



# The intelligence–religiosity nexus: A representative study of white adolescent Americans

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## ABSTRACT

The present study examined whether IQ relates systematically to denomination and income within the framework of the *g* nexus, using representative data from the National Longitudinal Study of Youth (NLSY97). Atheists score 1.95 IQ points higher than Agnostics, 3.82 points higher than Liberal persuasions, and 5.89 IQ points higher than Dogmatic persuasions. Denominations differ significantly in IQ and income. Religiosity declines between ages 12 to 17. It is suggested that IQ makes an individual likely to gravitate toward a denomination and level of achievement that best fit his or hers particular level of cognitive complexity. Ontogenetically speaking this means that contemporary denominations are rank ordered by largely hereditary variations in brain efficiency (i.e. IQ). In terms of evolution, modern Atheists are reacting rationally to cognitive and emotional challenges, whereas Liberals and, in particular Dogmatics, still rely on ancient, pre-rational, supernatural and wishful thinking.

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## 1. Introduction

Charles Spearman (1904) made a discovery a century ago about human cognition so fundamental that it approaches the status of a law of nature: Individuals who perform well (or badly) in one area of cognition tend to perform well (or badly) in all other, even rather dissimilar, cognitive areas. The practical implication of this principle is difficult to underestimate: For example, top performers in mathematics can be expected to do well not only in classical languages, but also in pitch discrimination, memory, and general problem solving irrespective of topic. Being a pioneer also in early factor analysis Spearman extracted two factors from the sub-test correlations matrix, one of which he designated general intelligence, *g*. Another major achievement is Arthur Jensen's further refinement of Spearman's original *g* measure (e.g. Jensen, 1998). Among other things, Jensen verified that the *g* factor is not merely a mathematical artifact, but "... a single dimension of individual differences that cuts across a variety of learning tasks (Jensen, 1998 p. 95).

Research on *g* can be ordered along a vertical axis (the causal basis for *g*) and a horizontal axis (its practical or predictive value), according to Jensen (1998, p. 95).

### 1.1. Vertical aspects of *g*

Vertically speaking, the *g* factor is a physiological phenomenon with multiple biological correlates (Jensen, 1998, Chapter 6; Jensen & Sinha, 1993). It is heritable, but heritabilities range from a rather low .20 in early childhood to an impressive .80 in late adulthood (e.g. Plomin & Spinath, 2004; Polderman et al., 2006). It appears that the full expression of genetic *g* is observed only later in life, after the individual has had a chance to actively realize its full potential. Because factor *g* is a phenotypic indicator of neural brain efficiency (Jensen, 1998), it comes as no surprise that recent brain research shows that *g* correlates positively with the size of about 10 small gray matter brain areas and intelligence (e.g. Jung & Haier, 2007). As could be expected, also brain size is largely inherited (Pennington et al., 2000; Toga & Thompson, 2005). The vertical evidence for *g* testifies to Spearman's original vision that *g* will only be fully understood in terms of "... the most profound and detailed direct

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study of the human brain in its purely physical and chemical aspects” (Spearman, 1927, p. 403), and a program – called psychology – has been formulated to further promote such an approach (Nyborg, 1994, 1997, 2007a).

### 1.2. Horizontal aspects of *g* and the *g* nexus

Horizontally speaking, the broad practical significance of *g* emanates “... from the fact it is causally related to many real-life conditions, both personal and social. All these relationships form a complex correlational network, or nexus, in which *g* is the major node” (Jensen, 1998, p. 544). Jensen is careful to point out that individual and group differences in *g* specify only the essential minimum level needed for achievement in areas like education, occupation, and economy, and that many non-*g* specific abilities, talents, personality, social and pure chance factors may help co-determine individual and group outcome. A large number of studies nevertheless show that *g* is the single most important predictor variable for individual and group differences in such diverse areas as employment, health, poverty, crime, welfare and, recently, cross-national student performance and national wealth (e.g. Batty, Deary, & Gottfredson, 2007; Gottfredson, 1997; Herrnstein & Murray, 1994; Lynn & Vanhanen, 2002; Nyborg, 2007b; Rindermann, 2007).

### 1.3. Religiosity and the *g* nexus

The purpose of the present article is to bring religiosity within the *g* nexus. There are good reasons for this. First, despite centuries of research and discussion we still do not know how to best account for the origin, development and persistence of religion worldwide. Second, religiosity occupies many people – almost everybody in developmental countries, but also a majority in developed societies (Zuckerman, 2006). The latter observation is puzzling, because religiosity is basically incompatible with a modern rational or scientific understanding. Religiosity thus refers to 1) *beliefs*, ranging from souls, invisible worlds, supernatural Gods or forces, to angels, devils, and holy spirits, and 2) *claims* about supernatural forces that control our behavior, feeling and thinking. To be sure, the various denominations differ considerably in intensity, direction and the nature of their beliefs and claims, but they all have supernatural phenomena in common, and this certainly goes far beyond rational explanation and objectivity. The intelligence–religiosity contrast becomes even more obvious in the following brief review of previous research that brings religiosity within the scope of the *g* nexus framework.

## 2. Selective historical review

The scriptures contain references to intelligence. For example Proverb (3:7, Scripture, 1982) states: “Trust in the Lord with all your heart, and lean not on your own understanding. In all your ways acknowledge Him, and He shall direct your paths. Do not be wise in your own eyes. Fear the Lord”. Even more to the point: “Blessed are the poor in spirit: for theirs is the kingdom of heaven.” (Matthew 5:3 in King James Bible).

The research literature on intelligence and religiosity is rather voluminous and will be reviewed only briefly here.

### 2.1. Within-nation studies of inverse IQ (or eminence)–religiosity relationships

Leuba (1921) found that only 39% of eminent American scientists and scholars believed in God. Howells (1928) and Sinclair (1928) used various measures of religious belief in college students and got negative correlations to intelligence, ranging from  $-.27$  to  $-.36$ . Argyle (1958) noted that “intelligent students are much less likely to accept orthodox beliefs, and rather less likely to have pro-religious attitudes”. Roe (1965) found that only 4.8% of 64 eminent scientists were religious, and Beit-Hallahmi (1988) noted a remarkable degree of irreligiosity among Nobel laureates in science and literature as compared to the general population.

Beit-Hallahmi and Argyle (1997, p. 177) speculated that there “... probably [are] no difference in intelligence among religious individuals and non-believers...”, though fundamentalists score a little lower...” (p. 182), but Larson and Witham (1998) observed that only 7% of the high-IQ members of the “National Academy of Sciences” believe in a personal God, against 20.8% Agnostics and 72.2% self-declared Atheists. Moreover, only 7.9% of the members believed in an afterlife against 76.7% declining its existence. Larson and Witham later (1999) found that no less than 90% of the American public still believes in the existence of a personal God and in afterlife, whereas only 40% university bachelors and 10% “eminent” scientists believe so. For bachelors specializing in mathematics, 40% believe in a personal God, but only 30% of the biologists and just 20% of the physicists believe so. Bell (2002) meta-analyzed 43 studies and found negative IQ-belief correlations in all but four studies. Dawkins (2006) noted that only 3.3% of the Fellows of the Royal Society in Britain believe in God, whereas 78.8% do not believe and the remainders were undecided, against 68.5% believers in the general British population. Kanazawa (in press) used data from the American National Longitudinal study of Adolescent Health ( $N = 14,277$ ) and found that the “Not religious at all”, the “Slightly religious”, the “Moderately religious”, and the “Very religious” differed significantly in IQ (103.09, 99.34, 98.28, and 97.14 respectively,  $p < .000$ ).

