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Individual differences and the effect of education on religiosity

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ABSTRACT

We study the complex relationships between education and religiosity by examining the effects of various individual differences on both these variables. We show that omitting individual differences, particularly intelligence, may lead to dramatic changes in the sign of the effect of education on religiosity. These findings may explain previous conflicting reports about the relationship between education and religiosity.

1. Introduction

There are conflicting reports about the relationship between education (i.e., educational attainment) and religiosity. Quite a few studies, primarily in the sociological literature, found that this relationship is negative. For example, in a highly cited review of the sociological literature, Sherkat and Ellison (1999) state, "Higher levels of education have a negative impact on measures of traditional religious beliefs" (p. 368), and in another review, Johnson (1997) states, "For all the research conducted on the relationship between education and faith over the years, the overall empirical picture is surprisingly uniform … the majority consistently show a modest negative relationship between the two." (p. 233).

On the other hand, there are also many studies, primarily in the economics literature, that found a positive relationship between education and religiosity. Thus, in a classic review of the economics literature on religiosity, Iannaccone (1998) states that "In numerous analyses of cross-sectional survey data, rates of religious belief and religious activity tend not to decline with income, and most rates increase with education" (p. 1470), and that "Over the past 40 years, scores of sociological studies have investigated the empirical relationship between income and/or education and numerous measures of religiosity …. Since the mid-1970s economists have weighed in, estimating models more sensitive to nuances of economic theory. Their basic results, however, mirror those of the sociologists: education is a weak but generally positive predictor of religious participation."

In the psychological literature there are only a few studies that examined the relationship between education and religiosity, all of them within the context of the effect of *intelligence* on religiosity. The results of these studies are also conflicting. Two studies, which were not designed to examine this relationship, provide some parenthetic relevant data. However, whereas one of them found a positive effect of education on religiosity (see Kanazawa, 2010, Table 1, p. 40 and Table 3, p. 48), the other found a negative effect (see Reeve & Basalik, 2011, Table 3, p. 70). A third study found a non-significant effect (see Ganzach, Ellis, & Gotlibovski, 2013, Table 4, p. 127).

One reason for the difference between these studies may be the use of different controls. For example, only a handful of these studies, primarily the studies in the psychological literature, used intelligence as a control. Because intelligence has a strong positive effect on education (e.g., Binet, 1905; Deary, Strand, Smith, & Fernandes, 2007; Neisser et al., 1996) as well as a negative effect on religiosity (e.g., Bell, 2002; Bertsch & Pesta, 2009; Lynn, Harvey, & Nyborg, 2009), the omission of intelligence from models of religiosity may severely bias the effect of education. While intelligence is an example of a variable that has the opposite effect on education and on religiosity, there are, as we see below, variables that have a similar effect. Their omission may also have important results for the estimation of the effect of education on religiosity.

In the current paper we examine a comprehensive set of models that takes into account individual differences that affect both education and religiosity, examining simultaneously the effects of these individual differences on both variables. These models shed light on the complex relationship between education and religiosity and demonstrate the sensitivity of estimates of this relationship to the omission of individual differences that affect both education and religiosity.

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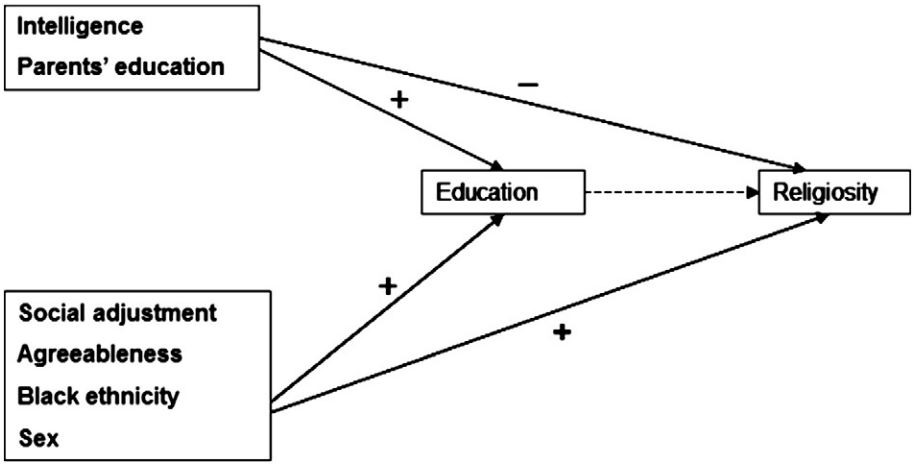

Fig. 1. The effects of various determinants on education and religiosity (broken line indicates non-significant effect).

