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Individual differences in religiosity as a function of cognitive ability and cognitive style

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ABSTRACT

The current study examines the degree to which individual differences in cognitive ability and cognitive style (rational thinking vs. experiential thinking) uniquely and jointly account for differences in religiosity. Using an array of measures of religiosity, results show that cognitive ability has a medium to large negative effect on various aspects of religiosity. Though also negatively related to religiosity, rational thinking style did not add significant unique effects, nor did it convey a significant indirect effect from cognitive ability. Experiential thinking was generally unrelated to ability but was positively related to some aspects of religiosity. Overall the results confirm that those with higher cognitive ability are less likely to accept religious doctrine or engage in religious behaviors and those with lower ability are more likely to accept religious doctrine and exhibit higher levels of fundamentalism. Cognitive style appears to play a lesser role in explaining individual differences in religiosity than cognitive ability.

1. Introduction

Religious or supernatural beliefs have been a part of human consciousness throughout human history. History also shows us that humans have invented multiple religions and a pantheon of deities. The acceptance of these myriad religious beliefs and concepts have waxed and waned throughout history. This clearly demonstrates two things. First, humans on average have a tendency to adopt supernatural systems to give meaning to and understand the world around them. Indeed, Park (2007) has codified religion as a *meaning system* consisting of cognitive, emotional and motivational components that shapes an individual's global belief, goals and as a result, sense of meaning. In other words, according to this perspective, religious beliefs work as a paradigm through which individuals observe, understand, interpret and evaluate their experiences and direct their behaviors. Indeed, for many people, particularly in the US, religion is a core part of their lives (Gallup, 1995; Pew Research Center, 2012). For these people, belief in supernatural deities and the associated doctrines shape a major part of their belief system and helps them to understand existential questions (Peterson, 1999). In addition, theological beliefs may provide a subjective sense that one's life is a part of larger system (Inzlicht, Mcgregor, Hirsh, & Nash, 2009; Inzlicht & Tullett, 2010).

Second, history demonstrates that the acceptance of religious beliefs will vary across individuals and across time. During the past century, psychologists have investigated the role that individual differences in core psychological traits play in the acceptance of these supernatural beliefs. In addition to personality, (e.g., Kandler & Riemann, 2013), education (e.g., Reeve & Basalik, 2011), and neurological structure (Inzlicht et al., 2009), it has been well established that cognitive ability is (inversely) related to the belief in deities and other aspects of religiosity (e.g., Argyle, 1958; Bertsch & Pesta, 2009; Howells, 1928; Larson & Witham, 1998; Lewis, Ritchie, & Bates, 2011; Nyborg, 2009; Reeve, 2009). For example, Bertsch and Pesta (2009) found that sectarianism (e.g., belief that one's religion is the only path to God) and scriptural acceptance (e.g., degree to which one

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accepts sacred texts as truth) are negatively correlated with IQ scores and measures of information processing ability. Likewise, Lynn, Harvey, and Nyborg (2009) show that IQ scores predict atheism rates across 137 nations: the higher the average IQ for a nation, the higher the rate of atheism. Similar findings have been reported at state level in the US. For example, Reeve and Basalik (2011) found that differences in the average IQ of states correlate $r = -.55$ with the average religiosity of residents in the state. Regardless of the specific conclusions one draws, this literature clearly demonstrates that there is a reliable inverse association between intellectual abilities and religiosity.