To sum up, religiosity relates negatively to IQ (or eminence), and very high-IQ individuals tend to be Atheists and scientists. Religiosity is asymmetrically distributed in modern society. A tiny fraction of very high *g* people prefers empirical evidence and testable hypotheses to supernatural beliefs, whereas the vast majority of average or low *g* people subscribe implicitly or explicitly to ideas of supernatural God(s), partake in culture-related rituals, and claim authority from clergy and scriptures.

### 2.2. Large-scale cross-nations studies of inverse IQ–religiosity correlations

Meisenberg (2007) correlated the national average IQs given by Lynn and Vanhanen (2006), to religiosity and noted a cross-national correlation of  $-.74$ , and Lynn, Harvey and Nyborg (in press) found that disbelief in God correlates  $.60$  with national IQs across 137 nations.

### 2.3. Denominational rank order

Little reported back in 1926 (cited in Ament, 1927) that “Unitarians, Episcopalians, Congregationalists, Universalists

and Presbyterians are... far more numerous in 'Who's Who'... Baptists, Methodists and Catholics are distinctly less numerous..." A year later Will Rogers mused that "You just can't eddicate a Baptist... cause when he's eddicated he ain't a Baptist any more" "But take Episcopalians, Presbyterians and Christians, and when they's eddicated they is still Episcopaliens, Presbyterians and Christians" (cited in Ament; *ibid.*). Rogers's speech was a steppingstone for a study in which Ament categorized Unitarians, Episcopal, Congregational, Friends, and Presbyterians in one group, and compared it to a group of all other denominations. Sixty three percent members of the first group appeared in Who's Who against 37% in the second group. Pratt (1937) rank-ordered denominations according to their mean intelligence and noted the following order: Episcopal, Christian Science, Nazarene, Congregational, Presbyterian, Protestant, Baptist, Methodist, Disciples of Christ, miscellaneous, Lutheran, Catholic, and no preference. However, all differences were non-significant. Not unexpectedly, this ordering resembles the proportional denominational representation in Who's Who, a proxy for eminence. Bello (1954) observed that secularized Jews and people with no religious affiliation were massively over-represented among American scientists, whereas Roman Catholics were under-represented. Lenski (1963) reported that Protestant and Jewish scientists were six times more productive than Roman Catholics.

Verhage (1964) exposed 1538 individuals to the Groningen Intelligence test and noted the following descending rank order: No affiliation, Reformed Church (Gereformeerde Godsdienst), Netherlands Reformed Church, and Roman Catholics. Nelsen (1973) established a scale from reading of books and magazines and going to lectures and cultural events, and observed that Catholics scored much lower than Protestants, with Jews at the top. Beit-Hallahmi and Argyle (1997) reviewed studies of social class–religion connections. In essence they found that working class members tend to believe more ardently and emotionally charged in an active agency of support and encouragement (see Lynd & Lynd, 1929, p. 329). In a 1990 United States survey Kosmin and Lachman (1993) noted that the best educated were Unitarians, Jews, Members of NRMs, and Agnostics, and the least educated were Jehovah's Witnesses, Holiness, Pentecostals, Baptists, and Brethren.

In short, denominations differ considerably in cognitive complexity, IQ, education and achievement.

#### 2.4. Liberal versus dogmatic orientations

Early United States studies suggest that fundamentalist or dogmatic attitudes are negatively related to intelligence (Hoge, 1974; Symington, 1935). Argyle (1958) found that "intelligent students are much less likely to accept orthodox beliefs, and rather less likely to have pro-religious attitudes." Rhodes and Nam (1970) found that Baptists score high on a measure of degree of fundamentalism and anti-intellectualism where Jews score low. Lynn, Hampson and Magee (1983) compared Protestant and Catholic intelligence and found a point-biserial correlation of .14 in favour of Protestants. Rigney and Hoffman (1993) exposed 1469 subjects to eight measures of anti-intellectualism and found that denominational affiliations could be ranked as follows in ascending order: None, Other, Jewish, Liberal Protestants, Fundamentalist Protestants, Roman

Catholics. Beit-Hallahmi and Argyle (1997) observed that "... fundamentalists score a little lower [intelligence], and that fundamentalist groups and their members are different from others in being of average of lower occupational status, education and income."

Denominations thus differ not only in IQ, but also in degree of dogmatism.

#### 2.5. Income

Kosmin and Lachman (1993) observed that the wealthiest denominations were, in descending order, Jews, Unitarians, Agnostics, and Episcopalians, and the poorest were members of Holiness churches, Brethren, Pentecostal, Baptists, Jehovah's Witnesses, and Seventh Day Adventists.

Denominational income rank thus overlaps with educational rank, and Liberals achieve better than Dogmatics.

#### 2.6. Decreasing religiosity with age

Several international studies indicate that religiosity fades with age during adolescence (e.g. Francis, 1989; Turner, 1980).

### 3. The present study

The problem with many older studies on intelligence–religiosity connections is that they typically draw on convenience sampling and make ad hoc interpretation. Often they remain purely descriptive or sociological at heart, and rarely do they consider the outcome within a testable empirical paradigm. This raised a need for extending the deductive framework of the *g* nexus to cover bonds between intelligence and type of religious persuasion. Ontogenetic and evolutionary aspects are also missing from older studies.

The present study examines the working hypothesis that dogmatism reflects a neurologically less than optimally evolved low *g* brain that seek supernatural guidance in ambiguous or life threatening situations.

The study begins with two sets of a priori assumptions. First, high *g* people have a brain based biological capacity for solving complex problems, and for acting rationally when confronted with fundamental questions about existence, human nature, underlying causes, or the "slings and arrows of outrageous fortune". Second, low *g* people lack this protection and are therefore unfairly ordained to live in a pre-rational world based on poorly validated evidence and little accumulated insight. They accordingly often find themselves in cognitively, emotionally, or morally challenging situations and have to use plan B, that is, to call upon easily comprehensible religious authoritative guidance and to submit more or less uncritically to culturally given stereotyped rituals. Frustration with their life may also make them seek redemption or faith in an after life.

