (2%) • Muslim (1%) • Buddhist (1%) • Atheist (6%) • Agnostic (8%) • "Spiritual" or "Other" (1%) • None (7%)

Note. Ethnicities and religious affiliations summed to more than 100% because people were allowed to choose more than one ethnicity and religious affiliation category.

research suggests that data collected using MTurk are reliable and valid for studying normal and clinical populations, and an MTurk sample carries advantages over traditional student samples in terms of diversity (Paolacci & Chandler, 2014). Participants were compensated $3 for completing the T1 survey and $2 for completing the T2 survey.

The one-year sample consisted of 292 undergraduates (198 women, 94 men) attending one of three universities, with a mean age of 18.4 at T1 (SD = 0.6). Two of the universities are located in the Great Lakes region; one is a large, public university and the other is a private research university. The third site is a private Christian university in the western United States. All participants began the study during their 1st year of college. Participants received partial credit in introductory psychology for completing the T1 survey and a gift card ($20) to the online retailer Amazon.com in exchange for completing the T2 survey.

Measures

All participants in each sample completed measures assessing generalized anxiety and doubt-related struggles at T1 and T2.

Generalized anxiety. Participants completed the seven-item Generalized Anxiety Scale–7 (Spitzer, Kroenke, Williams, & Löwe, 2006). The Generalized Anxiety Scale–7 measures symptoms of generalized anxiety (e.g., "feeling nervous, anxious, or on edge," "being so restless that

it is hard to sit still") during the previous 2 weeks on a 4-point scale from 1 (*not at all*) to 4 (*nearly every day*).

Doubt-related struggle. We assessed the extent to which people are troubled by doubts or questions about their r/s beliefs with the four-item Doubt subscale from the Religious and Spiritual Struggles scale (Exline et al., 2014). This measure assesses the degree to which participants experience doubt-related struggle (e.g., "struggled to figure out what I really believe about religion/spirituality," "felt troubled by doubts or questions about religion or spirituality") on a 5-point scale ranging from 1 (*not at all/does not apply*) to 5 (*a great deal*).

The prompt preceding the Doubt subscale on the T1 questionnaire in each sample read, "Over the past few months, to what extent have you had each of the experiences listed below?" The prompt for the T2 questionnaire differed across samples. For the two-week sample, the prompt read, "Over the past two weeks, to what extent have you had each of the experiences listed below?" For the one-month sample, the prompt read, "Over the past few weeks, to what extent have you had each of the experiences listed below?" For the one-year sample, the prompt read, "Over the past few months, to what extent have you had each of the experiences listed below?"

Analyses

We calculated descriptive statistics, alpha reliabilities, and zero-order correlations using the base functions and the *psych* package (Revelle, 2015) in the statistical program R (R Development Core Team, 2014). To evaluate the conceptual models depicted in Figure 1, we employed path analytic techniques using the *lavaan* package (Rosseel, 2012) in R. The models were fit using the maximum likelihood estimation method.

Results

Descriptive statistics, reliabilities, and intercorrelations

Descriptive statistics, alpha reliabilities, and zero-order correlations are shown in Table 2. Participants in each sample reported low amounts of anxiety and doubt-related struggles at each

Table 2. Descriptive Statistics, Reliabilities, and Bivariate Correlations Among Variables.

					Correlations			
Variables	M	SD	Range	α	1.	2.	3.	4.
Two-week study[a]								
1. T1 Anxiety	1.94	0.71	1–4	.90				
2. T2 Anxiety	1.83	0.71	1–4	.92	.67			
3. T1 Doubt struggles	1.66	0.82	1–5	.88	.23	.23		
4. T2 Doubt struggles	1.46	0.71	1–5	.91	.24	.29	.61	
One-month study[b]								
1. T1 Anxiety	1.75	0.75	1–4	.93				
2. T2 Anxiety	1.80	0.81	1–4	.94	.73			
3. T1 Doubt struggles	1.61	0.93	1–5	.92	.27	.24		
4. T2 Doubt struggles	1.43	0.76	1–5	.90	.26	.26	.73	
One-year study[c]								
1. T1 Anxiety	1.93	0.73	1–4	.90				
2. T2 Anxiety	1.95	0.78	1–4	.92	.57			
3. T1 Doubt struggles	1.83	1.00	1–5	.90	.27	.20		
4. T2 Doubt struggles	1.87	0.99	1–5	.90	.28	.30	.63	

Notes. Means were calculated as the average item mean for each measure.
All correlations had p values < .001. T1 = initial survey; T2 = follow-up survey.
[a]N = 268. [b]N = 527. [c]N = 292.

time point. Both anxiety and doubt-related struggles exhibited high degrees of temporal stability across each time frame, as shown by the strong correlations (range = .57–.73) for each construct across time. There were modest correlations between anxiety and doubt concurrently and across time (range = .20–.30).