To explain this relationship, Nyborg (2009), Dawkins (2006) and others have suggested that people tend to gravitate toward belief systems that match their level of cognitive complexity. For example, Dawkins posited that individuals of higher intelligence have a capacity for scientific and skeptical thinking, which is incompatible with the concept of "faith" or unquestionable acceptance of religious beliefs. Additionally it has been hypothesized that individuals of lower intelligence are less likely to have the capacity for abstract thought and critical thinking, and thus more likely to either be unable to identify logical inadequacies in religious explanations or to willingly subscribe to religious doctrine as a means to find "uncontested and uncontestable answers" to cognitive complex questions. More generally, Reeve (2009) posited that these relations appear consistent with predictions from the *g*-nexus. Briefly, it has long been argued that *g* attains its importance because it reflects individual differences in the ability to successfully comprehend and function rationally in an increasingly cognitively complex world (Gottfredson, 1997, 2004; Hunt, 1995; Jensen, 1998). In such environments, high-*g* affords success, self-esteem, and effective rational decision making, whereas low-*g* places people at risk for failure, frustration, confusion, and reliance on mystical thinking. Thus, high-*g* people are better equipped to construct a complex cognitive framework consistent with a rational world, and make post-conventional moral decisions. As such, they are likely to reject dogmatic meaning systems that contain irrational beliefs; that is, they are likely to gravitate away from dogmatic religious beliefs and towards liberal religious beliefs, or scientific belief systems (Nyborg, 2009). In contrast, lower-*g* people are likely to find the world frustratingly complex, and thus are more likely to gravitate towards social systems that provide scripted and easily comprehended belief systems. In short, for lower-*g* individuals, it is likely that religion provides a substitute for a rational, scientific (and often cognitively complex) meaning system with a dogmatic (i.e., simplified and stable) belief system by which to make sense of the world.

These perspectives on the association between cognitive ability and religiosity suggest that some people are more likely apply rational analysis to the evaluation of religious concepts, whereas others less likely to do so. Such propositions appear quite consistent with dual-processing theories of cognition that posit that there are two systems of information processing: a rational (or analytic) system and an experiential (or intuitive) system (Epstein, 1994; Evans, 2008). The rational system is evolutionarily more recent, and operates according to an individual's understanding of rules, logic and reasoning. This system relies heavily on available cognitive resources, is slower, more deliberative and affect free. In contrast, the evolutionarily older experiential system operates in a more unconscious, rapid basis, based on the use of implicit cognitive heuristics, and often affect laden. For example, according to Cognitive Experiential Self-Theory (CEST; Kirkpatrick & Epstein, 1992), the experiential system itself is shaped by emotionally significant past experience.

Although these systems can operate either independently or and interactively, research suggests individuals vary in their natural tendencies to rely on one system or the other (Pacini & Epstein, 1999). These stable preferences for or habitual tendencies to engage in these systems of thinking are typically referred to as cognitive style (Messick & Fritzky, 1963; Pacini & Epstein, 1999). Although related, it is important to note the distinction between cognitive ability and cognitive style; the former reflects what people actually can do whereas the later reflects what they are inclined to do. Consistent with this distinction, prior research has shown positive associations between general cognitive ability and rational thinking style, whereas cognitive ability is generally unrelated to experiential thinking (Evans, 2008). That is, although the propensity to engage in rational thinking is related to the ability to do so, the propensity to engage in the evolutionarily familiar experiential style is not related to cognitive ability.

Based on this description of cognitive style, we would predict that rational thinking style would also be negatively related to religiosity similar to *g*. In contrast, one would expect that reliance on experiential thinking would lend itself towards the acceptance of religious belief systems. To date, only one study we know of has investigated this possibility. Shenhav, Rand, and Greene (2012) found that individuals who exhibit more intuitive thinking have a higher tendency to believe in God, and that these individuals also tend to believe in God with greater confidence. These authors also found that IQ scores and a measure of rational thinking style were correlated. Unfortunately, no attempt was made to disentangle or model the shared variance between ability (as measured by the IQ test) and thinking style. As such, it remains unknown whether cognitive style explains some of the intelligence-religiosity association, adds to it, or is independent of it.

1.1. Current study

The goal of this study is to examine the degree to which both cognitive ability and cognitive style influence religiosity. Based on prior research, we predict that both cognitive ability and rational thinking will be inversely related to measures of religiosity, and experiential thinking will be positively related to religiosity. Further, given prior research and theory on dual process models of cognition, we posit that cognitive ability will be associated with the propensity to use the rational system, but not the experiential system. Thus, rational thinking may mediate some of the influence of ability on religiosity.

