

# Religious Head Versus Heart Beliefs: Measurement Development and Validation

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The notion of religious “head” versus “heart” beliefs is gaining currency, but almost no research has directly examined these dimensions together or studied their congruence/divergence and relative associations with thoughts, behaviors, or well-being. Validated measures of religious head and heart beliefs are needed to address this research gap. Toward that end, we conducted a series of four studies to develop a measure of religious head and heart beliefs. In Study 1, we tested methods for a self-report measure and created an initial item bank in a sample of 303 undergraduates. In Study 2, in a sample of 462 undergraduates, we conducted an exploratory factor analysis, deriving six separate scale scores based on previous measures of religious beliefs. In Study 3, we conducted a confirmatory factor analysis in a sample of 530 adults, which replicated the factor structure found in Study 2. In Study 4, we examined associations between head:heart beliefs and demographics, personality, cognitive processes, and psychological well-being to demonstrate preliminary validity. Based on these findings, we propose a 26-item measure comprising 6 scales and provide preliminary evidence that head versus heart beliefs relate differently to various outcomes. These religious head:heart scales represent a promising advance in the study of religious beliefs and set the stage for a new wave of research to better understand how religious head and heart beliefs differ and what those differences mean.

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Beliefs are commonly recognized as a core dimension of religiosity (e.g., Idler, 1999; Stark & Glock, 1968), yet relative to other dimensions (e.g., behaviors or coping), surprisingly little research has focused explicitly on religious beliefs and the roles they may play in health, well-being, and behavior (Park, 2016). The relative dearth of research on religious beliefs may be partly due to the difficulties inherent in studying them. For example, relatively few psychometrically sound measures of religious beliefs have been developed. Most current measures of “religious beliefs” are omnibus, combining multiple beliefs and, often, other aspects of religiosity into a single score (e.g., Brief Multidimensional Measure of Religiosity and Spirituality “beliefs” subscale, Fetzer Institute/National Institute on Aging Working Group, 1999).

Perhaps, a larger challenge to measuring religious beliefs is posed by the fact that religious beliefs have both propositional and implicational dimensions, sometimes referred to as “head” versus “heart” knowledge (Watts & Dumbreck, 2013) or explicit versus implicit beliefs (Jong et al., 2012). These dimensions are related but distinct, and each may uniquely influence individuals’ well-being,

decision making, and relationships. Dual-processing systems propose different levels of cognition. For example, Cognitive-Experiential Self-Theory (Epstein, 2008) proposes that people have two separate systems for information processing: analytical-rational and intuitive-experiential. The analytical-rational system is deliberate, slow, and logical, while the intuitive-experiential system is fast, automatic, and emotion-driven. Similarly, the Interacting Cognitive Subsystems (Barnard & Teasdale, 1991) propose that humans have two central subsystems: a “propositional” system that is more linguistic and an “implicational” subsystem that is more intuitive and schematic. According to these dual-processing theories, these independent systems operate in parallel and interact in complex ways to produce behavior and conscious thought.

Respectively, two different types of beliefs operate within these dual-processing systems. Explicit “head” knowledge involves mental representations of reality, mediated primarily by memories and knowledge, particularly semantic memory. Implicit “heart” knowledge is conceptualized as affect-laden mental representations mediated primarily by intuitive thoughts, memories, and knowledge, particularly implicit relational knowing (i.e., “gut-level” knowledge; Davis et al., 2013). Explicit knowledge is thought to be learned chiefly via intentional learning and encoded mainly in verbal-symbolic representations (Davis et al., 2013; van Tongeren et al., 2019) while implicit knowledge is thought to be learned primarily through emotional and incidental learning and activated in the presence of certain learned intrapersonal (e.g., active moods, schemas, needs, or goals) and situational cues (e.g., proximal and distal environmental features) such as the people who are present (Davis et al., 2013; Siegel, 2020).

Davis and his colleagues illustrated the notion of head versus heart knowledge in research focused on God beliefs (representations;

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Davis et al., 2013). They proposed that this body of research could be divided into studies focusing on explicit (God concepts) and implicit (God images) knowledge. God concepts refer to a “set of beliefs about a specific divine attachment figure’s traits; about how that divine attachment figure relates with, thinks about, and feels toward humans (including the self); and about how humans (including the self) should relate with, think about, and feel toward the divine attachment figure” (p. 53). In contrast, God images comprise relational and emotional God schemas reflecting “heart knowledge” (Davis et al., 2013, p. 52).

Although head and heart beliefs may be similar or different, virtually no research has established the extent to which individuals’ head and heart beliefs diverge surrounding the same topic (e.g., God’s existence or the afterlife). Thus, not only may head and heart beliefs be important (and different) in their relations with other phenomena (e.g., behavior or cognitive functioning) but also the discrepancy between these two types of beliefs may be an important individual difference variable as well. Although this conceptual model of head versus heart knowledge is gaining traction among scholars in the psychology of religion, research has been hindered by the lack of valid measures that distinguish between them. Some research has suggested that indirect methods might usefully capture implicit beliefs (e.g., reaction times; Shariff et al., 2008; see Zahl et al., 2013, for a review). However, practical considerations and an inability to assess distinctions among different religious beliefs as well as the lack of strong evidence of validity have limited the use of indirect methods (Zahl et al., 2013).

The alternative to laboratory-based methods of assessing head versus heart knowledge is self-report, and efforts are being made to develop useful self-report measures of implicit beliefs. For example, the Questionnaire of God Representations (QGRs) was designed to “differentiate between emotional and cognitive God representations” (Schaap-Jonker et al., 2016, p. 153). However, this questionnaire actually measures neither clearly, but rather measures *feelings toward God and beliefs about God’s actions*. Although the former is clearly not a representation of God but rather one’s reactions to God (e.g., “fear of not being good enough”), the latter, with items such as “God comforts me,” may tap into either head or heart knowledge of God. Another recent measure, the A/B-God Scale, was explicitly designed to assess heart religious beliefs about God (God image) by asking participants to describe God using adjective ratings “BASED ON YOUR OWN, PERSONAL EXPERIENCE” (Johnson et al., 2015, p. 229, capitalization in original).

Another promising approach is to directly ask participants about their intuitive feeling about religious constructs and about their understanding of those constructs. Thus far, this approach has been limited to beliefs about the nature of God, but participants seem able to distinguish between these sets of instructions and they appear to produce meaningful and differentially predictive scores (e.g., Zahl & Gibson, 2012). Zahl et al. (2013) argued that “the simple act of manipulating instructional wording in a questionnaire—asking respondents to consider and contrast their theological beliefs and personal experience, so that respondents are made aware of the potential difference between their doctrinal and experiential knowledge—may be sufficient to draw out a meaningful difference between the two.” Although little research has directly used this method, results to date suggest that meaningful differences between doctrinal and experiential representations can indeed be found using questionnaires.