Among the independent variables in our comprehensive model, two – intelligence and parents' education – are intellectual characteristics associated with cognitive functioning. These characteristics have opposite effects on education and religiosity. On the one hand, both parents' education and intelligence are positively associated with educational attainment (see Simkins, 2006 for the effect of parents' education on educational attainment; see Binet, 1905; Deary et al., 2007; Neisser et al., 1996 for the effect of intelligence). On the other hand, these two individual differences are also negatively associated with religiosity as they both provide people with the opportunity to seek rational alternatives to religious dogma (see for example, Achenbach & Edelbrock, 1987; Argyle & Beit-Hallahmi, 1975; Dawkins, 2006; Durkheim, 1915, 1964; Lenski, 1963).

Two variables – agreeableness and social adjustment – are temperamental characteristics associated with conformity. Agreeableness reflects "concern for cooperation and social harmony" (see Graziano, Jensen-Campbell, & Hair, 1966); social adjustment represents acceptance of behavioral and attitudinal conventions. These three variables have a positive relationship with both education and religiosity. Iannaccone (1998) eloquently describes the nature of these relationships as "Good kids may avoid drugs, stay in school, *and* go to church."

We also include in our models two demographic variables, black ethnicity and sex. Other things being equal, black ethnicity is also positively related to both education and religiosity. This pattern of effects of black ethnicity is consistent with previous findings suggesting that: (1) black ethnicity has a positive effect on religiosity (e.g., Cardell, Heaton, & Rutledge, 1990); (2) when *intelligence is kept constant*, black ethnicity has a positive effect on education (This 'reverse' ethnic educational gap is attributed to affirmative action; see Herrnstein & Murray, 1994, pp. 319–320).

Sex (being a female) is also positively related to both education and religiosity because it is associated with a higher tendency for social cooperation among females than among males (e.g., Cooper, 1979; Eagly & Chrvala, 1986) and with a tendency (at least in the United States) for male overrepresentation among secondary school drop-outs and female overrepresentation among tertiary education students and graduates (Pekkarinen, 2012).

Fig. 1 summarizes the pattern of the effects of our focal variables on education and on religiosity.

In sum, as Fig. 1 demonstrates, education may be related to religiosity in two opposed ways. On the one hand it may be related positively to religiosity via temperamental variables, such as agreeableness and social adjustment or via demographic variables, such as sex (being female) or ethnicity (being black). On the other hand, it may be related negatively to religiosity via intellectual variables, such as intelligence and parents' education. In the current paper we attempt to disentangle these opposing paths between education and religiosity, thus adjudicating between different findings of the effect of education on religiosity.

2. Method

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 an 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 were interviewed annually starting in 1997 and

Table 1
Descriptive statistics and inter-correlations of study variables.

	Mean	STD	1	2	3	4	5	6	7	8	9	10	11
1. Religiosity	53.1	33.2	–										
2. Intelligence	45.3	29.2	−0.30	–									
3. Education	13.3	2.7	−0.14	0.58	–								
4. Sex	1.49	0.50	0.12	0.03	0.10	–							
5. Black	0.27	0.44	0.35	0.32	−0.13	0.01	–						
6. Hispanic	0.21	0.41	−0.01	−0.16	−0.12	0.00	−0.31	–					
7. Parents' education	12.5	3.6	−0.12	0.36	0.34	−0.02	−0.03	−0.31	–				
8. Family income	10.4	1.1	−0.15	0.33	0.30	−0.01	−0.21	−0.17	0.28	–			
10. Religious background	67.9	26.9	0.29	−0.11	−0.05	0.01	0.18	−0.01	−0.06	−0.07	–		
11. Social adjustment	3.85	1.58	0.01	0.12	0.18	−0.01	0.00	−0.04	0.06	0.04	0.00	–	
12. Agreeableness	3.82	0.71	0.08	0.01	0.10	−0.02	0.03	−0.02	0.03	−0.01	0.05	0.14	0.38

Note: N varies between 4525 and 8904, depending on missing values. Correlations above .03 (in absolute value) are significant at the .01 level, correlations above .05 are significant at the .001 level, and correlations above 0.10 are significant at the .0001 level.