2. Methods

2.1. Participants

The sample was drawn from an urban university in the southeastern US. Undergraduate students (N = 150; 70

male, 80 female) enrolled in a general psychology course participated for course credit. The mean age was 21.22 years (SD = 4.22; range 18–44). The sample was comprised of similar proportions of freshmen (21%), sophomore (27%), juniors (29%) and seniors (23%). The majority (59%) self-identified racial status as white/Caucasian, with 22% black/African-American, 9% Hispanic/Latino, and 10% others.

2.2. Procedure

Participants were tested in a designated room in groups of 3 to 8. Each participant was seated at a private cubicle with visual barriers on either side. Following informed consent, participants were provided with booklets of all measures (described below). A trained researcher proctored all ability tests (described below). When finished with the self-report measures, participants were debriefed and dismissed.

2.3. Measures

2.3.1. General cognitive ability

Four scales from the Employee Aptitude Survey (Ruch, Stang, McKillip, & Dye, 2001) were used to assess *verbal reasoning, verbal comprehension, numerical ability* and *numerical reasoning*. General cognitive ability (GCA) was operationalized as the average of the (standardized) scores from four scales. The verbal reasoning test requires a person to combine separate pieces of information to form a conclusion. The verbal comprehension test requires a person to select the best synonym for a designated word from four alternatives presented. The numerical ability test measures the participant's ability to add, subtract, multiply and divide integers, decimals and fractions. The numerical reasoning test requires a person to analyze a series of numbers to determine the next number that would appear in the series. Alternate-forms reliability coefficients are reported to be .82, .85, .87 and .81 for the four scales, respectively (Ruch et al., 2001). Two-week interval test–retest estimates based on a similar sample reported by Reeve and Lam (2005) are .75, .74, .89, and .76, respectively.

2.3.2. Cognitive style

Cognitive style was measured in two ways. First, we used a maximal performance measurement device; namely, the Cognitive Reflection Test (CRT; Frederick, 2005). The CRT is a three-item test designed to measure one's ability to suppress an intuitively appealing but wrong answer in favor of a the correct answer that requires deliberative thought. The three items are (1) "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?" (2) "If it takes 5 machines 5 min to make 5 widgets, how long would it take 100 machines to make 100 widgets?" and (3) "In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake?" Frederick (2005) reported a series of studies showing that each of these has an intuitive but incorrect answer (i.e., a large percentage of people give the same initial but incorrect answer), and that those who score higher on the CRT display more patience, engage in less delay discounting (i.e., the tendency to discount the value of future rewards), and engage in less risk seeking behaviors.

Second, we used a typical performance measurement device. The Rational-Experiential Inventory Revised (REI-40; Pacini & Epstein, 1999) includes 40 self-rated items using a 5-point response scale (1 = definitely not true of myself to 5 = definitely true of myself). The questionnaire can be scored for four subscales (two for rational thinking, two for experiential thinking) or as two global scales. For our purposes, we computed the two global scores, reflecting overall Rational Thinking (RT) and Experiential Thinking (ET).

2.3.3. Religiosity

Because religiosity is thought to reflect a verity of dimensions, we employed a battery of measures assessing both perceptions and behaviors. *Overall Religiousness* and *Overall Spirituality* were each measured with a single self-report item (i.e., "To what extent do you currently consider yourself a religious person?" and "To what extent do you currently consider yourself a spiritual person?"). *Scriptural Acceptance* was measured with the Hogge and Friedman (1967) Scriptural Literalism Scale. This scale measures the extent to which a person believes his or her religion's scripture(s) are literally true. *Fundamentalism* was assessed with the Altemeyer and Hunsberger (1992) 7-item Fundamentalism Scale (e.g., "There is a religion on this earth that teaches, without error, God's truth"). Three dimensions of Religious Orientation were assessed with the *New Index of Religious Orientations* (NIRO, Francis, 2007): *Extrinsic* (e.g., "One reason for me going to church is that it helps to establish me in the community"); *Intrinsic* (e.g., "I pray chiefly because it deepens my relationship with God"), and *Questioning* (i.e., "I value my religious doubts and uncertainties"). All of these scales used a 5-point response scale indicating degree of agreement or disagreement with the statement.