The psychology program (Nyborg, 1994, 1997, 2007a) may supplement this by providing an entry into understanding of ultimate cause(s) for enhanced *g* (and reduced religiosity) during human evolution in the following way: "In this view evolution refers to gradual selection over eons of time for economical combinations of physico-chemical agents and related molecular processes and mechanisms... Psychology sees traditional Darwinistic selection as a special case of

selection among live organisms” where “... geography, geology, and variations in the climate, in water and mineral resources, and in the availability of food all affects physico-chemical processes” and “... translate to differences in body, in brain processing, thinking, and emotions, and in behavior.”... “In that respect, nature seems to follow the most economical or energy-efficient path.” (Nyborg, 1994, pp. 25–27).

The ultimate causal level presumes that geographically separated peoples were subjected to different evolutionary pressures over extended time-periods. Those living under the hardest of evolutionary pressures, in cold or arctic areas, were gradually and over many generations selected for enhanced *g* (for details of the Climate Theory, see Lynn, 2006; Rushton, 2000). They had to replace ancient pre-rational supernatural beliefs with more effective rational approaches in order to survive under the harsh conditions given. People living in warm or tropical areas enjoyed in general more relaxed selective conditions, and low *g* individuals were not severely punished, as their survival was not seriously compromised by uncritical reference to ancient supernatural thinking, irrational beliefs in souls, invisible worlds, Gods, forces, angels, devils, hell, or holy spirits. A contemporary belief that supernatural forces control behavior, feelings and thinking is accordingly seen as a reminiscence of pre-historic animism and magical thinking.

The proximate intelligence–religiosity connections were tested in accordance with the *g* nexus by monitoring whether contemporary *g* differences explain the covariant pattern of presence (or absence) of different types of religious persuasion and related socio-economic status. High *g* individuals will gravitate towards atheism or science, will discard supernatural phenomena, and will learn fast and prosper. Average *g* individuals will find one of several moderate liberal denominations more to their taste, will display average learning, and will accordingly assume an intermediate socio-economic standing. Low *g* individuals will submit to one of the many dogmatic denominations, will be slow learners, and will attain a low socio-economic status that accord with their limited cognitive complexity and closed mind. Variations in disbelief, denominational complexity, educability and income are accordingly expected to follow from essentially heritable *g* differences, and to manifest themselves as today's mainly biologically brain based religious class differences.

The primary goal is to anchor religiosity within ultimate and proximate biological, intellectual, and achievement parameters and the *g* nexus. A secondary goal is to add the psychology program, in order to establish a coherent deductive causal framework for explaining religiosity. Presently there is fundamental disagreement about the role of social background and education. Beit-Hallahmi and Argyle (1997, p. 157) noted that: “Basic demographic and social background variables seem to have important effects on religiosity, and should be taken into consideration ahead of other variables in accounting for religiosity.” They noted that Jews and Episcopalians have the most education and Baptists and Roman Catholics the least (Beit-Hallahmi & Argyle, 1997, p. 178), and concluded that this “... seemed to be due to different values being placed on education...”

The present approach differs from such a socialization position, by assuming that differences in cognitive complexity reflect a biological parameter (i.e. *g*) that predisposes both for denominational, educational and socio-economic differences.

Thus, *g* predicts training potential (Ree & Earles, 1990), attained income and job status (e.g. Gottfredson, 1997; Hartmann, Larsen, & Nyborg, submitted for publication; Nyborg & Jensen, 2001) and, by analogy, representation in Who's Who.

### 3.1. Syllogisms

Six testable syllogisms about *g* defined the empirical program. However, to promote a non-specialist understanding the somewhat technical *g* factor score will be translated into its IQ equivalent in the ensuing analyses (see Analysis section).

#### 3.1.1. Syllogism 1

Premises 1 and 2: Cognitively complex people typically resort to reason, science and data to reduce uncertainty, whereas people lacking this cognitive protection often resort to ancient supernatural beliefs and claims. Ergo: High-IQ people gravitate towards atheism and/or science, and low-IQ people become religious.

#### 3.1.2. Syllogisms 2a–c

Premise 1 and 2+premise 3: Denominations differ in cognitive complexity. Ergo, 2a: Cognitively highly complex people choose Atheism/science; 2b: Medium complex people choose liberal denominations (i.e. fairly open, critical, less committed, metaphorical, cultural heritage type), and 2c: Least complex people drift towards dogmatic denominations (committed, personal relationship with Jesus, emphasis on sinfulness, fixed rules for behaviour, and need for atonement).

#### 3.1.3. Syllogism 3

Premise 4: Denominations of different conceptual complexity also differ in IQ. Ergo: Denominations can be systematically rank ordered by average IQ.

#### 3.1.4. Syllogism 4

Premis 5: Denominations that differ in distribution score will according to Gaussian distribution theory also differ in the proportions of high-IQ individuals (i.e. with  $IQ \geq 120$ ) – the group from which society primarily recruits its members for the upper positions (Herrnstein & Murray, 1994). Obviously, the absolute denominational contribution of high-IQ members also depends on its numerical size. Ergo: Large denominations may offer more gifted individuals to occupy the upper religious and social positions in society than do small denominations, even if they do have relatively low mean IQs and SDs.

#### 3.1.5. Syllogism 5

Premise 6: IQ is the most important single predictor of income (Herrnstein & Murray, 1994). Ergo: Denominations with high IQ earn more than less favored denominations.

#### 3.1.6. Syllogism 6

Premises 7 and 8: The indicator for the heritability of IQ goes up with age as children have more chances to actively create their own environment rather than just reacting passively to parental directions (e.g. Scarr & McCartney, 1983). Moreover, individuals tend to gravitate over time towards a job with a task complexity that matches their own cognitive complexity level – the so-called Gravitation hypothesis (Reeve & Heggstad, 2004; Wilk, Desmarais, & Sackett, 1995; Wilk & Sackett, 1996). In the

**Table 1**  
White principal axis factor g loadings (un-rotated)

Sub-tests	g (PAF)
General science	0.86
Arithmetic reasoning	0.85
Word knowledge	0.84
Mathematics knowledge	0.84
Paragraph comprehension	0.83
Mechanical comprehension	0.80
Electronics information	0.76
Assembling objects	0.67
Numerical operations	0.62
Coding speed	0.59
Shop information	0.54
Auto information	0.53
Total variance explained	54%

present context the Gravitation hypothesis gives basis for the expectation that individuals will gravitate over time towards a non-faith/faith position with a degree of complexity that matches their own cognitive complexity. Ergo: Agnostic and Atheist persuasions become increasingly more prevalent from ages 12 to 17, and the proportion of religious believers drops accordingly.

**4. Method**

*4.1. Computer adaptive testing*

The CAT-ASVAB97 consists of the ten power and two speeded sub-tests shown in Table 1.

The U.S. Department of Defense developed a computer adaptive form for the 10 power sub-tests, so that the testing procedure "... matches the difficulty level of the individual test items to the ability levels of the respondents" (details in Owen, 1969, 1975; Segall, Moreno, & Hetter, 1997). The two speeded

tests in the CAT-ASVAB, Coding Speed and Numerical Operations were administered in a non-adaptive format, that is, all respondents answer the same items in the same order. The final ability estimate for these sub-tests is a rate score based on the proportion of correct responses corrected for guessing, divided by the mean screen presentation time for the items (Lord, 1980).

