2017

The Positives and Negatives of Higher Education: How the Religious Context in Adolescence Moderates the Effects of Education on Changes in Religiosity

Philip Schwadel

University of Nebraska-Lincoln, pschwadel2@unl.edu

Follow this and additional works at: <https://digitalcommons.unl.edu/sociologyfacpub>

Part of the [Educational Sociology Commons](#), [Family, Life Course, and Society Commons](#), [Place and Environment Commons](#), [Social Psychology and Interaction Commons](#), and the [Sociology of Religion Commons](#)

Schwadel, Philip, "The Positives and Negatives of Higher Education: How the Religious Context in Adolescence Moderates the Effects of Education on Changes in Religiosity" (2017). *Sociology Department, Faculty Publications*. 663.
<https://digitalcommons.unl.edu/sociologyfacpub/663>

This Article is brought to you for free and open access by the Sociology, Department of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Sociology Department, Faculty Publications by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

The Positives and Negatives of Higher Education: How the Religious Context in Adolescence Moderates the Effects of Education on Changes in Religiosity

Philip Schwadel

Department of Sociology
University of Nebraska-Lincoln
P.O. Box 880324
Lincoln, NE 68588-0324, USA
email pschwadel2@unl.edu

Abstract

Although longitudinal research suggests that declines in religiosity associated with higher education vary across religious traditions, it tells us little about variation in the effects of higher education on changes in religiosity more broadly. Higher education may promote increases in religiosity for some, particularly with many Americans now being raised in relatively secular homes. This research note uses multilevel growth curve models and four waves of longitudinal data to examine how the religious context in adolescence moderates the effects of higher education on changes in emerging adult religiosity, regardless of the direction of change. Religious tradition and parent religious service attendance assess the religious context in adolescence, and several religiosity scales and measures of religious behaviors assess dimensions of religiosity. Results

Published in *Journal for the Scientific Study of Religion* 56:4 (2017), pp 869–885.

doi 10.1111/jssr.12486

Copyright © 2018 The Society for the Scientific Study of Religion; published by John Wiley Inc. Used by permission.

show that higher education is particularly likely to lead to religious decline for mainline Protestants and those with religiously active parents, and to increases in religiosity for the religiously unaffiliated and those with parents who infrequently attend religious services. These findings demonstrate how the religious context in adolescence conditions the influence of education, thereby highlighting the variable nature of the influence of higher education on changes in religiosity.

Keywords: higher education, religion, adolescence, longitudinal, educational attainment

Introduction

Longitudinal research has greatly expanded insight into the potential causal effects of higher education on religion. Examining changes in religiosity among the college and non-college educated, this research shows that higher education promotes declines in some aspects of religiosity, such as religious beliefs, but not others, such as religious participation and salience (e.g., Hill 2011; Schwadel 2016). Moreover, Mayrl and Uecker (2011) find that religious decline associated with higher education varies across religious communities—college attendance and graduation promote waning religiosity for some young adults, particularly mainline Protestants, more so than others. Because they explicitly model religious *decline*, however, Mayrl and Uecker's analysis is unable to provide a clear picture of moderation in the effects of higher education on *changes* in religiosity more broadly. In particular, the focus on religious decline ignores the possibility that education can lead to increases in religiosity for some, and it tells us nothing about how education affects religiosity among those who were not very religious as adolescents.¹

College is a time of religious growth for some contemporary Americans (Braskamp 2007; Merrill, Lyon, and Jensen 2003). Today's college campuses provide ample opportunities for religious expression (Cherry, DeBerg, and Porterfield 2001; Schmalzbauer 2013). When the

Note: This research uses data from the National Study of Youth and Religion, a research project designed by Christian Smith of the Department of Sociology at the University of Notre Dame and generously funded by the Lilly Endowment Inc. of Indianapolis, IN.

¹ Mayrl and Uecker (2011) remove respondents who were not relatively religious in wave 1 from their analysis, presumably because the theoretical emphasis is on the potential for religious decline.

college environment does conflict with religion, many young adults are proficient at compartmentalizing religious and secular perspectives (Campbell 2005; Clydesdale 2007). Consequently, although some students experience declining faith, more than one-third report a strengthening of religious faith during college (Lee 2002). Cross-sectional research suggests that there are indeed positive associations between education and some aspects of religiosity for certain religious groups (McFarland, Wright, and Weakliem 2011; Schwadel 2011), though that research cannot differentiate the effects of education on religion from the known effects of religion on educational outcomes (Darnell and Sherkat 1997). In this research note, I expand on previous longitudinal research by examining if higher education promotes increases in religiosity for some young Americans, while it also promotes declines for others.