However, questionnaires that validly assess head versus heart beliefs are in a very early stage of development and require extensive attention. Once established, such valid measures will set the stage for the future conduct of much more sophisticated research. To that end, we conducted a series of four separate studies to develop a new measure of head/heart religious beliefs and establish its psychometric properties. Studies were conducted in spring 2018 (Study 1), fall 2018 (Study 2), spring 2019 (Study 3), and fall 2019 (Study 4).

## Study 1: Testing Methods of Measuring Head and Heart Religious Beliefs

To develop the religious head/heart beliefs instrument, we first needed a universe of items from which we could select those that best provided breadth and diversity and also represented the belief constructs most commonly discussed in the scholarly literature (for a review, see Flannelly, 2017). Although many different religious beliefs have been identified, we settled on three primary domains due to their foundational nature: Whether supernatural beings exist at all, and if so, what their nature and role in the world comprise (Park, 2013). If we find this approach fruitful with these most basic questions, then other more specific types of beliefs might warrant similar inquiry. We created an item pool using multiple belief measures that fall into one of the three selected primary domains: (a) supernatural, including belief in God and other supernatural beings (e.g., angels); (b) views of God, including various positive and negative attributes; and (c) perceptions of God’s actions (PGAs). We selected items from measures with previous reliability and validity evidence (e.g., Johnson et al., 2015; Jong et al., 2013; Jonker et al., 2008, and Zahl & Gibson, 2012; see the Measures section for further details).

We also needed to determine the best method of asking individuals to endorse their head and heart beliefs. Toward that end, we tested two different ways of presenting the items: by asking head and heart items side-by-side or sequentially. Providing instructions for entering these two mindsets in two different formats, as recommended by Zahl et al. (2013), allowed us to determine which format produced the greater discrepancy between head and heart beliefs (and thus, the preferred wording/format of the instrument). We also aimed to determine if our new measure was applicable to individuals who identified as nonreligious; we asked participants who identified as atheist, agnostic, or nonreligious to generate an image of God (per Bradley et al., 2015).

## Methods

### Participants

Participants were 303 undergraduates at the University of Connecticut recruited via the Department of Psychological Studies participant pool. Measures were administered via Qualtrics; participants were given a link to complete a survey.

### Procedure

Participants were first asked their current religious affiliation and provided with the responses of *Agnostic, Atheist, Buddhist, Christian, Hindu, Islamic, Jewish, Other (insert text)*, and *I have none*. Individuals who endorsed being agnostic, atheist, or had none were

then asked if they could generate an image of God, based on the method used by Bradley et al. (2015), using the following prompt: "Even though you may not believe in God, you may be able to generate an image of God. Please select the following method(s) of generating an image of God that you feel you are able to do. Please do not select any of the methods listed below if you are not able to do them." Options included the following: *Generating an image of God based on an image of God you held earlier in life; generating an image of God based on popular religious teachings or popular culture; generating an image of God based on your own personal ideas about what God might be like if God did exist*, and then instructed the following: "For the rest of the survey, please use the method(s) of generating an image of God that you selected for items that refer to God." Individuals who reported being unable to generate an image of God using any method did not receive any items referring to God and were removed from all analyses involving these items. All participants were also asked if they believed in more than one God. Those who responded "yes" received the instruction: "For questions that refer to "God," please select the God that you identify with the most or feel the closest to."

A random half of participants ( $n = 152$ ) received the first version of the belief measure, which presented each religious belief in a head mindset and a heart mindset side-by-side. Instructions were, "Please read the following instructions carefully before proceeding: You will be asked to complete the same set of questions two times. You will answer them in two different ways. Here are the two sets of instructions; take some time to review and compare them: (a) Think about what you know about your religion—you may have learned this information through reading, formal religious education, the media, or from your family. (b) Now, think about what you know about your religion as you experience it personally, in your heart of hearts. These instructions will appear at the top of the page. The first set will be on the left side of the page, and the second set will be on the right side of the page."

The other half of participants ( $n = 151$ ) received the second version of the belief measure, which asked how much they agreed with all of the religious beliefs, randomly receiving either a head mindset or a heart mindset first, completing all the items, and then receiving the other set of instructions, completing all the items a second time. The instructions were the same as condition 1, except the last two lines were instead, "Notice which set of instructions you receive first. It may be either #1 or #2." Thus, we only varied the format of the presentation of the items across groups.

## Measures

For consistency, we used the same response scale for all items drawn from multiple scales, using a 1 (*strongly disagree*) to 5 (*strongly agree*) format with a "cannot say" option.

**Supernatural Beliefs.** Belief in God and supernatural agents was assessed with the 10-item Supernatural Beliefs Scale (Jong et al., 2013); participants rated the extent to which they agree with statements such as, "There exists an all-powerful, all-knowing, loving God" and "Some people will be rewarded in the afterlife when they die."

**Views of God.** Views of God were measured with the 18-item Authoritarian and Benevolent God Representations scale (ABGR; Johnson et al., 2015); participants rate the extent to which they agree with each word that describes God such as "generous" or "angry."

Views of God were also assessed with the 10-item Positive and Critical God Representations scale (PCGR; Zahl & Gibson, 2012); participants were asked to rate the extent to which they agree with positive words that describe God such as "kind" versus negative descriptors like "demanding." We also included two items from the Baylor Religion Surveys (Baylor Religion Survey, 2017): "ever-present" and "distant."

**Perceptions of God's Actions.** PGAs were measured with the PGAs section of the QGR scale (Jonker et al., 2008). This section consists of 16 items with 3 subscales: supportive, ruling and punishing behavior of God, and passivity/perceptions that God does nothing. Participants were asked to rate the extent to which they agreed with statements such as "God comforts me," "God exerts power," and "God lets everything take its course."

## Results

### Sample Characteristics

Participants' average age was 19.04 years ( $SD = 1.5$ ). The sample comprised primarily women (54.8%) and included men (26.4%), gender queer/fluid (0.3%), and other (0.3%), and gender not identified (18.2%). Participants predominantly identified as White (52.8%); other identifications were Asian (16.5%), Black or African American (4.3%), Native Hawaiian or other Pacific Islander (0.3%), more than one race (5%), and race not identified (21.1%). Religious affiliation included Christian (161, 53.1%), none (14.8%), atheist (8.3%), agnostic (7.3%), other (5.6%), Jewish (4%), Islamic (3%), Buddhist (2%), and Hindu (2%), and 8.6% of the sample reported believing in multiple Gods. The total nonreligious participants (atheist, agnostic, or no religion) was approximately a third of the sample (30.4%).