*4.2. Liberal and Dogmatic terminology*

When religion is defined as ideology "... actively concerned with the establishment and defense of patterns of beliefs and values" (Geertz, 1964, p. 64), the question arises whether denominations differ in being open or closed-minded, flexible or dogmatic. The present review indicated that they certainly differ in degree of education, and lack of education correlates .50 to .60 with authoritarianism (Christie & Jahoda, 1954). This is one reason to expect denominational differences in degree of dogmatism, even if authoritarianism is typically used in discussions of right-wing ideology whereas dogmatism reflects the rigidity of both the political right and left (Beit-Hallahmi & Argyle, 1997, p. 167). Using his own dogmatism scale Rokeach (1960) observed that Roman Catholic American students scored higher than Protestants, and non-believers scored lowest on the scale, and Brown (1962) found that orthodox religious beliefs correlated with authoritarianism. This and other evidence lead Beit-Hallahmi and Argyle (1997) to conclude that religiosity is related to "... suggestibility, authoritarianism, dogmatism, and self-esteem." (p. 248).

The 19 denominations in the present study were tentatively categorized into four groups: 1) Atheists, 2) Agnostics, 3) Liberals, and 4) Dogmatics, based on the sparse research evidence for different levels of dogmatism and authoritarianism. A Liberal denomination was defined as fairly open, critical, less committed, metaphorical, cultural heritage-type religion, and average education and income, and a Dogmatic denomination

**Table 2**

Actual number of white subjects used in the ensuing statistical analyses, then the representative number of all adolescent subjects according to total NLSY97 sample weight / 100, by denomination and race, and sorted by the total denominational frequency in the United States 1997

Religious denomination	Actual white Ns used for the ensuing analyses	Representative number of subjects according to sample weight					Racial proportions within denomination in %			Denominational proportions across total sample in %		
		Total	Total %	White	Hispanic	Black	White	Hispanic	Black	White	Hispanic	Black
Roman Catholic	985	3,964,127	26	2,868,712	973,377	122,038	72	25	3	26	56	5
Baptist	541	2,853,049	19	1,598,288	115,018	1,139,743	56	4	40	15	7	50
Personal Philosophy	355	1,338,853	9	1,034,156	121,887	182,810	77	9	14	9	7	8
Bible Church	276	1,075,397	7	804,237	105,770	165,390	75	10	15	7	6	7
Lutheran	327	997,472	7	955,037	29,955	12,480	96	3	1	9	2	1
Methodist	237	854,365	6	698,178	32,833	123,354	82	4	14	6	2	5
Protestant (Other)	202	811,758	5	588,766	104,701	118,291	73	13	15	5	6	5
Pentecostal	98	535,862	4	292,747	98,953	144,162	55	18	27	3	6	6
Agnostic	103	370,420	2	303,645	37,980	28,795	82	10	8	3	2	1
Other	99	335,954	2	290,001	21,409	24,544	86	6	7	3	1	1
Disciples of Christ	79	329,701	2	228,558	35,658	65,485	69	11	20	2	2	3
Presbyterian	82	267,769	2	238,987	6704	22,078	89	3	8	2	0	1
Mormon	66	226,709	2	194,657	28,271	3781	86	12	2	2	2	0
Jewish	70	208,491	1	206,453	2038	0	99	1	0	2	0	0
Episcopal/Anglican	61	202,339	1	180,714	9056	12,569	89	4	6	2	1	1
Un. Church of Christ	58	200,012	1	168,237	4024	27,751	84	2	14	2	0	1
Holiness	44	189,945	1	125,422	0	64,523	66	0	34	1	0	3
Atheist	39	131,927	1	117,681	5155	9091	89	4	7	1	0	0
Muslem	20	68,787	0	58,658	0	10,129	85	0	15	1	0	0
All Groups	3,742	14,962,937	100	10,953,134	1,732,789	2,277,014						
Group percentage				73%	12%	15%						

**Table 3**

White IQ differences by Atheist versus Religious persuasions, excluding Agnostics ( $F(1\ 3637)=5.51$ ;  $p=.02$ )

	Representative N	IQ (PAF)	SD	Difference	IQ
Atheist	117,681	111.08	12.78		
Religious	10,531,586	105.95	13.54	Atheist–Religious	5.13
Total	10,650,267	106.01	13.54		

was defined by being heavily committed, calling for a personal relationship with Jesus, putting emphasis on sinfulness, adhering to fixed rules for behaviour, and expressing a need for atonement. Obviously, any such categorization is highly debatable even if three judges arrived at a mean correlation of .93 for their verdict. For liberal orientations one judge classified Jews and Methodists as Dogmatics, and another judge saw Roman Catholics as Liberals. Table 4 reflects the majority vote (for further discussion, see Limitation section).

#### 4.3. High-IQ fraction

The size of the high-IQ fraction of members within each denomination with  $IQ \geq 120$  was deemed interesting, as higher education and leading positions in society increasingly recruit such high-IQ people for service at the upper circles (Gottfredson, 1997; Herrnstein & Murray, 1994). The total size of the denominational high-IQ fraction would provide an index for the potential influence a particular denomination may exert on society.

#### 4.4. Test for significance

The use of cross-sectional weight/100 makes the study representative for all white 12–17 year old non-Hispanics, but the huge number of representative subjects makes ordinary statistical testing almost meaningless. To counter this problem, all test for statistical significance was calculated on basis of the much lower number of actually responding subjects (see Table 2, second column), even if tables provide the representative *N*.

**Table 4**

Rough division of current orientations into four

Current orientation	Categorization
Atheist	Atheist
Agnostic	Agnostic
Episcopal/Anglican	Liberal <sup>a</sup>
Jewish	Liberal
Methodist	Liberal
Presbyterian	Liberal
Lutheran	Liberal
Protestant (Other)	Liberal
Disciples of Christ	Dogmatic <sup>b</sup>
Un. Church of Christ	Dogmatic
Roman Catholic	Dogmatic
Mormon	Dogmatic
Bible Church	Dogmatic
Muslem	Dogmatic
Holiness	Dogmatic
Baptist	Dogmatic
Pentecostal	Dogmatic

<sup>a</sup> Liberal: fairly open, critical, less committed, metaphorical, cultural heritage-type persuasion.

<sup>b</sup> Dogmatic: more committed, personal relationship with Jesus, emphasis on sinfulness, explicit rules for behavior and need for atonement.