The analyses below further expand on previous research by highlighting the effects of education on changes in religiosity among those who were less religious as adolescents and/or raised in less religious homes. Many young Americans are now living in homes with relatively irreligious parents (Putnam and Campbell 2010). The children of less religious parents have limited exposure to religion themselves (Petts 2009; Smith and Denton 2005). If higher education does lead to increases in religiosity for some young Americans, those who have had limited exposure to religion may be the most likely to experience such religious growth. Increases in religious nonaffiliation in the United States are particularly relevant here. Although being raised with no religious affiliation was once relatively rare, it has become far more common in younger birth cohorts (Schwadel 2010). The tendency to experience religious growth during college may be especially prominent for this group of emerging adults.

This research note explores how the religious context in adolescence moderates the effects of higher education on changes in religiosity, regardless of the direction of change. I use multilevel growth curve models and four waves of longitudinal data to examine how the effects of higher education on changes in emerging adults' religiosity are moderated by both religious tradition in adolescence and parent religious service attendance. Four religiosity scales and two measures of religious behavior are used to assess various dimensions of religiosity. Results show that higher

education is particularly likely to lead to religious decline for main-line Protestants and those with religiously active parents, and to increases in religiosity for the religiously unaffiliated and those with parents who infrequently attend religious services. Unaffiliated emerging adults and those from homes with parents who rarely attend religious services are, on average, less religious than other emerging adults, but, unlike most other emerging adults, they are likely to increase in their religiosity if they go to college. These findings demonstrate how the religious context in adolescence conditions the influence of education, both positive and negative influences. I conclude by discussing the implications of the findings for our understanding of religious change, variation in the influence of higher education, and moderation of the effects of individual characteristics in general on religion.

Data and Methods

The data are from the National Study of Youth and Religion (NSYR). The first wave of the NSYR, collected in 2002–2003, surveyed a random sample of 3,290 U.S. adolescents ages 13–17, and one of each of their parents.² The response rate was 57 percent according to AAPOR RR4. The adolescent respondents were surveyed again in 2005 ($N = 2,530$), 2007–2008 ($N = 2,458$), and finally in 2013 ($N = 2,071$), when they were between 23 and 29 years old.³ The data are limited to those respondents who completed at least two waves of the survey.⁴ The analytic sample consists of 2,886 respondents with between two and four waves of data,⁵ resulting in between 9,011 and 9,840 observations

² The 80 respondents (in wave 1) who comprise the Jewish oversample are deleted from each wave because the Jewish oversample is not a random sample and those cases cannot be weighted along with the other cases. The sample sizes reported above do not include the Jewish oversample.

³ Four respondents reported being 31 or 32 years old in wave 4, which is outside of the range of possible ages given their ages in wave 1. Consequently, age for those four respondents was recoded to 29, the oldest possible age.

⁴ Limiting the analysis to those who completed the wave 4 survey does not meaningfully influence the results.

⁵ One case was deleted due to missing respondent-level data; 403 were deleted due to completing only the first wave of the survey.

across the six dependent variables.⁶ See Smith and Denton (2003) for more information on the NSYR.

I employ multilevel growth curve models, which are designed to examine the characteristics that explain individual change (Raudenbush and Bryk 2002; Singer and Willett 2003). Waves of data collection are the level-1 unit of analysis. Individual respondents are the level-2 unit of analysis. Time-varying (i.e., wave-specific) measures such as age and education are included in the level-1 model. Time-invariant (i.e., person-specific) measures such as religious tradition in adolescence are included in the level-2 model. Level-2 variables are centered on the grand mean and level-1 variables are centered on the respondent mean (Raudenbush and Bryk 2002; Singer and Willett 2003). To ensure proper estimation of within- and between-person effects, the means of all level-1 variables are included in the level-2 model. Although the effects of level-1 or time-varying measures of education are of primary interest, level-2 or time-invariant measures of education must be included in the models to empirically differentiate within- and between-person effects (see Raudenbush and Bryk 2002; Singer and Willett 2003).

Within- and between-person effects are modeled with time-varying and time-invariant independent variables, respectively. Thus, coefficients for the level-2 measures of education indicate how higher education is associated with differences in religiosity between respondents, and coefficients for level-1 measures of education indicate the effects of higher education on within-person changes in religiosity. The latter are the primary focus here as the goal is to assess how the effect of higher education on changes in religiosity varies by the religious context in adolescence. A key strength of these models is the ability to include cross-level interactions; in this case, interactions between time-varying measures of education and time-invariant measures of parents' service attendance and religious tradition in adolescence. All analyses are weighted and conducted in HLM 7.