### Generating a Representation of God

As described above, all nonreligious participants were given the option to generate a representation of God. Eighty-seven percent endorsed being able to employ at least one strategy, 9% endorsed two strategies, and 2% endorsed all three strategies, as participants were able to click more than one option. Of the nonreligious participants, 39.1% endorsed being able to generate a representation of God based on an image they held earlier in life, 34.7% endorsed generating a representation based on popular religious teachings or popular culture, and 39.1% endorsed being able to generate a representation based on their own personal ideas about what God might be like if God did exist. The 13% of nonreligious participants ( $n = 12$ ) who were not able to endorse any strategy for generating a representation were not included in analyses with items regarding views of God or PGAs.

### Utilization of "Cannot Say" Option

As noted above, for every item across both conditions, participants had the option to choose "cannot say." Across both conditions and all participants, the mean percentage of participants who endorsed "cannot say" for each item was 4.17%. This percentage was higher for nonbelievers (7.75%), especially atheists (13.18%).

### ***Discriminating Between Head Versus Heart Beliefs***

For both Condition 1 (side-by-side) and Condition 2 (back-to-back), mean scale scores, standard deviations, and Cronbach's alpha were calculated separately for head and for heart beliefs for each of the eight scales/subscales. Mean item scores rather than mean scale scores and standard deviations were calculated for the two items from the Baylor Religion Survey (see Table 1). Difference between head versus heart item/scale means was calculated, and independent sample *t* tests, 95% confidence intervals, and Cohen's *d* were used to determine which condition resulted in a significantly larger difference between head and heart belief scores. For five of the eight scales/subscales (Supernatural Beliefs Scale, ABGR Benevolent subscale, PCGR positive subscale, PGA Supportive and Ruling Punishing subscales), the side-by-side condition resulted in significantly larger differences between head and heart beliefs. For three scales/subscales (ABGR Authoritarian subscale, PCGR Critical subscale, and PGA Passive subscale), there was no significant difference between conditions. For the two Baylor Religion Survey items, the side-by-side condition resulted in a significantly larger difference between head and heart beliefs for one ("ever-present") and there was no significant difference between conditions for the other ("distant").

### **Discussion**

Study 1 laid the groundwork for developing a measure of head/heart religious beliefs by determining the best formatting for the instructions and providing information on appropriateness for individuals who do not endorse an affiliation and those with polytheistic traditions. Across all scales/subscales/items, either the side-by-side version of the questionnaire produced more significant differences between head and heart beliefs or there was no significant difference between versions. Therefore, we proceeded with the side-by-side version.

Study 1 also supported the notion that even individuals reporting being nonreligious, atheists, or agnostics were able to complete the measure in a meaningful way. The vast majority endorsed being able to generate an image of God and rarely used the "cannot say" option when answering questions directly related to God. Therefore, this method of generating an image of God appears to be applicable to both the religious and the nonreligious (Bradley et al., 2015). Thus, we removed the "cannot say" option from the measure.

### **Study 2: Undergraduate Sample Exploratory Factor Analysis**

Study 2 was conducted to test how items loaded together to help determine final items for the measure. We conducted exploratory factor analyses for all items within each of the three domains described in Study 1 (i.e., supernatural beliefs, views of God, and PGAs). We also aimed to select a subset of items that demonstrated high loadings to retain for future studies to reduce participant burden while completing the measure.

### **Methods**

#### ***Participants***

Participants were 462 undergraduates at the University of Connecticut recruited via the Department of Psychological Studies

participant pool. As in Study 1, measures were administered via Qualtrics; participants were given a survey link and completed it online.

#### ***Procedure***

The procedure was identical to that of Study 1 with two exceptions: (a) we did not include a "cannot say" response, due to the fact that the majority of nonreligious participants in Study 1 were able to respond to religious items without utilizing this option once given instructions on generating an image of God and (b) every participant received head and heart beliefs in a side-by-side format, as Study 1 had shown this format produced larger discrepancy in responses. Again, participants were asked about their religious affiliation, non-religious participants were asked to generate an image of God, and participants who endorsed believing in multiple Gods were asked to think of the God they identified with the most or felt closest to. Measures were also identical to those administered in Study 1.

#### ***Analyses***

All exploratory factor analyses were conducted with Mplus using the ML estimator (Muthen & Muthen, 2012) and 1,000 iterations allowing for 1–8 factors. The factors were rotated with Geomin factor rotation, as this has been shown to produce satisfactory results in previous research (e.g., Schmitt & Sass, 2011).

### **Results**

#### ***Sample Characteristics***

Participants' average age was 18.76 years ( $SD = 1.65$ ). The sample comprised primarily women (51.9%) and included men (27.1%), trans men (.02%), trans women (.02%), gender queer (.02%), and gender not specified (20.1%). Participants identified as White (52.4%), Asian (14.5%), Black or African American (6.1%), more than one race (5.2%), Native American or Alaska native (.8%), Native Hawaiian or other Pacific Islander (0.2%), and race not identified (20.8%). Religious affiliation included Christian (54.1%), none (13.6%), agnostic (9.3%), other (6.7%), atheist (5.6%), Jewish (3.2%), Hindu (3%), Islamic (2.8%), and Buddhist (1.5%), and 7.6% of the sample reported believing in multiple Gods. Nonreligious participants (atheist, agnostic, or no religion) comprised nearly one third of the sample (28.6%).

#### ***Exploratory Factor Analyses***

All fit statistics from the exploratory factor analyses (as well as confirmatory factor analyses from Study 3) are shown in Table 2. The number of items retained for each domain is presented below. We did not retain items differentially by head and heart domain; all retained items were later assessed through both a head and heart methodology.

**Supernatural Beliefs.** Exploratory factor analyses were conducted on all items in the supernatural beliefs domain (i.e., Supernatural Beliefs Scale; Jong et al., 2013) for both head and heart instructions. For supernatural head beliefs, the scree plot indicated a one-factor fit. The overall fit of the one-factor model was good (see Table 2 for fit statistics). All loadings were higher than .6. As all items loaded onto the same scale, we considered this factor to



**Table 1**  
*Differences Between Head and Heart Beliefs Across Conditions and Scale Alphas (Side-by-Side Versus Back-to-Back)*