**Table 5**

IQ averages for white Atheists, Agnostics, Liberals and Dogmatics ( $F(3\ 3738)=9.09$ ;  $p<.001$ )

Level of factor	Representative N	IQ (PAF)	SD
Atheist	117,681	111.08	12.78
Agnostic	303,645	109.13	14.21
Liberal	3,903,069	107.26	13.55
Dogmatic	6,629,517	105.19	13.48
Total	10,953,912	106.10	13.57

#### 4.5. Analysis

The CAT-ASVAB97 sub-tests show considerable cognitive homogeneity. The standardized scores for all 12 sub-tests were subjected to an un-rotated Principal Axis Factor analysis, and a general intelligence (PAF) *g* factor score was derived and subsequently converted to IQ equivalent points through the formula  $g * 15 + 100$ . This factorial IQ is theoretically and methodologically a more satisfying measure than a simple IQ score based on summed standardized sub-test scores (Jensen, 1998). The *g* loadings of the 12 sub-tests (see Table 1) range from .55 to .88, suggesting that the standard CAT-ASVAB97 is a close proxy for *g*, as expected (Nyborg, 2007b; Rindermann, 2007).

#### 4.6. Subjects

Table 2 first tabulates the actual number of 12–17 year old white respondents used in the ensuing statistical analyses, then the representative number and percentage of the full NLSY97 sample of 12–18 year old individuals, broken down by denomination and race. The representative number indicates how many individuals each respondent represent when total sample weights / 100 are used (Moore, Pedlow, Krishnamurty, & Wolter, 2000). The total weighted sample represents all white non-Hispanic, Hispanic, black, and other adolescents in the United States in 1997, sorted by total denominational frequency and race.

Roman Catholic and Baptist persuasions clearly dominate the American picture, whereas Atheists and Muslims form small

**Table 6**

White IQ differences by denomination ( $F(18\ 3723)=6.90$ ;  $p<.001$ .)

Denomination	Representative N	IQ	SD
Episcopal/Anglican	180,714	113.43	11.68
Jewish	206,453	112.43	13.14
Atheist	117,681	111.08	12.78
Agnostic	303,645	109.13	14.21
Methodist	698,178	108.33	13.41
Presbyterian	238,987	107.74	13.55
Lutheran	955,037	107.51	12.01
Protestant (Other)	588,766	107.42	13.38
Disciples of Christ	228,558	106.90	12.99
Roman Catholic	2,868,712	106.66	12.98
Other	290,001	106.43	13.65
Mormon	194,657	106.16	12.87
Un. Church of Christ	168,237	106.14	12.47
Bible Church	804,237	106.09	14.21
Muslem	58,658	104.87	9.94
Personal Philosophy	1,034,934	103.98	14.54
Holiness	125,422	103.56	12.88
Baptist	1,598,288	102.13	13.78
Pentecostal	292,747	101.89	13.05
Total	10,953,912	106.09	13.57

**Table 7**

Religious classification, percentile IQ distribution, proportion of high-IQ individuals (i.e.  $IQ \geq 120$ ) in percent, and the population weighted proportion of potential representative white candidates for service as clergy or in the upper strata of society, by denomination

Denomination	Classification	Percentile IQ distribution									Denominational proportion of high-IQ individuals (i.e. $IQ \geq 120$ )		
		<70	70–80	80–90	90–100	100–110	110–120	120–130	130–140	>140	High-IQ fraction	Representative N	Percent of population
Jewish	Liberal	0	0	3	17	23	24	22	10	1	33	68,496	4
Episcopal/Anglican	Liberal	0	2	0	10	31	28	20	9	0	29	51,665	3
Atheist	Atheist	0	2	5	13	21	34	18	7	0	25	29,642	2
Agnostic	Agnostic	1	2	4	19	28	27	13	3	3	19	58,051	4
Bible Church	Dogmatic	0	6	8	15	28	25	13	4	0	17	140,608	9
Other	?	0	4	7	22	27	23	13	4	0	17	48,696	3
Methodist	Liberal	1	3	6	13	24	37	13	4	0	17	115,790	7
Lutheran	Liberal	0	2	6	20	27	29	16	0	0	16	151,876	10
Roman Catholic	Dogmatic	0	3	8	18	28	27	13	2	0	15	444,339	28
Protestant (Other)	Liberal	1	2	6	14	29	33	10	2	1	14	81,380	5
Presbyterian	Liberal	1	1	9	14	26	34	10	4	0	14	32,740	2
Personal Philosophy	?	1	5	11	19	28	23	11	1	1	13	131,687	8
Disciples of Christ	Dogmatic	0	3	6	15	36	28	8	4	1	13	29,040	2
Un. Church of Christ	Dogmatic	0	5	5	20	27	29	13	0	0	13	21,061	1
Holiness	Dogmatic	2	0	13	27	30	16	11	0	0	11	14,177	1
Mormon	Dogmatic	1	3	5	19	33	28	7	3	0	11	20,532	1
Pentecostal	Dogmatic	2	5	8	27	33	17	8	1	0	9	25,640	2
Baptist	Dogmatic	1	6	12	24	28	22	7	1	0	8	127,100	8
Muslem	Dogmatic	0	0	5	32	25	34	4	0	0	4	2591	0
Total percent		0	4	7	22	27	23	13	4	0			
Training potential		Poor	Difficult to train		Unskilled	Skilled	Humanities	Science	Eminence				
All groups		71,327	39,9801	861,729	2,043,645	3,062,472	2,919,827	1,295,361	269,052	30,698		1,595,111	100%

**Table 8**

White Gross Household Income by denomination ( $F(18, 2,944)=8.57$ ;  $p < .0001$ )

Denomination	Representative N	1996 US\$ mean	SD
Jewish	118,422	114,517	79,716
Episcopal/Anglican	135,373	81,103	57,345
Mormon	159,968	75,219	57,773
Presbyterian	192,013	73,870	49,346
Disciples of Christ	173,178	69,126	62,035
Methodist	543,742	67,982	51,386
Roman Catholic	2,270,011	65,138	46,637
Agnostic	234,590	63,329	47,473
Lutheran	804,876	62,205	42,561
Other	201,520	61,504	57,737
Un. Church of Christ	129,713	60,960	30,439
Atheist	87,937	60,407	48,608
Personal Philosophy	839,490	54,827	42,951
Bible Church	610,168	54,212	39,887
Protestant (Other)	469,383	51,102	34,400
Baptist	1,300,394	50,763	41,111
Muslim	46,530	48,298	30,510
Holiness	111,754	46,216	29,262
Pentecostal	237,216	39,924	26,381
All Groups	8,666,278	60,474	46,472

minority groups. All denominations are numerically dominated by white non-Hispanics, but Hispanics count for 25% of the Roman Catholics. Forty percent of the Baptists are blacks, as are 27% of the Pentecostals and 34% of Holiness. Within race, 56% of Hispanics admit to being Roman Catholics, 50% of blacks state they are Baptists, and close to a quarter of all whites acknowledge to be Roman Catholics. The remaining individuals are widely dispersed over numerous other denominations.