Three behavioral measures of religiosity were included. *Religious Attendance* was assessed by two items adapted from the General Social Survey assessing frequency of attendance of organized religious services. *Private Religious Practices* was assessed via three items measuring the frequency of religious practices outside of organized services. And *Prayer* was measured with two items. All three measures used a six-point response scale ranging from "Several times a week or daily" to "Never or almost never."

2.3.4. Demographics

Self-reported age, gender, year in school, and race were collected.

3. Results

Descriptive statistics, reliability estimates, and zero-order correlations for all measures are shown in Table 1. All of the means for the religiosity scales indicate somewhat moderate levels of religiosity on average. The CRT proved to be difficult for this sample; 64% of the sample answered all three items incorrectly and only 6% answered all three correctly. This restricted variance should be kept in mind when evaluating the results using the CRT as it will serve to attenuate any associations. As expected, GCA is positively correlated with both measures of rationality, and is unrelated to experiential thinking. The pattern of correlations between religiosity and

Table 1
Descriptive statistics for primary study variables.

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Sex	.50	.62	na														
2. GCA	.00	.73	.23	na													
3. CRT	.59	.91	.29	.53	.64												
4. Rational	3.68	.53	.15	.27	.22	.88											
5. Intuitive	3.46	.52	.12	.03	−.07	.06	.90										
6. Overall Relig.	2.94	1.24	−.07	−.16	−.09	−.14	.26	na									
7. Overall Spirit.	3.47	1.19	−.12	−.13	−.19	.00	.38	.55	na								
8. Rel. Attendance	2.57	1.36	−.11	−.20	−.10	−.19	.01	.45	.43	.85							
9. Rel. Practices	3.19	1.49	−.23	−.31	−.17	−.16	.03	.49	.52	.70	.81						
10. Prayer	3.19	1.52	−.24	−.31	−.19	−.17	.21	.59	.54	.54	.79	.86					
11. ERO	2.60	.73	−.06	−.33	−.20	−.05	.26	.27	.20	.15	.15	.31	.70				
12. IRO	2.97	1.03	−.17	−.39	−.24	−.22	.17	.69	.55	.59	.72	.74	.41	.88			
13. QRO	3.05	.91	.12	.16	.07	.09	−.06	−.27	−.28	−.24	−.28	−.30	−.07	−.27	.81		
14. Fundamentalism	2.41	1.00	−.10	−.27	−.10	−.25	.13	.51	.31	.54	.59	.57	.20	.68	−.33	.88	
15. Script. Accept.	3.41	.87	−.18	−.21	−.17	−.20	.22	.61	.46	.59	.63	.62	.28	.66	−.37	.65	.86

Note. $N = 150$. Correlations > |.15| significant at $p < .05$. Coefficient alpha estimate of internal consistency shown in diagonal. GCA = General Cognitive Ability; CRT = Cognitive Rational Test. ERO = Extrinsic Religious Orientation; IRO = Intrinsic Religious Orientation; QRO = Questioning Religious Orientation.

cognitive ability confirm prior research showing an inverse relation. GCA is inversely correlated with all measures of religiosity (note, QRO scores reflect increased questioning and doubt, and this should be positively correlated with GCA). Similarly, rational thinking (measured both by the CRT and the rational thinking scale of the REI) is inversely associated with all measures of religiosity, though not as strongly as cognitive ability. Experiential thinking in contrast is positively associated with most measures of religiosity, though it appears unrelated to public behavior (i.e., religious attendance and practices). A dummy coded (female = 0, male = 1) gender variable was also included in the correlation matrix to test for mean differences. The point-biserial correlations shown in Table 1 indicate that our sample demonstrates gender differences in scores similar to those documented in the prior literature. Specifically, males scored higher on the rational thinking measures and lower on the measures of religiosity.

