Intelligence and religiosity: Within families and over time

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ABSTRACT

We study the effect of intelligence (General Mental Ability) on religiosity using research designs that allow for stronger causal inferences compared to previous research in this area. First, we examine how between-siblings differences in intelligence are related to differences in their religiosity. Second, we examine how intelligence is related to changes in religiosity over time. The results of both designs suggest that intelligence has a strong negative effect on religiosity. In addition, our results also suggest that intelligence interacts with age in determining religiosity: the more intelligent the person, the stronger the negative effect of age on religiosity.

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1. Introduction

The age-old question whether it is rational to believe in God recently received a renewed attention following the publication of Richard Dawkins' book "The God delusion" (2006, see also Pirsing, 1991, for another influential book). Following this renewed philosophical interest, there was also a renewed interest in the empirical question of whether there is a causal link between intelligence and religiosity and whether intelligence has a negative effect on religiosity. In the current paper we study this link using research designs that allow for stronger causal inferences compared to designs used in previous research in this area.

Studies that provide empirical support for a negative relationship between intelligence (i.e., General Mental Ability or g) and religiosity begun to appear as early as 1928 (Howells, 1928; Sinclair, 1928), and continued to appear since. In reviewing the relevant research, Bell (2002) states that of 43 studies that report correlations between intelligence and religiosity, all but four

found a negative correlation. (Bell, 2002, see also, Beckwith, 1986 for similar results). Following the publication of Dawkins' (2006) book, there was a resurgence in studies that relied on more refined methodologies than earlier studies, either by using large representative samples and better controls (Ganzach, Ellis, & Gotlibovski, 2013; Kanazawa, 2010) or a larger number of measurements of intelligence (Bertsch & Pesta, 2009). These studies too found a negative relationship between intelligence and religiosity. In addition, two recent studies also found a negative relationship between intelligence and religiosity on the aggregate level, either by correlating average national intelligence with average national religiosity (Lynn, Harvey, & Nyborg, 2009), or by relating average denominations' intelligence to the strength of their religious beliefs (Nyborg, 2009).

However, the correlational designs of all these previous studies do not allow strong causal inferences about the relationship between intelligence and religiosity, as they did not rule out alternative non-causal explanations. In particular, the correlations reported in these studies do not rule out the possibility that background characteristics affect both the level of intelligence and the degree of religiosity. For example, it is possible that a poor early home environment is associated both with low intelligence and with high religiosity, or that religious parents have both a positive influence on their children's

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religiosity and a negative influence on their intelligence (see Blau, 1981).[1]

Thus, one purpose of the current paper is to examine whether the observed correlation between intelligence and religiosity can be explained by background variables associated both with intelligence and with religiosity, rather than by a causal link between the two. To do that, we analyze the effect of intelligence on religiosity *within families* by comparing siblings' religiosity as a function of their intelligence. Such an analysis provides a strong control for background characteristics. Under such a control, an observed relationship between intelligence and religiosity is not likely to be due to a third background variable. In essence, in this design siblings are used as their own controls. For example, a significant effect of intelligence – which is essentially a significant relationship between siblings' differences in intelligence and their differences in religiosity – cannot be attributed to home environment, because this environment is similar for both siblings.

Another approach that allows for strong causal inferences regarding the effect of intelligence on religiosity is to examine *changes* in religiosity within individuals over time as a function of their intelligence. A number of studies documented a negative correlation between age and religiosity during childhood and young adulthood (Argyle, 1958; Francis, 1989; Kuhlen & Arnold, 1944; Turner, 1980). These findings were interpreted as an indication for a causal link between *intellectual ability* and religiosity (Lynn et al., 2009), since when growing up people become more intellectually capable. However, it is still an open question what is the effect of *intelligence* – which is essentially intellectual ability standardized by age – on *changes* in religiosity. One possible hypothesis is that changes in religiosity are a function of intelligence, such that the decline in religiosity of the more intelligent is greater than the decline of the less intelligent. The reason for this hypothesis is that under the assumption that religiosity is not rational (e.g., Dawkins, 2006), the brighter individuals will make a 'better' use of their accumulated experiences, and reject religiosity, in the same way they make better use of academic training in achieving academic success (Binet, 1905; Deary, Strand, Smith, & Fernandes, 2007; Zenderland, 1998).