Scale/Subscale	No. of items	Condition 1: Side-by-side										Condition 2: Back-to-back										
		Head					Heart					Head					Heart					
		$\alpha$	$M$	$SD$	$M$	$SD$	$\alpha$	$M$	$SD$	$M$	$SD$	$\alpha$	$M$	$SD$	$M$	$SD$	$\alpha$	$M$	$SD$	$M$	$SD$	95% CI
SBS	10	.94	4.06	3.30	0.91	1.07	.76	.97	.96	3.73	3.41	1.07	1.06	.28	(0.28, 0.68)	4.79***	0.55					
ABGR																						
Authoritarian	9	.87	2.79	2.64	0.83	0.91	.15	.92	.92	2.80	2.55	0.90	0.86	.26	(-0.29, 0.07)	-1.22	0.14					
Benevolent	9	.95	4.40	3.80	0.69	1.08	.60	.95	.97	4.13	3.91	0.78	0.95	.21	(0.21, 0.57)	4.02***	0.48					
PCGR																						
Positive	7	.87	4.26	3.69	0.73	0.91	.57	.90	.89	4.03	3.89	.81	.85	.07	(0.35, 0.65)	6.44***	0.74					
Critical	3	.69	2.71	2.63	1.03	1.02	.07	.77	.77	2.81	2.58	0.97	0.88	.24	(-0.37, 0.03)	-1.67	0.19					
BRS																						
Ever-present	1	—	4.48	3.54	0.86	1.27	.95	—	—	4.05	3.68	1.12	1.28	.37	(0.35, 0.81)	4.91***	0.57					
Distant	1	—	1.95	2.61	1.22	1.28	-.66	—	—	2.30	2.51	1.27	1.31	-.21	(-0.92, 0.03)	1.86	0.37					
PGA																						
Supportive	10	.98	4.40	3.47	0.89	1.22	.94	.99	.00	3.85	3.50	1.14	1.20	.30	(0.43, 0.85)	6.07***	0.69					
Ruling and punishing	4	.83	3.59	2.94	1.04	1.05	.66	.86	.88	3.40	3.06	1.09	1.07	.33	(0.11, 0.55)	2.98***	0.34					
Passive	2	.83	3.19	3.08	1.19	1.13	.06	.74	.78	3.24	3.27	1.03	1.06	-.05	(-0.16, 0.38)	.69	0.09					

*Note.* ABGR = Authoritarian and Benevolent God Representations; BRS = Baylor Religion Survey;  $d$  = Cohen's  $d$ ;  $M$  = mean scale/item score; PCGR = Positive and Critical God Representations; PGA = Perceptions of God's Actions; SBS = Supernatural Beliefs Scale;  $\alpha$  = Cronbach's  $\alpha$ . Total sample  $n = 303$ ; C1  $n = 152$ ; C2  $n = 151$ . \*\*\*  $p < .01$ . \*\*\*\*  $p < .001$ .

**Table 2**  
*Exploratory and Confirmatory Factor Analysis Fit Statistics*

Scale	df	Chi square	CFI	TLI	RMSEA (95% CI)	SRMR
<b>EFA</b>						
Supernatural beliefs scale						
Head	35	460.58	.88	.85	.16 (.15–.18)	.05
Heart	35	402.19	.88	.85	.15 (.14–.16)	.05
Views of God						
Head	376	1643.48	.86	.84	.09 (.08–.09)	.05
Heart	376	1715.96	.85	.83	.09 (.08–.09)	.06
Perceptions of God's actions						
Head	75	371.33	.96	.94	.09 (.08–.10)	.04
Heart	75	467.02	.95	.92	.11 (.10–.12)	.02
<b>CFA</b>						
Supernatural beliefs scale						
Head	9	80.57	.97	.96	.12 (.10–.15)	.02
Heart	9	128.29	.96	.93	.16 (.13–.18)	.03
Views of God						
Head	34	93.19	.97	.97	.06 (.04–.07)	.05
Heart	34	94.61	.98	.98	.06 (.05–.07)	.04
Perceptions of God's actions						
Head	32	159.48	.96	.95	.09 (.08–.10)	.05
Heart	32	201.81	.96	.95	.10 (.09–.12)	.04

*Note.* A CFI and TLI value greater than .90 indicates good fit (Hu & Bentler, 1999).

An RMSEA value less than 0.06 indicates acceptance fit (Brown, 2015).

An SRMR value less than 0.07 indicates good fit (Hu & Bentler, 1999).

indicate an affirmative belief in supernatural agents. Similarly, the supernatural heart beliefs yielded a scree plot indicating a one-factor fit. The overall fit of the one-factor model was good. All loadings were higher than .6. As all items loaded onto the same factor, we considered it to indicate a positive belief in supernatural agents. Based on these results, we retained six items from this domain to later be assessed with both a head and heart methodology. As all items loaded strongly onto the factor, we attempted to include a wide range of beliefs, and thus, chose items relating to a belief in God, the Devil, demons, angels, and expectations about the afterlife (e.g., being rewarded).

**Views of God.** Exploratory factor analyses were conducted on all items of scales in the view of God domain (i.e., ABGR, Johnson et al., 2015; PCGR, Zahl & Gibson, 2012, and the two items from the Baylor Religion Survey; Baylor Religion Survey, 2017) for both the head and heart instructions. The scree plot for views of God head beliefs indicated a four-factor fit. The overall fit of the four-factor model was very good. However, items tended to load as the factors that have previously been established across the ABGR and PCGR scales (Johnson et al., 2016; Zahl et al., 2013): authoritarian and benevolent for the ABGR scale and positive and critical for the PCGR scale. To determine if these scales could be collapsed into a positive/negative view of God beliefs, a two-factor solution was examined. The fit of the two-factor model was also good. Items loaded onto a positive view of God factor (items such as “helping” from the ABGR, “responsive” from the PCGR, and “ever-present” from the Baylor Religion Surveys loaded on the same factor) and a negative view of God factor (items such as “strict” from the ABGR and “critical” from the PCGR).

As with the views of God head beliefs, the scree plot for heart beliefs indicated a four-factor fit, and again, the fit was very good and items similarly loaded across the previously established subscales of the ABGR and the PCGR. Again, we examined the

two-factor fit to determine if these scales could be collapsed. The two-factor model demonstrated good fit. Heart beliefs items loaded onto the same factors as the head beliefs items and the loadings were similar. Based on results of the factor analyses, we retained five items from the positive views of God factor and five items from the negative views of God factor (i.e., 10 items in total for the Views of God domain) to later be assessed through both a head and heart methodology. As all items tended to load onto the factor strongly, we retained items that appeared to represent a range of views. All items demonstrated high loadings (>.6).

**Perceptions of God's Actions.** Exploratory factor analyses were conducted on all items in the PGAs dimension (i.e., PGAs section of the Questionnaire of God Images scale; Jonker et al., 2008) for both the head and heart instructions. Previous factor analyses have found three subscales of the PGA: supportive (e.g., “God gives me strength”), punishing/ruling (e.g., “God exerts power”), and passive (“God lets everything take its course”) (Jonker et al., 2008).