The following statistical analyses exclude the Mixed Race category ( $N=83$ ) and the 18 years olds ( $N=18$ ), and collapsed 12 very small-numbered denominations, not mentioned separately in Table 2, under "Other". Moreover, in order not to confuse religion with race and related socio-economic variables, the analyses were further limited to white non-Hispanic adolescents. This reduced the original white NLSY97 sample to  $N=3742$ . The use of cross-sectional sample weights makes them represent all 10,953,134 12–17 year old white

subjects, or 73%, living in the United States at time of testing in 1997 (Moore et al., 2000).

The average white IQ is about 6 IQ points above total sample IQ. The factor structures are identical across races and sexes (all congruence coefficients  $\geq .998$ ). Cross-sectional sample weight/100 is used consistently in all the following analyses of white non-Hispanics.

## 5. Results

Syllogism 1 (high-IQ people gravitate towards atheism and/or science, and low-IQ people remain religious) was tested in an ANOVA design with IQ as dependent factor and Atheist versus religious as the categorical variable. Agnostics were left out of this analysis, as they could neither be classified as atheists nor religious.

Table 3 confirms that white religious people trail Atheists by 5.13 IQ points. Analysis of variance on the actual number of respondents indicates that this difference is statistically significant ( $p=.02$ ).

Syllogism 2 said that a: cognitively highly complex people choose Atheism/science; b: medium complex people choose liberal denominations (i.e. fairly open, critical, less committed, metaphorical, cultural heritage type), and c: least complex people drift towards dogmatic denominations (committed, personal relationship with Jesus, emphasis on sinfulness, fixed rules for behaviour, and need for atonement). Table 4 outlines the classification of denominations, and Table 5 provides numbers that confirm syllogism 2, in addition to indicating Agnostic IQ.

Atheists thus score 1.95 IQ points higher than Agnostics, 3.82 points higher than Liberals, and 5.89 points higher than Dogmatics. The differences are highly significant ( $p < .001$ ).

Syllogism 3 (denominations can be systematically rank ordered by average IQ) found confirmation in Table 6.

Thus, Episcopal/Anglicans top the IQ scale and Pentecostals and Baptists are found at the bottom. Roman Catholic IQ is close to the sample mean.

Syllogism 4 (Large denominations may offer more gifted individuals to occupy the upper religious clerical and social

**Table 9**

White age and sex differences in adolescent Agnostic, Atheist and Religious persuasions

Persuasion	Sex	Age in years					Row total	
		12	13	14	15	16		17
Agnostic	Male	8639	40,380	31,174	42,585	34,555	31,911	189,244
		58.48%	69.97%	54.09%	55.75%	58.78%	83.20%	62.32%
Agnostic	Female	6134	17,327	26,463	33,803	24,230	6444	114,401
		41.52%	30.03%	45.91%	44.25%	41.22%	16.80%	37.68%
Total		14,773	57,707	57,637	76,388	58,785	38,355	303,645
		0.96%	2.75%	2.56%	3.41%	2.79%	5.33%	
Atheist	Male	3216	5722	16,644	14,957	33,999	6061	80,599
		26.17%	100.00%	73.26%	71.97%	72.78%	64.11%	68.49%
Atheist	Female	9072	0	6074	5825	12,718	3393	37,082
		73.83%	0.00%	26.74%	28.03%	27.22%	35.89%	31.51%
Total		12,288	5722	22,718	20,782	46,717	9454	117,681
		0.80%	0.27%	1.01%	0.93%	2.22%	1.31%	
Religious	Male	794,352	1,041,294	1,119,253	1,044,280	982,713	295,546	5,277,438
		52.61%	51.11%	51.62%	48.74%	49.08%	43.96%	50.11%
Religious	Female	715,462	996,079	1,049,056	1,098,108	1,019,691	376,752	5,255,148
		47.39%	48.89%	48.38%	51.26%	50.92%	56.04%	49.89%
Total		1,509,814	2,037,373	2,168,309	2,142,388	2,002,404	672,298	10,532,586
		98.24%	96.98%	96.43%	95.66%	94.99%	93.36%	
Column total		1,536,875	2,100,802	2,248,664	2,239,558	2,107,906	720,107	10,953,912



positions in society than do small denominations, even if they do have relatively low mean IQs and SDs) finds confirmation in Table 7. The bottom X-axis denotes training potential as a function of the IQ percentile distribution shown by the top X-axis.

The denominational proportion of high-IQ individuals was defined as the summed proportions of individuals observed in the upper three percentile columns having IQs  $\geq 120$  points. Table 7 shows that though Episcopalians have the highest denominational average IQ (Table 6), Jews nevertheless surpass them in high-IQ fraction, due to Jewish IQ distribution being skewed more towards the high (and low) end of the IQ scale. Dogmatic denominations have in general fewer high-IQ individuals within their ranks.

However, despite an average IQ (Table 6) and a below average dispersion score, the Roman Catholic denomination is nevertheless the largest source of high-IQ individuals for religious and societal service (28%), due to their large numerical representation in the population, followed by Lutherans (10%), and Bible Church (9%).

Syllogism 5 (denominations with high IQ earn more than less favored denominations) is confirmed by Table 8.

Data on income (1996 US \$) was available for 8.6 million white non-Hispanic adolescents. Jews come out with the highest Gross Household average income, and there is a considerable gap down to subsequent Episcopalian income. Atheists earn close to the sample average of about 60,000\$, despite their high average IQ. Most Dogmatic incomes are below average. The income differences are statistically significant ( $p < .001$ ). The denominational high-IQ fractions and average incomes correlate significantly (Pearson  $r = .72$ ,  $t = 4.25$ ;  $< .001$ ; Spearman  $R = .46$ ,  $t = 2.16$ ,  $p < .05$ ).

Syllogism 6 (Agnostic and Atheist persuasions become increasingly more prevalent from age 12 to 17, and the proportion of religious believers drops accordingly) was partly supported, as seen in Table 9.

The total proportion of religious people drops from 98% at age 12 to 93% at age 17, mainly driven by a falling proportion of males, whereas the female proportion of religious individuals actually increases over time. The total proportion of Agnostics increases from 1 to 5% between age 12–17, but the trend is driven exclusively by a relative male increase from 58 to 83%, whereas the relative female proportion of Agnostics in fact drops to 17% at age 17. The total Atheist proportion does not change much with age, as the female proportion remains low compared to the male proportion.

## 6. Discussion

All six predictions came true. Syllogism 1 (Table 3) was confirmed when believers were found to trail Atheists by 5.13 IQ points. This dovetails well with the literature review that the most eminent, and by proxy most intelligent, scientists are Atheists; more than 90% of the most eminent scientists are self-declared Atheists. The high heritability of IQ implies that Atheists tend to have intelligent offspring. The framework predicts that their children will most likely also become Atheists, scientists, or high-ranking professionals, due to their largely inherited high IQ, but they are not likely to take over the world. As seen from Table 2 almost all American Atheists are white non-Hispanics, and these high-IQ individuals

constitute only a miniscule proportion of contemporary American youth. Moreover, high-IQ people have, on average, fewer children than low-IQ people and have them later in life (Herrnstein & Murray, 1994). This implies that future generations will see fewer non-believing high-IQ individuals.