Finally, although educational attainment is endogenous to intelligence with regard to religiosity, the well documented strong positive effect of intelligence on education (e.g., Neisser et al., 1996a) should be taken into account in examining the effect of intelligence on religiosity. In particular, the effect of intelligence on religiosity may be mediated and/or moderated by educational attainment. First, since the more intelligent are better able to profit from their education (Binet, 1905; Deary et al., 2007), they may become less religious because they are more influenced by their education in developing a rational, non-religious, view of the world (Dawkins, 2006), i.e., a *moderation* effect. Second, since education may lead to decrease in religiosity by providing people with the opportunity to seek rational alternatives to religious dogma (e.g., Durkheim &, 1915, 1915, 1964; Lenski, 1963), the more intelligent may become less religious because they obtain more education, i.e., a *mediation* effect of education (see for

example Argyle & Beit-Hallahmi, 1975; Achenbach & Edelbrock, 1987). The results regarding this mediation effect are, however, conflicting. Whereas in studying the relationship between intelligence education religiosity and health on the aggregate (state) level, Reeve & Basalik (2011) did suggest that education mediates the effect of intelligence on religiosity, Ganzach et al. (2013) suggested that, by large, there is no such a mediation, and Kanazawa (2010) suggested that, if anything, education *reduces* the negative net effect of intelligence on religiosity. However, all these results were obtained in a cross-sectional design. A more sensitive longitudinal design such as the one we use in the current paper may reveal a different picture.[2]

2. Method

We use data in which individual and background characteristics were measured when participants were 15 years old on average (with a 13–17 age range), and religiosity and educational attainment were measured at three time points, when participants were, on average, 20, 23 and 26. Thus the age of the participants through the three focal survey years ranged from 18 to 28. In the longitudinal analysis we use all three measurements of religiosity and education, and in the cross-sectional analysis we use only their measurements at the last time point.

2.1. Participants and procedure

The data were taken from an ongoing longitudinal study, the 1997 cohort of the National Longitudinal Survey of Youth (NLSY97). The NLSY97 is a probability sample of 8984 Americans (with over sampling of Afro-Americans, Hispanics and economically disadvantaged whites) born between 1980 and 1984. About 35% were Catholic, 26% Baptists, 29% other Protestants, and the rest from small denominations and religions. The participants came from 6819 households, 1862 of them included more than one participant. As a result 3192 of the participants came from households that included two participants and 835 came from households that included 3 or more participants (as 96% of the same household participants were siblings, we use below the term "siblings" rather than the "same household members"). The participants were interviewed annually starting in 1997. Our analyses draw on the interview that was conducted in 1997 in which intelligence was measured and on the 3 interviews conducted in 2002, 2005 and 2008 in which religiosity (and education) was measured. Thus intelligence and other individual and background characteristics were measured when participants were 15 years old on average (with a 13–17 age range), and religiosity and educational attainment were measured when participants were, on average, 19, 22 and 25, respectively. The retention rate in 2008 was 83.7%.

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[1] Similarly, the aggregate level results of Lynn et al. (2009) and Nyborg (2009) are also susceptible to alternative explanations, about a third variable underlying both intelligence and religiosity.

[2] We acknowledge the possibility of alternative explanations for the relationship between education and religiosity. First, a reverse causation explanation by which religiosity affects education (e.g., Darnell & Sherkat., 1997); and second, the existence of other mediators that are related to education and may affect religiosity (e.g., Iannaccone, 1998). However, these alternative explanations do not constitute a threat to the internal validity of the effect of *intelligence* on religiosity.