The scree plot for head beliefs regarding PGAs indicated three factors, which demonstrated good fit. Unlike previous research, items mostly loaded on two factors, with the third factor only having one item with a loading greater than .3; however, this item also had a high cross-loading onto the first factor (.87). Generally, items loaded onto a supportive factor, replicating previous research (e.g., “God comforts me,” “God protects me”) but unlike previous research, the items in the ruling and punishing behavior of God factor and the items in the passivity factor loaded onto the same factor in our analyses. Thus, the two factors were labeled as supportive versus nonsupportive. The scree plot for heart beliefs regarding PGAs also indicated three factors, which replicates previous research (Jonker et al., 2008). The three-factor model demonstrated good fit. Unlike the head belief items, the heart belief items loaded onto the three factors that have been previously found (Jonker et al., 2008) with no high cross-loadings.

Based on these results, we chose to retain five items from the supportive subfactor, three items from the ruling/punishing subfactor, and two items from the passive subfactor for the sake of brevity (i.e., 10 items in total from the Perceptions of God domain) to later be assessed through both a head and heart methodology. As all items tended to load onto the factor strongly, we retained items that appeared to represent a range of perceptions.

**Exploratory Factor Analysis of Head and Heart Difference Scores.** Because the difference scores between head and heart beliefs may also be of interest, we also conducted exploratory factor analysis on each head and heart difference score (head belief–heart belief) using the same procedure as above.

## Discussion

These results generally replicated factor analyses conducted in previous studies (Jonker et al., 2008; Johnson et al., 2016; Zahl et al., 2013). However, the PGAs demonstrated different factor structures when assessed through head versus heart instructions. PGAs were less nuanced when assessed through a head methodology, in that participants tended to respond similarly to items assessing God's ruling/punishing actions and God's passive role. However, when assessed with heart instructions, the ruling/punishing items and the passive items loaded onto two separate factors. It may be that when in a head mindset, participants were likely to disagree with both views of God being ruling/punishing and passive

but agreed with these views to different degrees when in a heart mindset. Based on the high loading from most items, we selected a subset of items with high loadings. The resulting measure consisted of 26 items: 6 items from the Supernatural Beliefs domain, 10 items from the Views of God domain (5 items from the positive view of God factor and 5 items from the negative view of God factor), and 10 items from the PGAs domain (5 items from the supportive factor, 3 items from the ruling/punishing factor, and 2 items from the passive factor). These items were tested through Confirmatory Factor Analysis in Study 3.

### Study 3: Confirmatory Factor Analysis in a Community Sample

Study 3 aimed to confirm that the version of the scales developed in Study 2 would replicate in a community sample obtained through Amazon Mechanical Turk (MTurk). Collecting data via MTurk allows for a more demographically diverse sample than standard American undergraduate samples (e.g., age, ethnicity, education, occupation, and religiousness; [Buhrmester et al., 2011](#)).

## Methods

### Participants

Participants were 530 adults. As in Studies 1 and 2, measures were administered via Qualtrics; participants were provided with a web link to complete the survey online. Participants received \$2 for each completed survey using MTurk best practices to ensure valid results ([Paolacci et al., 2010](#)). Participants were required to be 18 years or older and a resident of the United States; they received a \$2 incentive for survey completion.

### Procedure

The procedure was identical to that of Study 2 except that we used the reduced version of the head/heart measures developed in that study to decrease participant burden.

### Analyses

All confirmatory factor analyses were conducted with Mplus using the ML estimator ([Muthén & Muthén, 1998–2012](#)) and 1,000 iterations.

## Results

### Sample Demographics

Participants' average age was 35.5 years ( $SD = 11.31$ , range = 18–76). The sample comprised primarily men (61.5%) and included women (38.1%), and those identifying as gender nonbinary (.19%). Participants identified as White (68.7%), Asian (15.1%), Black or African American (9.1%), Native American or Alaska Native (4.0%), more than one race (3.0%), and Native Hawaiian or other Pacific Islander (.2%). Religious affiliation included Christian (56.8%), atheist (12.6%), agnostic (11.1%), Hindu (9.2%), none (3.4%), other (2.5%), Islamic (2.1%), Buddhist (1.7%), and Jewish (.6%), and 25.1% of the sample reported believing in multiple Gods. The total number of nonreligious participants (either atheist, agnostic, or no religion) comprised 27.2%.

For the final reduced set of items used in the head/heart beliefs measure used in Study 3 for confirmatory factor analyses, as well as their respective factor loadings, please see [Table 3](#). All confirmatory factor analysis fit statistics are listed in [Table 2](#) along with exploratory factor analysis fit statistics from Study 2.

### Supernatural Beliefs

Two confirmatory factor analyses were conducted on the reduced set of items from the supernatural beliefs domain for both the head and heart instructions. For *Supernatural Head Beliefs*, the overall fit of the one-factor model was good (see [Table 2](#) for fit statistics). All factor loadings were greater than .6. For *Supernatural Heart Beliefs*, as with the views of God head beliefs, the overall fit of the one-factor model was good. All factor loadings were greater than .6.

### Views of God

Two confirmatory factor analyses were conducted on a reduced subset of items in the views of God domain for the head and heart instructions. For the *Views of God Head Beliefs*, the overall fit of the two-factor model (positive vs. negative views of God) was good (see [Table 2](#) for fit statistics). All factor loadings were greater than .6. Similarly, for the *Views of God Heart Beliefs*, the overall fit of the two-factor model (positive vs. negative views of God) was good. All factor loadings were greater than .6.

### Beliefs About God's Actions

Two confirmatory factor analyses were conducted on a reduced subset of items in the beliefs about God's Actions domain for the head and heart instructions. The overall fit of the two-factor model regarding *God's Actions Head Beliefs* (supportive vs. unsupportive views of God) was good (see [Table 2](#) for fit statistics). All factor loadings were greater than .6. The overall fit of the three-factor model for *God's Actions Heart Beliefs* (supportive, punishing/ruling, and passive) was good. All factor loadings were greater than .6.

### Exploratory Factor Analysis of Head and Heart Difference Scores

We also conducted confirmatory factor analysis on each head and heart difference score (head belief–heart belief) using the same procedure as above. The models demonstrated similar fit and items loaded similarly onto each factor; fit information and item loadings can be found in [Supplemental Tables 1 and 2](#).

## Discussion

These results indicate that the reduced version of items selected from the exploratory factor analyses in Study 2 demonstrated very good fit in a different population, a community sample across the U.S. All items loaded on their respective factors with loadings greater than .6, indicating that each item represents the overall factor. Thus, the reduced version of each of these domains appears to maintain the same factor structure while reducing length. This study also confirmed that the factor structures of these domains of religious head and heart beliefs are the same across an undergraduate and a community sample.