6 After limiting the data to respondents who completed at least two waves of the survey, there are 9,958 observations across the four waves, 859 of which are deleted from sample due to missing data on the dependent variables. Listwise deletion results in the loss of 88 additional cases, primarily (58 of the 88) due to missing data on the primary independent variable—college education.

Dependent Variables

The NSYR includes 16 measures of popular (i.e., primarily Christian) religiosity across the four waves (see next paragraph for individual measures). Because these measures load onto a single factor,⁷ the first dependent variable, the *overall religiosity scale*, is an additive scale composed of standardized versions of all 16 measures (average Cronbach's α across waves = .92). This scale, however, can mask differences across dimensions of religiosity, and the association between education and changes in religiosity varies across dimensions of religiosity (Schwadel 2016). Consequently, I divide the 16 measures into five additional dependent variables.

The *religious belief scale*, which taps commitment to widely held doctrinal beliefs (Wald and Smidt 1993), is an additive scale composed of standardized measures of belief in the afterlife, angels, demons, God, miracles, and judgment day (average Cronbach's α = .86).⁸ The *personal religiosity scale*, which assesses the experiential or affective dimension of religion (Glock 1962; Pearce, Hardie, and Foster 2013), is an additive scale of standardized measures of the importance of faith in shaping daily life, making a personal commitment to God, feeling close to God, and experiencing an answer to prayer or guidance from God (average Cronbach's α = .83).⁹ The *religious certainty scale*, which

7 The *factormat* option in Stata was used to perform an exploratory factor analysis on the polychoric correlation matrix (due to ordinal nature of most variables). All measures loaded at .40 or higher on a single factor (.62 or higher for all measures other than support for proselytization [.55] and opposition to religious subjectivism [.40]). No other factor had multiple variables reaching the basic threshold of .40 (Costello and Osborne 2005).

8 Belief in afterlife, angels, demons, and miracles each coded as follows: (1) not at all, (2) maybe, and (3) definitely. Belief in God is coded (1) no, (2) unsure/don't know, and (3) yes. Respondents who believe in God were asked: "Do you believe that there will come a judgment day when God will reward some and punish others?" In wave 4, an "unsure" response option was added. Those who answered no, unsure/don't know, or do not believe in God are coded 0 and those who answered yes are coded 1.

9 Importance of faith is based on the survey question: "How important or unimportant is religious faith in shaping how you live your daily life?" The five-category variable ranges from not at all important to extremely important. In the first wave, respondents were asked (1) if they had ever made a personal commitment to live their life for God and (2) if they experienced a definite answer to prayer or specific guidance from God. In later waves, respondents were asked if they had done or experienced these things in the time since the previous survey. In wave 4, a "maybe" response option was added. For both commitment to God and having a prayer answered/guidance from God, those who responded no or maybe are coded 0 and those who answered yes are coded 1. Finally, respondents were asked: "How

reflects a sectarian view that stipulates allegiance to specific religious teachings (Wilson 1982), is an additive scale composed of standardized measures of religious exclusivism, lack of religious doubt, support for proselytization, and opposition to religious subjectivism (average Cronbach's $\alpha = .64$).^{10,11} These scales have been employed in previous research on the effects of education (Hill 2011; Schwadel 2016). *Frequency of religious service attendance*¹² and *frequency of prayer*¹³ measure religious activity, both public and private. All dependent variables are standardized to have a mean of 0 and a standard deviation of 1 (see Table 1 for descriptive statistics).

Independent Variables

The two primary time-varying independent variables are dummy variables for current matriculation at a four-year college or university and having graduated from such an institution. The reference group for all education variables is those who are not attending or did not graduate from a college or university. Age is measured in years of age, centered so that 17 years of age has a value of 0. Age-squared is included in the models when statistically significant (i.e., $p < .05$). Dummy variables

distant or close do you feel to God most of the time?" The six-category variable ranges from extremely distant to extremely close. In wave 4, a "does not apply" response category was added. Respondents who do not believe in God, and were thus not asked the question, and those who responded "does not apply" are coded as extremely distant.