Path Analyses

Fit statistics for each model in each sample are shown in Table 3. The complex struggles model is a saturated model and thus by definition fit the data perfectly in each sample, that is, $\chi^2(0) = 0$, $p = 1.00$. Using the criteria of comparative fit index ≥ .95, root mean square error of approximation ≤ .08, and standardized root mean square residual ≤ .08 (see Hooper, Coughlan, & Mullen, 2008), the accompaniment model and primary struggles model provided acceptable fits to the data in the one-month sample only, whereas the secondary struggles model fit the data well in each sample. Next, the complex struggles model was compared to each other model in each sample by examining significant changes in the chi-square values and corresponding degrees of freedom (Wheaton, Muthén, Alwin, & Summers, 1977). Essentially, this procedure compares nested models to one another; when the change in χ^2 ($\Delta\chi^2$) across models is significant given the change in degrees of freedom (Δdf), this indicates that the model with more degrees of freedom does not fit the data as well as the model with fewer degrees of freedom.

First, we compared the complex struggles model to the accompaniment model. The complex struggles model provided a better fit to the data in the two-week sample ($\Delta\chi^2 = 7.34$, $\Delta df = 2$, $p = .03$), the one-month sample ($\Delta\chi^2 = 6.08$, $\Delta df = 2$, $p = .05$), and the one-year sample ($\Delta\chi^2 = 6.50$, $\Delta df = 2$, $p = .04$). Next, we compared the complex struggles model to the primary struggles model. The complex struggles model provided a better fit to the data in the two-week sample ($\Delta\chi^2 = 4.30$, $\Delta df = 1$, $p = .04$), the one-month sample ($\Delta\chi^2 = 4.47$, $\Delta df = 1$, $p = .03$), and the one-year sample ($\Delta\chi^2 = 5.57$, $\Delta df = 1$, $p = .02$). Finally, we compared the complex struggles model to the secondary struggles model. There was no significant difference between these models in the two-week sample ($\Delta\chi^2 = 2.78$, $\Delta df = 1$, $p = .10$), the one-month sample: $\Delta\chi^2 = 1.47$, $\Delta df = 1$, $p = .23$), or the one-year sample ($\Delta\chi^2 = 0.72$, $\Delta df = 1$, $p = .40$).

Table 3. Best Fitting Path Models and Fit Statistics Describing the Relations Between Anxiety and Doubt-Related Struggles Over Two Weeks, One Month, and One Year.

Model	χ^2 (*df*), *p*	CFI	RMSEA	SRMR
Two-week sample				
Accompaniment	7.34 (2), .03	0.98	.10	.05
Secondary struggles	2.78 (1), .10	0.99	.08	.03
Primary struggles	4.30 (1), .04	0.99	.11	.04
Complex struggles	0.00 (0), 1.00	1.00	.00	.00
One-month sample				
Accompaniment	6.08 (2), .05	1.00	.06	.03
Secondary struggles	1.47 (1), .23	1.00	.03	.01
Primary struggles	4.47 (1), .03	1.00	.08	.02
Complex struggles	0.00 (0), 1.00	1.00	.00	.00
One-year sample				
Accompaniment	6.50 (2), .04	0.99	.09	.05
Secondary struggles	0.72 (1), .40	1.00	.00	.01
Primary struggles	5.57 (1), .02	0.99	.13	.04
Complex struggles	0.00 (0), 1.00	1.00	.00	.00

Notes. The accompaniment model indicated that doubt struggles and anxiety were significantly correlated within each period and auto-correlated across times. The secondary struggles model included a path from anxiety at T1 to doubt struggles at T2. The primary struggles model removed from the path from T1 anxiety to doubt struggles at T2 and added a path from doubt struggle at T1 to anxiety at T2. The complex struggles model included all paths between variables. CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual.

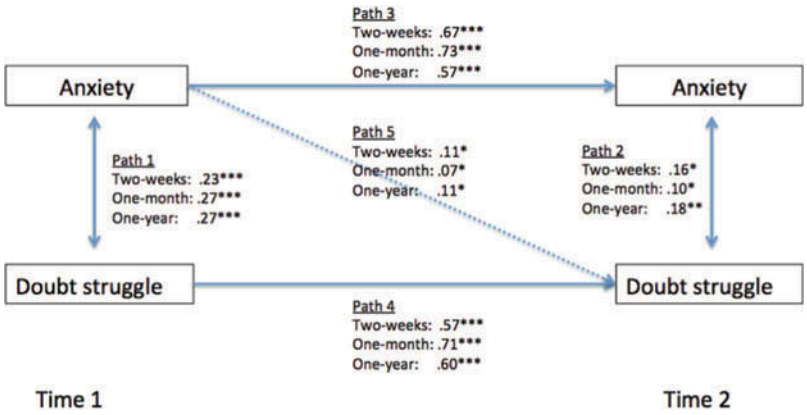

Figure 2. Standardized path coefficients describing the relations between anxiety and doubt struggles over 2 weeks, 1 month, and 1 year in the secondary struggles model. *Note*. The secondary struggles model includes all solid arrows and the dotted arrow (Paths 1–5) from Figure 1, and it omits Path 6 leading from doubt struggle at Time 1 to anxiety at Time 2.