**Table 3**  
*Confirmatory Factor Analysis Loadings*

Religious beliefs domains	Head beliefs standard factor loading			Heart beliefs standard factor loading		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
<b>Supernatural beliefs</b>						
There exists an all-powerful, all-knowing, loving God.		.86			.82	
There exists an evil personal spiritual being, whom we might call the Devil.		.88			.88	
There exist good personal spiritual beings, whom we might call angels.		.88			.89	
There exist evil, personal spiritual beings, whom we might call demons.		.84			.87	
Some people will be rewarded in an afterlife when they die.		.86			.87	
Some people will be punished in an afterlife when they die.		.85			.85	
<b>Views of God</b>						
Kind	.79			.86		
Ever-present	.67			.79		
Generous	.81			.87		
Compassionate	.83			.92		
Forgiving	.79			.87		
Controlling		.70			.77	
Strict		.76			.83	
Angry		.75			.79	
Punishing		.81			.84	
Demanding		.65			.66	
<b>Perceptions of God's actions</b>						
God comforts me	.88			.94		
God guides me	.92			.92		
God gives me strength	.90			.93		
God protects me	.90			.92		
God lets me grow	.84			.88		
God punishes		.68			.75	
God exerts power		.80			.90	
God sends people to hell		.64			.70	
God leaves people to their own devices			.76			.82
God lets everything take its course			.82			.89

Note. All loadings are significant at  $p < .001$ .

#### Study 4: Correlates of Head and Heart Beliefs

Following the factor analytic studies, we aimed to establish the validity of our religious head and heart beliefs measure. We examined the extent to which head and heart beliefs were associated with relevant variables, including cognitive style, personality, and psychological well-being/distress. Validation efforts were based on current theorizing and the small amount of previous research available on head and heart beliefs. We could locate no literature on the relations of head and heart with other variables except for a few studies documenting differential relationships of head versus heart with other variables (e.g., Zahl & Gibson, 2012). Thus, for purposes of validating the measure, rather than focusing on relations of our head and heart beliefs with relevant other variables separately, we focused on relations of the *difference*, or *predominance* of head over heart beliefs (calculated as head minus heart beliefs) with these other variables. However, we also examined how both head and heart beliefs related to one another and how each individually related to our validation variables.

The first variable included to validate the head/heart beliefs measure was social desirability, reasoning that religious beliefs would generally be minimally related to social desirability, based on previous research (e.g., Jones & Elliott, 2017) but that respondents

might be more inclined to report in a socially desirable fashion in terms of what they are supposed to believe (i.e., head beliefs) rather than what is in their heart of hearts (i.e., heart beliefs). Therefore, we hypothesized that the predominance of head beliefs would be minimally but positively related to social desirability.

The second set of variables we used to validate the head/heart beliefs measure related to rational versus intuitive thought (Davis et al., 2013). Previous research has demonstrated that religiousness, including religious beliefs, is positively associated with intuitive and negatively associated with analytic thinking (e.g., Bahçekapili & Yilmaz, 2017; Pennycook et al., 2016; Shenhav et al., 2012). Thus, we examined the extent to which head versus heart beliefs predominate relates to analytic and intuitive thinking. We employed both self-report measures and the Cognitive Reflection Test (CRT) (Toplak et al., 2011) to examine these relations. We hypothesized that religious beliefs would generally be related to higher intuitive processing and less analytic thinking and, further, that a predominance of head beliefs would be related to higher levels of analytic thinking and lower intuitive processing.

Personality comprised the third set of variables employed to test validity. We anticipated that head and heart beliefs might show a different pattern of relations with personality and that the difference between head and heart beliefs may show some relation; however,



specific hypotheses were not rendered given the lack of research on which to base them. Although research linking religious variables and personality is abundant (e.g., Ashton & Lee, 2021; Piedmont & Wilkins, 2013), little of this work has focused specifically on religious beliefs and of studies that have, findings are inconsistent. For example, in a U.S. community sample of adults with a variety of religious affiliations, religious beliefs related positively to neuroticism and openness and negatively to extroversion and agreeableness, and were not related to conscientiousness (Johnstone et al., 2012) while in a sample of adults in Iran, religious beliefs were positively related to extroversion, openness, agreeableness, and conscientiousness and inversely to neuroticism (Khoynzhad et al., 2012). Furthermore, even these few studies used an omnibus measure of religious beliefs, precluding the examination of specific beliefs such as those produced by the head/heart measure developed here.

Finally, regarding psychological health and well-being, much prior work has shown that religious beliefs are modestly related to higher levels of well-being (e.g., Silton et al., 2014) although associations tend to be inconsistent and small (see Carney et al., 2020, for a review). Furthermore, some research suggests that heart beliefs are more strongly associated with well-being than are head beliefs (e.g., Van Tongeren et al., 2019; Zahl & Gibson, 2012); such closer linkages may be due to the more direct relationship of heart belief with emotion. For example, a study of Christian college students found that positive heart religious beliefs were more closely related than were head beliefs to lower anxiety and avoidance specifically regarding attachment to God as well as to higher levels of self-esteem and life satisfaction (Zahl & Gibson, 2012). We also expected that a predominance of head versus heart religious beliefs would indicate a discrepancy in religious beliefs that could lead to less well-being and higher levels of distress. Thus, in the present study, we hypothesized that beliefs would be related to well-being and that a greater predominance of head to heart beliefs would relate less strongly to well-being.

## Method

### Participants/Procedure

Participants were 512 adults recruited through MTurk using the same recruitment and payment as in Study 3.

### Measures

**Head and Heart Beliefs.** For calculating difference scores, heart beliefs for each of the six types of beliefs were subtracted from the respective head beliefs, such that higher scores indicated a predominance of head beliefs.

**Social Desirability.** Social desirability was measured with the Marlowe–Crowne Scale of Social Desirability (M–C SDS; Crowne & Marlowe, 1960;  $\alpha = .82$ ). Participants indicate the extent to which they engage in certain behaviors (e.g., “I always try to practice what I preach,” “I have never intensely disliked someone”) on a true/false scale.

**Cognitive Style.** Cognitive style was assessed with the Rational–Experiential Inventory (REI; Pacini & Epstein, 1999) which distinguishes a rational style, measured by the 18-item Need for Cognition Scale (NFCS; Cacioppo & Petty, 1982,  $\alpha = .90$ ) and an intuitive/experiential style, measured by the 11-item Faith in Intuition (FI,  $\alpha = .88$ ) scale as well as the CRT (Toplak et al., 2011). For the

NFCS, participants indicated the extent to which they agree with statements such as “The notion of thinking abstractly is appealing to me” on a 1 (*extremely uncharacteristic of me*) to 5 (*extremely characteristic of me*). For the FI scale, participants indicated the extent to which they agree with statements such as, “I believe in trusting my hunches” on a 1 (*completely false*) to 5 (*completely true*) scale. For the CRT, participants indicated their cognitive ability by responding to three open-ended math questions (e.g., “A bat and a ball cost \$1.10 in total. The bat costs \$1.00 more than the ball. How much does the ball cost?”). Each question has an incorrect intuitive response and a correct response that requires thoughtful reflection.