10 Exclusivist religious perspectives coded as follows: (1) there is very little truth in any religion, (2) many religions may be true, and (3) only one religion is true. Respondents with a religion were asked: "In the past year, how many doubts, if any, have you had about whether your religious beliefs are true?" Response options are many doubts, some doubts, a few doubts, and no doubts. In wave 4, a "does not apply" response category was added. Does not apply and those with no religion are coded as having many doubts. Support for proselytization contrasts those who say it is "okay for religious people to try to convert other people to their faith" with those who believe "everyone [should] leave everyone else alone." Finally, opposition to religious subjectivism is based on disagreement with the following statement: "Some people think that it is okay to pick and choose their religious beliefs without having to accept the teachings of their religious faith as a whole. Do you agree or disagree that this is okay?"

11 The marginal α for this scale does not necessarily indicate lack of unidimensionality, particularly with the downward bias in scale reliability associated with noncontinuous items (see Sijtsma 2009). Still, the results should be interpreted with caution. This is an important aspect of religiosity that should be negatively associated with higher education (Schwadel 2011, 2016).

Table 1. Descriptive statistics

	<i>Mean</i>	<i>Std. Dev.</i>	<i>N</i>
Dependent Variables			
Overall religiosity scale	.000	1.000	9,011
Frequency of service attendance	.000	1.000	9,840
Frequency of prayer	.000	1.000	9,809
Religious belief scale	.000	1.000	9,527
Personal religiosity scale	.000	1.000	9,664
Religious certainty scale	.000	1.000	9,400
Time-Varying (Level-1) Independent Variables			
Bachelor's degree	.095		9,855
In college	.170		9,855
Age ^a	2.107	4.016	9,855
Live with parent(s)	.664		9,855
Cohabit	.055		9,855
Married	.071		9,855
Children	.063		9,855
South	.410		9,855
Time-Invariant (Level-2) Independent Variables			
Bachelor's degree	.298		2,886
Mean in college	.159	.202	2,886
Parent service attendance ^b	4.356	2.199	2,886
Evangelical Protestant ^b	.322		2,886
Mainline Protestant ^b	.121		2,886
Black Protestant ^b	.114		2,886
Catholic ^b	.245		2,886
Other religion ^b	.068		2,886
Unaffiliated ^b	.119		2,886
Religious tradition unknown ^b	.021		2,886
Mean age ^a	1.952	1.817	2,886
Female ^b	.504		2,886
White ^b	.673		2,886
African American ^b	.165		2,886
Latino ^b	.103		2,886
Other race ^b	.053		2,886
Race missing ^b	.006		2,886
Parent(s) has bachelor's degree ^b	.397		2,886
Parochial school ^c	.081		2,886
Mean live with parent(s)	.679	.243	2,886
Mean cohabit	.054	.123	2,886
Mean married	.068	.135	2,886
Mean children	.061	.116	2,886
Mean South	.416	.479	2,886

a. Age centered so 0 is 17 years of age.

b. From wave 1.

c. From waves 1 and 2.

indicate if the respondent is married, cohabiting, has children, lives in the South Census Region, and is living with their parent(s).

The primary time-invariant variables are wave-1 measures of religious tradition in adolescence and parent religious participation. Religious tradition is measured with dummy variables for mainline Protestant, black Protestant, Catholic, other religion, and unaffiliated, with evangelical Protestant as the reference category (coding based on Steensland et al. 2000). Responding parent's religious service attendance is a seven-category variable ranging from never to more than once a week.¹⁴ Person-specific means of in college, age, living with parents, South, children, married, and cohabiting are included to improve the estimates of corresponding time-varying variables (Singer and Willett 2003). Dummy variables indicate if the respondent received a bachelor's degree in any wave,¹⁵ if the respondent's mother or father had a bachelor's degree, female respondents, African-American, Latino, and other-race respondents (white reference), parochial school attendance in wave 1 or 2, missing data on respondent's race ($N = 18$), and unknown religious tradition ($N = 61$).

Results

Results from multilevel models of the overall religiosity scale are reported in Table 2. The first model (Model 2A) shows that attaining a bachelor's degree is associated with a within-person decline in overall religiosity ($b = -.120$, $p < .01$). Because the dependent variables are all standardized, this means that all else being equal—including robust life-course changes—those who attain a bachelor's degree decline by .12 standard deviations in overall religiosity. Nonetheless,

¹² Frequency of religious service attendance is a seven-category measure ranging from never to more than once a week.

¹³ Frequency of prayer is a seven-category measure ranging from never to many times a day.

¹⁴ Four cases are missing data on parent service attendance. For these respondents, parent service attendance is coded at the mean.