To evaluate our predictions, the models shown in Figs. 1 and 2 were tested. These path models specify that both general cognitive ability and cognitive style may have unique effects net the other, and that cognitive style (specifically rational thinking) may mediate some of ability's total effect. Ordinary least squares regression was used to estimate path coefficients. Given the large number of specific path analysis models actually tested (20 overall), all results are shown in tabular form. Results of the regression analyses testing Model 1 are shown in Table 2 and those for Model 2 are shown in Table 3. Standardized regression coefficients are shown in the top portion of each table and the summary of effects is shown in the lower portion. Statistical significance is reported for convention; however, because standardized regression coefficients are in the metric of correlations, path coefficients can be evaluated as effect size indicators using Cohen's traditional rules of thumb. As such, we interpret both statistical and practical significance (i.e., effect size).

Together, GCA and CRT scores accounted for 2% to 16% of the variance in the outcome variables. The path coefficients reflecting the unique direct effects of GCA and CRT indicate that, with the exception of the overall spirituality item, GCA accounts for virtually all of the explained variance. GCA shows a large effect on five of ten outcomes, a medium effect on one, and a small effect on three. Only overall spirituality is unrelated to the unique variance of GCA. In contrast, CRT has a small significant effect on only overall spirituality. CRT does not have a statistically significant unique effect (i.e., all $p > .10$) on any other measure of religiosity. Because CRT has a nil unique effect on these outcomes, there is little mediation (i.e., all indirect effects are less than .10). Accordingly, the total effect of GCA is essentially equal to its direct effect in this model.

Table 3 shows the analogous results using the REI measure of rational and experiential thinking. As expected, the increased variance in the measure of cognitive styles allowed for more variance to be explained. Together, GCA and the REI scores accounted for 3% to 21% of the variance in the outcome variables. GCA shows significant unique effects on all outcome measures. Controlling or REI scores, GCA has large effects on four of ten outcomes (religious practices, prayer activities, extrinsic and intrinsic religious orientation), a medium effect on one (fundamentalism), and small effects on the other five. Rational thinking shows small but significant unique effects on four outcomes and a medium effect on one (fundamentalism). Experiential thinking, which

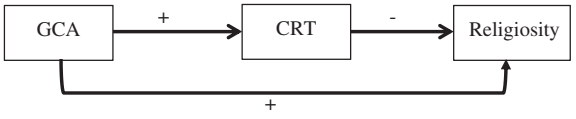

Fig. 1. Analytical model using cognitive reflections test.

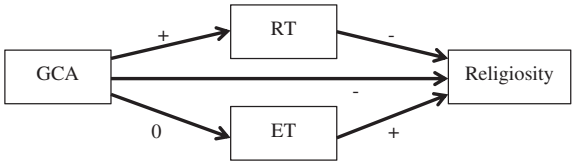

Fig. 2. Analytical model using the Rational Experiential Inventory.

Table 2
Standardized path coefficients and effects estimates across outcomes using CRT as mediator.

Path coefficients										
	Outcome variables									
	OvR	OvS	Attd	Prac	Pray	ERO	IRO	QRO	Fundm	ScAc
GCA to CRT	.53[a]	.53 [a]	.53 [a]	.53 [a]	.53 [a]	.53 [a]	.53 [a]	.53 [a]	.53 [a]	.53 [a]
GCA to Y	−.15	−.03	−.20[b]	−.30 [a]	−.29 [a]	−.31 [a]	−.38 [a]	.17[c]	−.30 [a]	−.17[c]
CRT to Y	−.01	−.18[c]	.01	−.01	−.04	−.04	−.05	.02	.06	−.08
Computed effects										
Antecedents	Endogenous variables									
	CRT	OvR	OvS	Attd.	Prac.	Pray	ERO	IRO	QRO	Fundm	ScAc
Total R^2	.28 [a]	.03	.04[c]	.04[c]	.09 [a]	.09 [a]	.11 [a]	.16 [a]	.02	.08	.05[b]
GCA											
Direct effect	.53	−.15	−.03	−.20	−.30	−.29	−.31	−.38	.17	−.30	−.17
Indirect effect	–	−.01	−.01	.01	−.01	−.02	−.02	−.03	.01	.03	−.04
Total effect	.53	−.16	−.04	−.19	−.31	−.31	−.33	−.41	.18	−.27	−.21
CRT											
Direct effect		−.01	−.18	.01	−.01	−.04	−.04	−.05	.02	.06	−.08