The division into four (admittedly disputable: see Limitations section) categories of orientation (Table 4) puts Atheists on top of the scale with IQ 111.08, followed by Agnostic IQ 109.13, Liberal IQ 107.26 and Dogmatic IQ 105.19, respectively ( $p < .001$ ; Table 5). Atheists thus score 3.82 IQ points above Liberals and close to 6 IQ points above Dogmatics. This confirms Syllogisms 2a–c that cognitively complex people prefer an a-religious position whereas less complex people join liberal denominations of the cultural heritage type, and the least complex people tend to find consolation in a dogmatic denomination.

Denominations can be systematically rank ordered by their average IQ, according to Syllogism 3, and this was confirmed. Various brands of Protestants, Jews, Atheists and Agnostics orientations all score well above average IQ. Atheists and Agnostics obtain fairly similar IQs (111.08 versus 109.13, respectively). Demographically speaking they are minorities, however, in relation to the huge number of Roman Catholics, Baptists, and Personal Philosophy people. Where Roman Catholics flock near the average IQ, Baptists score close the bottom. Personal Philosophy people number more 1.3 million and have an average IQ of 103.47.

IQ is arguably one of the most stable behavioral traits over time (see Larsen, Hartmann, & Nyborg, 2007, for a recent large-scale longitudinal study) and over situations (Jensen, 1998), and there is no evidence to suggest that religion affects people's IQ. Within the *g* nexus, IQ predicts educability with fair accuracy and is the single most important predictor of success in life in general (Gottfredson, 1997), whereas personality accounted, in a recent large-scale study, for little more than 1% of the variance in explaining individual differences in achievement (e.g. Hartmann et al., submitted for publication). Then again, it is important to keep in mind that biological IQ is a necessary, but certainly not a sufficient, cause for success.

The denominational high-IQ fraction was defined as the summed proportion of members with IQs  $\geq 120$ , and denominations let themselves be rank ordered along this dimension (Syllogism 4; Table 6). Interestingly, Jews surpass Episcopalians in high-IQ fraction, even if Episcopalians have slightly higher average IQ, the reason being that Jewish SD is larger than the Episcopalian (SD 13.14 versus 11.68, respectively). According to normal distribution theory there will accordingly be 1.6 Jew for each Episcopalian with IQ 145, and this ratio grows exponentially with increasing IQ. Also of relevance here, several early studies indicate that there actually more people at the very high end of the IQ scale than Gaussian IQ distribution theory would let us to expect (Burt, 1963; Hollingsworth, 1942; Terman, 1925), whereas the present contemporary study found very few up there: only three subjects scored above IQ 145. This may reflect a dysgenic trait, as the present sample was designed to represent all American adolescents. The high ranking of Jews dovetails nicely with the fact that no less than 23% of all Nobel prizes awarded 1901–2007 were harvested by Jews who represent only about .25% of the world's population (JINFO.ORG, 2007). Atheists and Agnostics also show large fractions of high-IQ individuals.

This may explain why they dominate the highest ranks of science, as judged from the literature review. The latter two groups might hold an unknown, but possibly significant, number of formal Jews who self-reported as Atheists or Agnostics rather than Jewish by family association.

On average, Atheists and Agnostics account for 22% of the high-IQ fraction, Liberals for 20%, and Dogmatics for 11%. However, after adjustment for the actual proportional representation of the total white adolescent population (Atheist and Agnostic  $N=87,693$ ; Liberal  $N=501,947$ ; Dogmatic  $N=825,088$ ), we see that Dogmatics provide 51.7% of the societal high-IQ fraction potential, whereas Liberals count for 31.5%, and Atheists and Agnostics for only 5.5%.

High-IQ potential relates naturally to denominational differences in income, but Jews earn considerably more money than a linear relationship would predict, so other factors are obviously also at play here. It is worth considering that the Gross Household Income differences are predicted from adolescent offspring IQ or high-IQ fraction (Pearson  $r=.75$ ,  $p<.001$ ; and  $r=.72$ ,  $p<.001$ , respectively). The more common approach is to predict Gross Household Income from adult breadwinner IQ, but the reverse adolescent IQ–Gross Household Income prediction also works well, because IQ is high heritable, so regression toward the mean applies from offspring to parental as well as from parental to offspring income.

Syllogism 6 was basically substantiated but the analysis revealed some interesting trends. The number of religious people drops with age, from 98% at age 12 to 93% at age 17. This finding is in line with previous research showing that religiosity or church attendance decline with age during adolescence (e.g. The United States: Kuhlén & Arnold, 1944; England: Francis, 1989; Argyle, 1958; Argyle & Beit-Hallahmi, 1975; Northern Ireland: Turner, 1980). It suggests that most of the decline takes place at an early age (down from 98.24 to 93.35% at age 17), as the United States is anomalous for a well-developed country in having an unusually low percentage of its adult population disbelieving in God (10.5% according to Zuckerman, 2006; see Lynn et al., in press, Appendix). The United States is the wealthiest of all nations but nevertheless demonstrates a level of religiosity similar to that of economically much less well-developed countries like Saudi Arabia and Uganda. Part of the anomaly may be due to the history of religious immigration from Europe to the United States, where some immigrants left for religious reasons and other brought their traditional values with them. Perhaps the combination of a relatively high inheritance of religious beliefs (.64 according to Newcomb & Svehla, 1937) and selective immigration explains the large number of Americans remaining faithful.

There are sex differences behind the age changes in the Religious, Agnostic and Atheist categories. At age 12 there are more religious males than females (52.61% versus 47.39%; Table 9), but at age 17 the pattern reverses with 43.96% males against 56.04% females. The Agnostic proportion increases from 1 to 5% between age 12–17, but this change is driven by the relative male contribution rising from 58.48% to 83.20%, whereas the proportion of female Agnostics actually dropped to 16.80% at age 17. The total Atheist proportion did not change much with age mainly because female Atheists dropped from 73.83% at age 12 to 35.89% at age 17, and this almost outweighed the reverse male pattern. The overall drop in the total proportion of religious people from 98.24% to

93.36% at age 17 was thus essentially driven by a falling proportion of religious males, whereas the female proportion of religious people actually increased over time. Apparently, the male religious liberation between 12 and 17 does not have a female counterpart, and this may explain the commonly observed adult female–male gap, with more adult females than males confessing to being religious.

The extraordinary large number of religious Americans in general, and females in particular, raises questions about which mechanisms explain the pervasiveness of religion? Perhaps the low-IQ people in general, and females with slightly lower average IQ than males (Jackson & Rushton, 2006; Lynn, 1999; Nyborg, 2005) in particular, need religion in order to control emotions in ambiguous situations with existential anxiety (with no particular direction) or fear (with an “object” like impending death). The fear-reducing qualities of religious behavior would go some way to explain why so many continue to seek out religion in times where apparently far too optimistic atheists undoubtedly would have assumed that rationality will soon take over as the preferred tool to reduce uncertainty. Thus, rather than solving, the present study raises a number of hard questions about why religiosity prevails, and it suggests that future research better concentrate on the molecular brain basis of faith, preferably along the lines already laid down long time ago by Charles Spearman (1927) and, more recently, by the physiology program (Nyborg, 1994, 1997, 2007a,b).