¹⁵ I use a dummy variable indicating ever receiving a bachelor's degree rather than the mean across waves because the substantively relevant distinction is between those who do and do not graduate from college. Using the mean instead would give more weight to those who graduated in an earlier wave. Nonetheless, the results are not meaningfully different when using the mean of time-varying bachelor's degree.

Table 2. Multilevel models of overall religiosity scale

	<i>Model 2-A</i>		<i>Model 2-B</i>	
	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>
Time Varying				
Bachelor's degree	-.120	.038**	-.083	.037*
Mainline Protestant			-.212	.095
*Black Protestant			.169	.117
*Catholic			-.005	.076
*Other religion			.125	.089
*Unaffiliated			.106	.101
*Parent attendance			-.051	.014***
In College	-.041	.022	-.032	.023
Mainline Protestant			-.132	.063
*Black Protestant			.048	.076
*Catholic			.006	.051
*Other religion			.005	.075
*Unaffiliated			.255	.081**
*Parent attendance			-.004	.010
Age	-.049	.004***	-.050	.004***
Age-squared	.002	.000***	.002	.000***
Live with parent(s)	.007	.024	-.000	.024
Cohabit	-.061	.039	-.070	.039
Married	.085	.034*	.088	.034**
Children	.144	.041***	.134	.041***
South	.077	.056	.079	.054
Time Invariant				
Bachelor's degree	.064	.041	.065	.041
Mean in college	.102	.092	.108	.091
Mainline Protestant	-.376	.053***	-.409	.055***
Black Protestant	-.301	.070***	-.292	.071***
Catholic	-.490	.038***	-.490	.039***
Other religion	-.397	.075***	-.389	.077***
Unaffiliated	-1.057	.057***	-1.035	.057***
Religion missing	-.521	.135***	-.523	.135***
Parent service attendance	.135	.007***	.133	.008***
Female	.148	.029***	.149	.029***
African American	.242	.065***	.241	.065***
Latino	.094	.046*	.093	.045*
Other race	-.111	.069	-.111	.069
Race missing	.213	.109*	.217	.111
Parochial school	.123	.050*	.123	.049*
Parent(s) bachelor's	-.104	.032***	-.103	.032***
Mean live with parent(s)	.152	.074*	.151	.074*
Mean cohabit	-.170	.118	-.169	.118
Mean married	.684	.113***	.688	.113***
Mean children	.450	.137***	.454	.137***
Mean South	.117	.030***	.117	.030***
Mean age	.027	.017	.027	.017
Mean age-squared	-.008	.004**	-.008	.003**
Intercept	-.005	.015	-.005	.015
Deviance		17,769		17,702†

Models include random slopes for age ($p < .001$) and age-squared ($p < .001$); models include interactions between unknown religious tradition and both bachelor's degree and in college ($p > .05$); level-1 $N = 9,011$.

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test).

† Addition of interactions improves model fit ($p < .001$).

the between-person results show that at the aggregate (i.e., across all waves of data collection), those with a bachelor's degree are not any more or less religious than those who do not have a bachelor's degree ($b = .064$, n.s.). The negative, nonlinear effect of age reflects religious decline in late adolescence and the leveling off of such decline in the later years of emerging adulthood. The time-varying control variables further highlight changes across the life course by showing the importance of marriage and children in promoting increases in religiosity.

Model 2B introduces interactions between level-1 education variables and level-2 measures of parent service attendance and religious affiliation in adolescence. The results show that the negative effect of college graduation ($b = -.083$, $p < .05$) on changes in religiosity is particularly robust for mainline Protestants ($b = -.212$, $p < .05$). Although being in college is not generally associated with changes in religiosity ($b = -.032$, n.s.), this effect differs for mainline Protestants ($b = -.132$, $p < .05$) and for the unaffiliated ($b = .255$, $p < .01$). These effects are depicted in Figure 1(a), which shows large between-person differences across religious traditions, with, for example, evangelicals averaging .35 on the religiosity scale, mainline Protestants $-.06$, and the unaffiliated $-.68$. The focus here, however, is on how education influences within-person changes in religiosity. As Figure 1(a) shows, mainline Protestants' overall religiosity declines by .13 if they are in college, and the unaffiliated increase in their overall religiosity by .25 while in college. Mainline Protestants' overall religiosity declines by .30 if they graduate from college. The negative effect of college graduation on changes in religiosity also varies by parent attendance ($b = -.051$, $p < .001$). As Figure 1(b) shows, although adolescents from homes with low-attending parents are relatively irreligious ($-.44$ estimated overall religiosity), they do increase their religiosity moderately (.08) if they graduate from college. Conversely, college graduation is associated with a .26 decline in overall religiosity for those from homes with high-attending parents.