Note. $N = 150$. Standardized coefficients shown. GCA = General Cognitive Ability; CRT = Cognitive Rational Test; OvR = overall religiousness; OvS = overall spirituality; Attd = Religious attendance; Prac = Religious Practices; ERO = Extrinsic Religious Orientation; IRO = Intrinsic Religious Orientation; QRO = Questioning Religious Orientation; Fundm = Fundamentalism; ScAc = Scriptural Acceptance.
[a] $p < .01$.
[b] $p < .05$.
[c] $p < .10$.

Table 3
Standardized path coefficients and effects estimates across outcomes using REI scales as mediators.

Regression coefficients										
	Outcome variables									
	OvR	OvS	Attd	Prac	Pray	ERO	IRO	QRO	Fundm	ScAc
GCA to RT	.27[a]	.27[a]	.27[a]	.27[a]	.27[a]	.27[a]	.27[a]	.27[a]	.27[a]	.27[a]
GCA to ET	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
GCA to Y	−.13[c]	−.14[c]	−.16[c]	−.29[a]	−.29[a]	−.35[a]	−.36[a]	.14[c]	−.23 [a]	−.18[b]
RT to Y	−.12	.01	−.15[c]	−.08	−.10	.03	−.14[c]	.06	−.20 [a]	−.16[b]
ET to Y	.27 [a]	.38 [a]	.02	.05	.22 [a]	.27 [a]	.19 [a]	−.07	.15[b]	.23 [a]
Computed effects										
Antecedents	Endogenous variables									
	RT	ET	OvR	OvS	Attd	Prac	Pray	ERO	IRO	QRO	Fundm	ScAc
Total R^2	.07[a]	.00	.11 [a]	.16 [a]	.06[b]	.10 [a]	.15 [a]	.18 [a]	.21 [a]	.03	.13 [a]	.12 [a]
GCA												
Direct effect	.27	.03	−.13	−.14	−.16	−.29	−.29	−.35	−.36	.14	−.23	−.18
Indirect effects												
Via RT	–	–	−.04	.00	−.04	−.02	−.03	.01	−.04	.02	−.05	−.04
Via ET	–	–	.01	.01	.00	.00	.01	.01	.01	.00	.00	.01
Total effect	.27	.03	−.16	−.13	−.20	−.31	−.31	−.33	−.39	.15	−.28	−.22
Cog. style												
RT Direct effect	–	–	−.13	.01	−.15	−.08	−.10	.03	−.14	.06	−.20	−.16
ET Direct effect	–	–	.27	.38	.02	.05	.22	.27	.19	−.07	.15	.23

Note. $N = 150$. Standardized coefficients shown. GCA = General Cognitive Ability; RT = Rational Thinking; ET = Experiential Thinking; OvR = overall religiousness; OvS = overall spirituality; Attd = Religious attendance; Prac = Religious Practices; ERO = Extrinsic Religious Orientation; IRO = Intrinsic Religious Orientation; QRO = Questioning Religious Orientation; Fundm = Fundamentalism; ScAc = Scriptural Acceptance.
[a] $p < .01$.
[b] $p < .05$.
[c] $p < .10$.

is positively associated with religious thinking, also shows medium or large unique effects on five of the ten outcomes. These results show that all three variables have significant, unique effects on various aspects of religiosity and religious thinking.