**Personality.** Personality was assessed with the 25-item Big Five Inventory (Brody & Ehrlichman, 1997) with subscales of extroversion ( $\alpha = .83$ ), agreeableness ( $\alpha = .85$ ), conscientiousness ( $\alpha = .86$ ), neuroticism ( $\alpha = .88$ ), and openness ( $\alpha = .86$ ). Participants indicated the extent to which they have certain personality traits (e.g., “is outgoing, sociable”) on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale.

**Well-Being.** Well-being was assessed broadly to include psychological health, quality of life, and spiritual well-being. Psychological health was measured with the Depression Anxiety Stress Scales-21 (DASS-21; Lovibond & Lovibond, 1995) with subscales of depression ( $\alpha = .94$ ), anxiety ( $\alpha = .94$ ), and stress ( $\alpha = .92$ ). Participants indicated the extent to statements applied to them over the past week (e.g., “I found it hard to wind down,” “I felt downhearted and blue”) on a 0 (*did not apply to me at all*) to 3 (*applied to me very much or most of the time*) scale. Quality of life was assessed with the Quality of Life Questionnaire (QOL; Flanagan, 1982;  $\alpha = .92$ ). Participants indicated the extent to which they felt satisfied in a certain situations or relationships (e.g., “close friends,” “participating in active recreation”) on a 1 (*terrible*) to 7 (*delighted*) scale. Spiritual well-being was measured with the Functional Assessment of Chronic Illness Therapy–Spiritual Well-Being, a modified version for nonillness (FACIT–Sp–non-illness version; Peterman et al., 2002;  $\alpha = .88$ ). Participants indicated the extent to which they feel certain spirituality-related emotions and cognitions (e.g., “peaceful,” “a sense of harmony within myself”) on a 0 (*not at all*) to 4 (*very much*) scale.

## Results

### Sample Demographics

Participants’ average age was 34.0 years ( $SD = 10.62$ , range = 18–73). The sample comprised men (57.2%), women (41.8%), transgender men (.2%), transgender women (.4%), and other (.4%). Participants identified as White (68.0%), Asian (15.6%), Black or African American (13.9%), more than one race (1.8%), and Native American or Alaska Native (.8%). Religious affiliation included Christian (50.0%), agnostic (14.5%), atheist (14.1%), Hindu (8.2%), none (4.7%), other (2.7%), Islamic (2.5%), Buddhist (1.8%), and Jewish (1.6%), and 24.6% of the sample reported believing in multiple Gods. The total number of nonreligious participants (either atheist, agnostic, or no religion) was approximately one third of the sample (33.2%).

### Head and Heart Beliefs: Mean Levels and Intercorrelations

Differences between head and heart beliefs on each of the six scales are shown in Table 4. Independent sample *t* tests and effect

**Table 4**  
*Head and Heart Beliefs Descriptive Information*

	Head $\alpha$	Heart $\alpha$	Head $M$ ( $SD$ )	Heart $M$ ( $SD$ )	Head–Heart $M$ ( $SD$ )	Head–Heart skew	Head–Heart kurtosis	Head $M$ versus Heart $M$ $t$	Head $M$ versus Heart $M$ effect size
Supernatural beliefs	.95	.95	3.82 (1.13)	3.18 (1.25)	0.39 (0.99)	1.05	2.42	13.34***	0.54
Views of God									
Positive	.89	.92	3.99 (.91)	3.60 (1.11)	0.38 (1.08)	0.84	2.82	8.77***	0.38
Negative	.85	.87	3.37 (1.01)	2.99 (1.07)	0.64 (1.09)	1.25	1.33	7.73***	0.37
Perceptions of God’s actions									
Supportive	.94	.96	3.89 (1.12)	3.36 (1.31)	0.53 (1.16)	1.10	1.63	10.23***	0.43
Ruling	.79	.80	3.55 (1.13)	2.96 (1.18)	0.59 (1.17)	0.84	1.12	11.24***	0.51
Passive	.77	.80	3.33 (1.17)	3.31 (1.21)	0.02 (1.21)	0.17	2.01	.39	0.02

Note. Mean item scores are reported. Sample  $n = 512$ .  
\*\*\*  $p < .001$ .

sizes were calculated to determine if head and heart beliefs significantly differed. Participants scored significantly higher on head than heart beliefs on five of the six belief scales. We also calculated the mean values, standard deviations, skew, and kurtosis for the Head–Heart index scores (see Table 4). Correlations among each set of head–heart beliefs were fairly modest: For each pair of the six belief sets measured, correlations between head and heart ranged from .46 to .59. All head and heart beliefs were significantly positively correlated with one another except for positive and negative views of God (for intercorrelations of all 12 subscales, see Supplemental Table 3).

**Correlations of Head and Heart Beliefs With Validation Measures**

Supplemental Table 4 shows bivariate correlations between each head and heart subscale with all of our validation variables. Results complement those shown in Table 5. For some beliefs, both head and heart are similarly related to the validation variables, such as the quality of life (related to almost all of the beliefs at a similar

magnitude; thus, beliefs in a positive God, whether head or heart, are related to higher quality of life). For other beliefs, such as a positive view of God, only head beliefs correlated with less self-reported distress, echoing the findings of head predominance shown in Table 5. A negative view of God related to higher levels of distress for both head and heart beliefs. Social desirability related positively to five of the religious belief scales although correlations were modest.

**Predominance of Head to Heart Beliefs: Relations With Social Desirability, Intuitive and Rational Thinking, Personality, and Well-Being**

Table 5 shows correlations between the degree head beliefs predominate heart beliefs and all of the validation measures. In general, results were spotty, but significant relationships were noted for all belief scales, and the direction of significant relationships was consistent across each of the validation measures. However, religious head and heart beliefs had inconsistent relationships with

**Table 5**  
*Correlations of Head Over Heart Belief Dominance (Calculated by Head–Heart) With Social Desirability, Intuitive and Rational Thinking, Personality, and Well-Being*

	Supernatural beliefs	Positive God	Negative God	God’s actions: supportive	God’s actions: ruling	God’s actions: passive
Social desirability	-.09*	-.06	-.11*	-.04	-.09*	.08
Rational/intuitive						
Intuitive	-.15**	-.07	-.11*	-.04	-.03	.07
Cognition	.16**	.10*	.04	.16**	.08	-.06
CRT	.19**	.08	.10*	.12**	.13**	-.00
Personality						
Extroversion	-.11*	-.13**	.03	-.13**	-.02	-.07
Agreeableness	.14**	-.01	.16**	.08	.14**	-.06
Conscientiousness	.13**	.07	.08	.10*	.13**	-.00
Neuroticism	-.04	.01	-.03	.00	-.01	.01
Openness	.21**	.08	.19**	.16**	.20**	-.06
Distress/well-being						
Quality of Life	-.08	-.04	-.08	-.04	-.06	.08
Depression	-.19**	-.11*	-.08	-.13**	-.13**	.06
Anxiety	-.31**	-.16**	-.13**	-.20**	-.22**	.04
Stress	-.24**	-.13**	-.08	-.15**	-.13**	.04
Spiritual well-being	-.24**	-.21**	.06	-.23**	-.15**	-.05

Note. CRT = Cognitive Reflection Test.  
\*  $p < .05$ . \*\*  $p < .01$ .