Focal results from models of the five other religiosity indicators are reported in Table 3 (see the Appendix in the Supporting Information for control variable results). In the model of frequency of service attendance, both being in and graduating from college interact significantly with mainline Protestant, and the interaction between college graduation and unaffiliated is large and significant. These interactions are depicted in Figure 2(a), which shows that mainline

Figure 1. Estimated between-person differences and effects of higher education on within-person changes in overall religiosity scale by religious tradition in adolescence and parent service attendance. Figure depicts results from Model 2B in Table 2; SD = standard deviation.

Protestants' service attendance declines by .20 on average if they are in college, and by a .35 if they graduate from college. For Catholics, there is an estimated .19 decline in service attendance if they graduate from college. Among the unaffiliated, on the other hand, being in college is associated with a .33 increase in attendance. There are also significant interactions between parent attendance and both being in and graduating from college in the model of frequency of

Table 3. Focal results from multilevel models of religiosity with interactions between time-varying education and time-invariant measures of both religious tradition at wave 1 (evangelical Protestant reference) and parent service attendance

	<i>Frequency of Service Attendance</i>		<i>Frequency of Prayer</i>		<i>Religious Belief Scale</i>		<i>Personal Religiosity Scale</i>		<i>Religious Certainty Scale</i>	
	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>	<i>b</i>	<i>se</i>
Time Varying										
Bachelor's degree	.052	.042	-.072	.043	-.127	.041**	-.034	.039	-.114	.041**
'Mainline Protestant	-.347	.087***	-.092	.096	-.084	.106	-.216	.094*	-.077	.102
'Black Protestant	.099	.165	.226	.156	.249	.158	.376	.126**	-.006	.130
'Catholic	-.187	.076*	-.146	.081	.052	.080	.047	.081	-.046	.083
'Other religion	.020	.087	-.015	.097	.135	.113	.091	.098	.006	.091
'Unaffiliated	.059	.085	-.027	.121	.164	.135	.043	.100	.256	.113*
'Parent attendance	-.105	.013***	-.013	.017	-.028	.016	-.055	.016***	-.022	.017
In College	.022	.028	-.071	.026**	-.031	.024	.003	.025	-.030	.029
'Mainline Protestant	-.200	.072**	-.026	.073	-.083	.073	-.115	.076	-.173	.073*
'Black Protestant	.170	.116	-.051	.106	.049	.065	.121	.083	.036	.114
'Catholic	-.005	.059	-.073	.054	.034	.059	.002	.060	-.048	.059
'Other religion	.093	.080	.050	.076	-.027	.083	.042	.074	.023	.082
'Unaffiliated	.324	.079***	.114	.086	.158	.092	.226	.085**	.248	.102*
'Parent attendance	-.043	.012***	.003	.011	.004	.012	-.005	.011	.001	.012
Age	-.091	.005***	-.035	.005***	-.020	.004***	-.058	.005***	-.042	.005***
Age-squared	.004	.001***	.003	.001***			.003	.001***	.003	.001***
Time Invariant										
Bachelor's degree	.078	.034*	.062	.041	.016	.044	.058	.039	.099	.038**
Mean in college	.246	.079**	.035	.096	.127	.099	.100	.087	.078	.087
Mainline Protestant	-.264	.041***	-.320	.057***	-.405	.058***	-.328	.055***	-.390	.053***
Black Protestant	-.108	.072	-.206	.083*	-.263	.072***	-.206	.077**	-.284	.069***
Catholic	-.310	.036***	-.356	.045***	-.367	.042***	-.431	.040***	-.514	.040***
Other religion	-.158	.065*	-.264	.076***	-.459	.076***	-.266	.074***	-.216	.077**
Unaffiliated	-.746	.043***	-.704	.059***	-.900	.067***	-.840	.055***	-.840	.050***
Parent service attendance	.163	.007***	.092	.008***	.101	.008***	.111	.008***	.127	.007***
Level-1 <i>N</i>	9,840		9,809		9,527		9,664		9,768	
Deviance	22118†		22766		20879		21180†		22384†	

Models include random slopes for age ($p < .001$ in all models) and age-squared (not in model of belief scale, $p < .001$ in all other models); models include interactions between unknown religious tradition and both bachelor's degree and in college ($p > .05$ in all models); models include control variables (see Appendix A for control variable results).

* $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed test).