The summary of effects shown in the lower portion of Table 3 shows that rational thinking does mediate a meaningful indirect effect (i.e., small or larger) in about half of the models. For example, in the case of overall religiosity, 22% of GCA's total effect is an indirect effect via rational thinking. Similarly, rational thinking conveys about 20% of GCA's total effect for religious attendance, fundamentalism and scriptural acceptance. Because experiential thinking is essentially unrelated with GCA, it did not mediate any indirect effect of GCA.

4. Discussion

Overall our results again confirm that cognitive ability is inversely related to religiosity. Consistent with prior research, people who score higher on measures of intelligence (in this case, a battery of cognitive ability tests) accept religious doctrine to less a degree, are less fundamentalist, engage in fewer religious behaviors, and question religious ideas more than those who score lower on intelligence tests. In addition, our results confirm that cognitive ability generally has a medium to large effect on religiosity (depending on specific outcome). Specifically, the pattern of results suggests that cognitive ability is most strongly related to what might be called the "core" aspects of religiosity (e.g., internalization of religious doctrine, engaging in prayer and religious practices in daily life) and less related to relatively general views (e.g., single "overall view" type items) or general public behavior (e.g., attending a religious gathering).

In contrast, cognitive style did not show strong effects. In general, cognitive style showed small or nil effects on the religiosity measures. Despite showing a similar pattern of inverse relations with religiosity measures, rational thinking style did not yield nearly the same size effect seen with cognitive ability. The strongest results occurred when using the self-report measure of cognitive style, but even here, rational thinking conveyed relatively little effect of cognitive ability. In sum, rational thinking style, although inversely related with religiosity, seems to add relatively little unique variance beyond cognitive ability, and conveys only a small portion of cognitive ability's effect. On the other hand, intuitive thinking was positively related to most of the religiosity measures and thus did explain some unique variance in religiosity as it was essentially unrelated to differences in cognitive ability.

In light of the distinction between cognitive ability and cognitive style (i.e., the former reflects what people can do and the later what they are inclined to do), the current results suggest that religious belief may be (in part) accepted based on the propensity to engage in the evolutionarily familiar experiential thinking style, whereas it is differences in the ability (not the inclination) to override this evolutionarily familiar cognitive system and engage in logical thinking and abstract reasoning that decreases the acceptance of such beliefs. Finding that intelligence, specifically information processing ability, was negatively associated with literal acceptance of religious scriptures and sectarianism, and positively related to religious questioning, Bertsch and Pesta (2009) similarly hypothesized that lower IQ individuals are less likely to have the capacity for critical abstract thought and thus more likely to subscribe to religious orthodoxy as a means to find "uncontested and uncontestable answers." Consistent with this hypothesis, evidence shows that IQ stratifies religious affiliations and this stratification corresponds to the degree of religious orthodoxy and dogmatism exhibited by the denomination (Nyborg, 2009). He suggests that this stratification occurs through the same "gravitational" process known to cause IQ stratifications in occupations (Reeve & Heggestad, 2004; Wilk, Desmarais, & Sackett, 1995; Wilk & Sackett, 1996). Namely, people gravitate towards denominations that provide a match with their level of cognitive complexity. Those with lower ability gravitate towards more fundamentalist or dogmatic sects, whereas those with high ability gravitate towards less fundamental denominations or away from religious belief altogether.

At the same time, some caveats are noteworthy. First, our sampling design relied on a college sample. Thus, generalizability to other populations may be questionable to the degree our sample characteristics do not match the general population. Our sample is certainly restricted in terms of age, region of the US, and attained education, and is likely so on some psychological characteristics including religiosity. Similarly, it should be noted that our findings are culturally and temporally bounded. For example, Meisenberg, Lawless, Lambert, and Newton (2006) found positive relation between intelligence and religiosity after controlling for educational differences in a sample from an under-developed Caribbean island. This could suggest that the inverse IQ-religiosity relationship is moderated by the degree to which a scientific worldview is available within a society. We encourage continued research on the pathways by which g influence religiosity, and the potential moderating effects of societal level variables.

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