### 6.1. Limitations

Multivariate regression analysis indicates that a particular denominational preference is not well predicted from individual unweighted IQs ( $R^2=.001$ ;  $R^2=.000$ ;  $F(1, 3,740)=.004$ ;  $p=.96$ ), and the predictive power is also very low, even if statistically significant when cross-sectional sample weights/100 data are used to establish the representative sample ( $R=.002$ ;  $R^2=.000$ ;  $F(1, 10,953,912)=56.87$ ;  $p<.000$ ). There are several reasons for this.

The IQ differences between the various religious categories most like are seriously underestimated, because the delineation is qualitative rather than definitive. Liberals were defined as more open-minded, critical, less committed, metaphorical, cultural heritage-type individuals, and Dogmatics as more committed, to have a personal relationship with Jesus, to emphasize sinfulness, to be ready to follow guidance and strict rules for behaviour, and to feel more of a need for atonement (Hunt, 1972; Beit-Hallahmi & Argyle, 1997, pp 43–46). These categorical lines are notoriously fuzzy. Second, each denomination has a hierarchical power structure, and members of the religious clergy, if far fewer by numbers, most likely are considerably more intelligent than its ordinary worshippers, and it may even be so that the Dogmatic clergy-flock IQ distance is larger than that within Liberal ranks. Finally, the categorization is far from perfect, because denominations characterized here as Liberal include Dogmatic minorities (e.g. Jews) and dogmatic denominations (e.g. Roman Catholics) may include a large number of liberals. A more precise and rigorous categorization undoubtedly would increase the IQ differences, but the present study does not allow for this.

According to one survey, 71% of all Americans see themselves as religious. This is a high number for a developed society

as compared to Asian Pacifics (50%), Western Europeans (60%), and Eastern and Central Europeans (65%), but not when compared to Middle Easterns (79%), Latin Americans (82%) and Africans (91%) (Gallup International, 2005). Zuckerman (2006) found close to 90% believers in the United States. On the other hand, an online survey of a nationwide sample of 2010 adults reported that only 58% were absolutely certain in their belief in God (Harris Interactive, 2006). Then again, the cross-national studies by Kanazawa (in press), by Lynn, Harvey and Nyborg (in press) and by Rindermann (2007) suggest that the negative IQ–religiosity–income relationships generalize to the rest of the world.

The subjects in this study are 12 to 17 year olds. This raises questions about whether the results generalize to the white adult population of the United States. There are two views of relevance for addressing this question. According to socialization and social learning theory, believers are born into a religious tradition and so they by and large take over the religion of their parents. Along this line Beit-Hallahmi and Argyle (1997, p. 243) argued that “Religious identity... has nothing to do with decision, choice, belief, or personality.” In fact “There can be no doubt that the attitudes of parents are among the most important factors in the formation of religious attitudes.” (Ibid. p. 99). A contrasting view, the one adopted in the present study, is that young believers gravitate toward the denomination of their parents only if it matches their own level of cognitive complexity. Ordinarily, the high heritability of IQ and the phenomenon of regression to the population mean imply that the offspring of mid-parental IQ 130 will have IQs normally dispersed around IQ 115, and offspring of mid-parental IQ 80 will have on average an IQ of 90. This means that offspring of Dogmatics would tend on average to gravitate toward a more Liberal persuasion, and Liberal offspring would move toward a more dogmatic position. Also of interest is the fact that ordinary siblings differ on average 11–12 IQ points against the average 16–18 IQ point difference for randomly chosen individuals in the population (e.g. Jensen, 1998). This natural genetic variability allows us to submit the gravitation hypotheses to a critical test: Siblings who have considerably higher (or lower) IQ than their parents will reject the preferred familial denomination and gravitate up (or down) with time towards a denomination that suits their particular IQ better. A recent representative longitudinal study of 7070 British boys and girls (Deary, Batty and Gale (2008) appears to support the upward part of the gravitation hypothesis. Deary and colleagues thus confirmed that higher IQ at age 10 is associated with less likelihood of endorsing traditional values at age 30 and with having a more adult liberal social attitude across four important social domains, irrespective of sex. Moreover, own education and social class played a minor or no role for the observation that “Brighter 10-year-olds are, at age 30, more likely to hold to a philosophy emphasizing reason and individualism rather than tradition” which defines enlightenment (Deary et al., 2008, p. 5). Finally, following Scarr and Weinberg’s original (1981) suggestion that “Intelligence drives attitude formation”, they cite McCourt et al. (1999) for the conclusion that high-IQ individuals “... are able to form more individualistic and open-minded (i.e. antiauthoritarian) attitudes that those of

lesser cognitive ability” (p. 987). This statement runs in parallel with the present working hypothesis, where dogmatism reflects a neurologically less than optimally evolved low g brain that seeks supernatural guidance in ambiguous or life threatening situations.

## 6.2. Summary and prospects

Notwithstanding its obvious limitations, the present study suggests that the g nexus, and the Gravitation hypothesis constitute useful heuristics for contemplating observed within-nation covariant IQ–religiosity–achievement links. High-IQ people are able to curb magical, supernatural thinking and tend to deal with the uncertainties of life on a rational–critical–empirical basis, and to become prosperous servants of society, whereas low-IQ people easily become trapped in religious magical thinking, in addition to achieving, earning and serving less well.

The g nexus framework and the Gravitation hypothesis applies to cross-national studies as well (Lynn et al., in press), and the g-faith correlations show up in even stronger form in the large-scale aggregated studies. An extension of the present working hypothesis predicts that high-IQ Northern countries will continue to prosper but only if they keep up their relatively large proportion of high-IQ leaders, that moderately high-IQ liberal (some of them Protestant) countries will take an intermediate position, and that low-IQ Southern/Equatorial countries will remain dogmatic and poor.

IQ reflects the physiological state of the brain and is about 80% genetic. The observed negative correlations between IQ and religiosity and the positive correlation between IQ and prosperity seem thus to be biological and neurological phenomena based in evolutionary events. Perhaps time is ripe for an extension of Spearman’s original vision that the study of g is the direct study of the human brain in its purely physical and chemical aspects (Spearman, 1927, p. 403). Perhaps it is time to realize that “The real challenge of tomorrow is... to examine behaviour... in terms of its molecular basis and to use the proper scientific tools for this task... the... precise identification of proximal physico-chemical agents, through a mapping of their systemic loci of actions, and by monitoring their non-linear dynamics in the light of individual inner and outer structural constraints.” (Nyborg, 1997, p. 471).

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