† Addition of interactions improves model fit ($p < .001$).

service attendance. Because the main effects of being in and graduating from college are not significant (and because parent attendance is centered), this means college education only has an effect among those with high- and low-attending parents. As Figure 2(b)

Figure 2. Estimated between-person differences and effects of higher education on within-person changes in religious service attendance by religious tradition in adolescence and parent service attendance. Figure depicts results from Table 3; SD = standard deviation.

shows, being in college is associated with a .14 increase in service attendance among those with low-attending parents and a .14 decrease in service attendance among those with high-attending parents. Receiving a bachelor's degree is associated with a .35 increase in service attendance for those with low-attending parents and a similar decrease for those with high-attending parents.

Figure 3. Estimated between-person differences and effects of higher education on within-person changes in personal religiosity scale by religious tradition in adolescence and parent service attendance. Figure depicts results from Table 3; SD = standard deviation.

Although there are no statistically significant interactions in the models of prayer or religious belief in Table 3, there are significant interactions between education variables and both religious tradition and parent service attendance in the model of personal religiosity. As Figure 3(a) shows, being in college is not associated with changes in personal religiosity for most emerging adults, but the unaffiliated

increase their personal religiosity by .23 on average if they are in college. Receiving a bachelor's degree is similarly unrelated to changes in personal religiosity for most emerging adults, but it is associated with a .22 decline in personal religiosity for mainline Protestants and a .38 increase for black Protestants. Figure 3(b) shows that those with low-attending parents increase their personal religiosity by .18 if they graduate from college while those with high-attending parents decrease to the same extent if they graduate from college.

The final model in Table 3 indicates that the effects of being in and graduating from college on changes in religious certainty vary by religious tradition in adolescence. As Figure 4 shows, being in college is associated with a .17 decline in religious certainty for mainline Protestants and a .25 increase for the unaffiliated. While earning a bachelor's degree is associated with a moderate (.11) decline in religious certainty for most emerging adults, it is associated with a .14 increase for the unaffiliated.

Overall, the results in Tables 2 and 3 confirm that there are large differences in religiosity *between* emerging adults from different religious traditions and between those with high- and low-attending parents. The emphasis here, however, is on how the effect of education on *within-person changes* in religiosity varies by religious tradition and

Figure 4. Estimated between-person differences and effects of higher education on within-person changes in religious certainty scale by religious tradition in adolescence. Figure depicts results from Table 3.

parent attendance. The findings indicate that higher education is associated with declines in religiosity for emerging adults with parents who frequently attended religious services, and increases in religiosity for those with parents who infrequently attended services. The most consistent findings from the interactions with religious tradition are the relatively large, negative effects of higher education on changes in mainline Protestants' religiosity and the often positive effects of higher education—especially being in college—for the unaffiliated.

Conclusions

“Every additional year of higher education,” according to Beckwith (1985:80), “must surely make it more difficult to believe in and respect a superior being who sends sinners and unbaptized children to hell, and who insists upon constant praise and worship.” Despite the hyperbolic nature of Beckwith's characterization, the above results provide some support for this view of higher education leading to reduced religiosity. In particular, being in college is associated with declines in prayer, and graduating from college is associated with declines in religious belief and certainty. The association between college graduation and declines in religious belief provides support for the argument that the social, cultural, and curricular content of higher education is antithetical to traditional religious beliefs (Sherkat 1998). The association between college graduation and declines in religious certainty may reflect diversity in social environments and curricular content at contemporary universities, which can promote more relativistic views that conflict with exclusivist religious perspectives (Putnam and Campbell 2010). Nonetheless, as the above findings show, the widespread view that education “erodes” religion (Johnson 1997) does not apply equally to all emerging adults, and the religious context in adolescence is one dimension along which it varies.

Parents' religious activity is a key component of the religious context that not only affects their children's religiosity but also the way their children respond to attending and graduating from college. Specifically, college education leads to declines in service attendance, personal religiosity, and the overall religiosity scale for those with high-attending parents, and to growth in these same dimensions of religiosity for those with low-attending parents. In other words, college

education promotes regression to mean, thus partially negating the influence of parents' service attendance on their children's religiosity. Another way to view these findings is that college attendance and graduation weaken the intergenerational transmission of religiosity. For those with high-attending parents, parental religiosity can constrain religious choices early in the life course (Cornwall 1989; Ozorak 1989), and the loosening of such constraints through higher education can lead to religious decline (Hoge, Johnson, and Luidens 1994). It remains to be seen how later life-course changes in religiosity associated with aging and family formation influence this specific demographic. For those with low-attending parents, the college experience—including exposure to religious diversity, various campus religious groups, and discussions about religion with peers from different religious backgrounds (Braskamp 2007; Hu and Kuh 2003; Schmalzbauer 2013)—may encourage religious growth. These emerging adults may also revert to patterns of religiosity more similar to those of their parents as they age, though the general trajectory of religiosity across the life course suggests that this is not very likely.