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distress, and in general, religious heart beliefs tended to be more strongly related to distress than head beliefs.

As shown in Table 5, predominance of head beliefs was significantly inversely related to social desirability for three of the six scales (negative view of God, supernatural beliefs, and PGAs as ruling) such that higher head over heart beliefs related to less social desirability. Predominance of head beliefs were significantly related to lower intuition for two of the six belief scales (negative view of God and supernatural beliefs), to higher need for cognition for three (positive view of God, supernatural beliefs, and PGAs as supportive), and to higher rationality on the CRT for four (negative view of God, supernatural beliefs, PGAs as supportive and ruling).

Regarding personality, predominance of head over heart beliefs was negatively related to extroversion for three of the belief scales (positive view of God, supernatural, and active God), positively related to agreeableness for three (negative God image, supernatural beliefs, and PGAs as ruling), positively related to conscientiousness for three (supernatural beliefs, PGAs as active and ruling), and positively related to openness for four (negative view of God, supernatural beliefs, PGAs as supportive and ruling); head predominance was unrelated to neuroticism.

In terms of well-being, head belief predominance was related to less self-reported distress (depression, anxiety, and stress) for nearly all of the belief scales. Head belief predominance was inversely related to depression for four belief scales (supernatural beliefs, positive view of God, PGAs as supportive and ruling), negatively related to anxiety for five (all but PGAs as passive), and negatively related to stress for four (the same beliefs scales as listed for depression). Head predominance was also inversely related to spiritual well-being for four of the belief scales (the same ones as depression and anxiety) and unrelated to quality of life. PGAs as passive was the only religious belief domain where the predominance of head beliefs was not related to any of our validation measures.

## Discussion

In general, Study 4 demonstrated that religious head and heart beliefs were only modestly associated with our validation measures in our community sample, and participants tended to report holding stronger religious head than heart beliefs, similar to the findings of Zahl and Gibson (2012). Religious head predominance related meaningfully to many of the included validation variables. Self-reported social desirability may reflect either deliberate efforts or self-deception (e.g., Perinelli & Gremigni, 2016); we found that a predominance of head beliefs was generally related to *less* social desirability, perhaps reflecting the latter motivation. Predominance of head beliefs also related to higher rationality and lower levels of intuitiveness, as hypothesized based on previous research (Pennycook et al., 2016). We had no hypotheses regarding relations between the predominance of head beliefs and personality; generally, individuals who had stronger head versus heart beliefs tended to be more introverted, agreeable, conscientious, and open to new experience. It may be that individuals who are more open are better able to hold distinct head and heart beliefs and that individuals who are more agreeable are more likely to hold higher head beliefs if these were taught through a more formal religious education. Contrary to our hypotheses, greater predominance of head over heart beliefs correlated with *less* distress; we expected

that a larger discrepancy in beliefs would lead to *more* distress (Zahl & Gibson, 2012). Having a larger discrepancy between head and heart beliefs may be relatively undisturbing for most individuals; however, a third variable may account for this relationship. More research is needed to determine how predominance of head versus heart beliefs as well as a general discrepancy between beliefs (i.e., absolute value) relates to well-being. Examining correlation patterns of simple head and heart beliefs with our validation variables complements the patterns of head:heart dominance; together, these results provide a comprehensive view of how religious beliefs relate to other domains.

## Summary and Concluding Discussion

This set of studies aimed to facilitate the study of the important but daunting frontier of religious head and heart beliefs by providing a valid self-report measurement tool. Our results are promising but represent the start to what we envision will be a long and fruitful endeavor to refine and implement these measures to understand the utility of studying both religious head and heart beliefs across many contexts. We acknowledge the limitations of our studies. The samples are limited (primarily White, undergraduate samples were primarily young adults); future research examining head and heart religious beliefs would profit from broadening samples in terms of race and age. We used cross-sectional designs and simple correlation analyses with other self-report measures as a way to begin the conversation, but we encourage the future work using more sophisticated methods including experimental studies to determine if it is possible to manipulate religious head and heart beliefs. In spite of these limitations, we are hopeful that this new measure will help to move this important aspect of the psychology of religion forward.

Our studies suggest that people can meaningfully self-report head and heart religious beliefs and that most people can complete these scales, including those who identify as nonreligious. Religious head and heart beliefs demonstrate differential relations with a range of psychological domains, including intuition/rationality, personality, and well-being. More theoretical considerations are needed regarding how head and heart beliefs develop and how they play out in individuals' lives, such as whether children learn both types of beliefs in similar ways and how these beliefs change over the lifecourse. In addition, head and heart beliefs may differentially influence individuals' lifestyles, relationships, decision making, and mental and physical health; much more theoretical and empirical work is needed to understand these potential differences.

The discrepancy between the strength of head beliefs over heart beliefs appears to be one meaningful way to begin unpacking the differential roles of religious head and heart beliefs, but his approach is complicated. For example, a discrepancy may be differentially impactful if both head and heart beliefs are high or low or may even moderate the effects of beliefs on other phenomena. It also remains to be determined whether discrepancy itself is the more important variable, arguing for calculation of an absolute value, or whether the direction of the discrepancy is more meaningful. Bringing more sophisticated statistical techniques to bear may help to understand more about the nature of head and heart beliefs, including possible nonlinear effects and moderation by other variables such as religious affiliation or cultural influences.

To advance the field, we strongly encourage future researchers to include religious beliefs as an important component of religiousness in their studies (Idler, 1999), and we further encourage them to distinguish between religious head and religious heart beliefs. The God representation research has made the most progress in distinguishing between head and heart beliefs (Sharp et al., 2019) and has encouragingly been specifying whether the focus of studies is religious concept (head belief) or image (heart belief) (Davis et al., 2013), yet very few studies have measured both in the same study. Our results suggest this will be a promising direction.

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