Which model should be preferred for describing the relations between anxiety and doubt-related struggle? First, it is clear that the accompaniment model and the primary struggles model should not be preferred, as they did not fit as well as the complex struggles model. In contrast, the secondary struggles model could not be distinguished from the less parsimonious complex struggles model. This result might suggest that the secondary struggles model should be preferred. However, the confidence we can have in this conclusion is tempered by the zero-order correlations showing that the paths from anxiety at T1 to doubt struggle at T2 were similar in magnitude to the paths from doubt struggle at T1 to anxiety at T2. Therefore, we believe that it is prudent not to rule out the complex struggles model prematurely; indeed, future research may be warranted in order to provide a more definitive distinction between the adequacy of the secondary struggles model and the complex struggles model.

Nonetheless, as the model comparisons in the current study did provide the best evidence for the secondary struggles model, we report the standardized path coefficients for each path in this model in Figure 2. In sum, they showed that, in each sample, (a) each construct exhibited high cross-temporal stability; that (b) there were moderate, positive concurrent associations between anxiety and doubt-related struggles at both T1 and T2; and that (c) that anxiety at T1 predicted small but significant increases in doubt-related struggle at T2.

Discussion

We employed three separate samples to examine the temporal relations between anxiety and doubt-related struggles over 2 weeks, 1 month, and 1 year. Path analyses provided the strongest support for what was termed the secondary struggles model (Pargament, 2009), in which anxiety leads to increases in doubt struggles. As noted in the introduction, support for this model may carry the practical implication that treating anxiety may directly allay struggles with r/s doubt.

Why does anxiety lead to increased struggles with r/s doubt? The experience of anxiety indicates perceived internal and external threats coupled with a lack of confidence in one's ability to cope with such threats (Newman, Llera, Erickson, Przeworski, & Castonguay, 2013). The world as seen through the lens of anxiety is thus an unsafe, unpredictable, and uncontrollable place. This view is in stark contrast to the comfort and security that are associated with holding strong and unwavering r/s beliefs (Ardelt & Koenig, 2006; Beck & McDonald, 2004). It is possible that, over time, the lack of trust in oneself and in the world that are associated with anxiety begin to undermine confidence in one's r/s worldview, thus destabilizing one's r/s beliefs by instigating questions, concerns, and

doubts. The present results suggest that the longitudinal effects of anxiety on doubt-related struggles can be found in the relative short-term (2 weeks, 1 month), and over longer periods as well (up to 1 year). Furthermore, as the magnitude of each the longitudinal effect was similar across time frames, the relevance of anxiety to doubt struggles does not appear to diminish over time.

Why did struggles with r/s doubt not lead to increases in anxiety? Possible answers to this question may be rooted in the notion that people conceive of and respond to r/s doubt in complex and varied ways (Krause et al., 1999; Krause & Wulff, 2004). Although the experience of r/s doubt may be uncomfortable, theologians (Kapleau, 1980) and researchers (Batson, Schoenrade, & Ventis, 1993) alike have suggested that r/s doubt can have transformative effects on a person that may result in a deeper and more mature faith. People who see r/s doubt as an opportunity rather than as merely a threat can perhaps achieve positive outcomes over time from engaging with r/s doubt via introspection or in the context of a supportive r/s community (Beck, 2007; Pargament et al., 1988). Therefore, in line with the current results, struggles with r/s doubt need not be a precursor of anxiety; we do, however, encourage future research to explore the personal and environmental factors that may lead to positive as well as negative effects of r/s doubt over time.

Although the generalizability of our findings is limited by the use of self-report and reliance on Western samples in nonclinical contexts, a number of characteristics of the present studies (longitudinal designs spanning multiple time frames, testing of alternative models, and exact replications of findings) serve to bolster confidence in the results presented herein. Further, the similarity of results across a large university sample and a more demographically diverse sample of adults speak to the robustness of the findings. It is important to understand doubt's precursors, as doubt may be both a normal part of r/s life (Tamminen, 1994), as well as a source of concern that can potentially result in apostasy (Hunsberger et al., 1993). Our findings suggest that those who see themselves and their world as resting on shaky ground are likely to start developing more questions about the sturdiness of their r/s foundation.

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