In addition to parent religious participation, religious tradition in adolescence moderates the effects of education on changes in religiosity. Being in and graduating from college lead to more forms of religious decline, and to greater declines in overall religiosity, for those raised mainline Protestant than for other emerging adults. These results reflect continued religious privatization in the mainline community (Roof and McKinney 1987) and also speak to trends in denominational affiliation. Although demographic transitions may explain much of the decline of mainline Protestantism (Hout, Greeley, and Wilde 2001), growth in higher education may also play a role as mainline Protestants are particularly susceptible to the detrimental effects of education on religiosity. Mayrl and Uecker (2011) suggest that lack of mainline campus ministries may help explain this finding. Still, along with mainline Protestants, Catholics also exhibit declines in service attendance associated with college graduation. Perhaps lack of closure in both Catholics' and mainline Protestants' social networks makes them relatively susceptible to declines in religious participation (Smith 1998).

The tremendous growth of religious nonaffiliation (aka "nones") is the most profound change to American religion in decades. It has become relatively common for Americans to be raised with no

religious affiliation (Schwadel 2010). Importantly, however, many nones are not irreligious, and having no religion is often a liminal phase (Lim, MacGregor, and Putnam 2010). The above results show that nones who attend and graduate from college are relatively likely to become more religious. Here, too, the results suggest that higher education leads to regression to mean. Higher education appears to promote religiosity among the unaffiliated and may thus be a key avenue to religious affiliation for contemporary nones. This will become increasingly relevant as more Americans are raised unaffiliated. Although diversity in college-educated Americans' social networks is generally seen as a source of potential religious decline (Smith and Snell 2009), it may be a source of religious vitality for those entering college with little or no connection to organized religion. The exposure to diverse beliefs and experiences while in college may explain why despite the finding that being in college has relatively little influence for most groups across most indicators of religiosity, being in college is associated with increases in overall religiosity, attendance, personal religiosity, and religious certainty for those who were unaffiliated as adolescents.

The above results show that college attendance and graduation are associated with both declines and increases in religiosity, depending on the religious context in adolescence. These findings add to two burgeoning areas of research. First, that emphasizing potential positive associations between higher education and some aspects of religiosity (e.g., McFarland, Wright, and Weakliem 2011; Schwadel 2011). Uecker, Regnerus, and Vaaler (2007:1683), for example, find that the least educated are the most likely to decline in their religious participation and affiliation during emerging adulthood, leading the authors to conclude that "higher education is not the enemy of religiosity that so many have made it out to be." In the terminology used by Uecker and colleagues, the above results provide greater insight into just when higher education is likely to be and not likely to be the enemy of religiosity. Second, recent research emphasizes variability in the association between education and religiosity across several relevant social contexts. For instance, the association between education and religion appears to vary by nation (Schwadel 2015) and type of educational institution (Hill 2011; Schwadel 2016). The results here show that the religious context in adolescence is similarly relevant to the effects of education on changes in religiosity. Furthermore, additional

research may show that the relevance of the religious context in adolescence to the effects of education on religiosity may vary by other factors, particularly type of educational institution.

Of course, the above findings are only generalizable to Americans up to age 29. The patterns identified may change at older ages, particularly as education affects other relevant factors such as occupation, income, marital status, and procreation; or, the influence of these other factors on changes in religiosity may also vary by existing religious attributes. Indeed, the results here highlight potential moderation in the effects of individual characteristics in general on changes in religiosity. More specifically though, they point to the dynamic nature of the association between education and religion. Not only does the relationship between college education and religion change across generations (Schwadel 2014), but also within a single generation, it is contingent on previous religious experiences. Higher education does appear to promote religious change, but the direction and magnitude of that change depends on existing individual attributes.

References

- Beckwith, Burnham P. 1985. *The decline of U.S. religious faith, 1912–1984*. Palo Alto, CA: B.P. Beckwith.
- Braskamp, Larry A. 2007. Fostering religious and spiritual development of students during college. *SSRC Web Forum*. Available at: <http://religion.ssrc.org/reforum/Braskamp.pdf>. Retrieved June 24, 2009.
- Campbell, Robert A. 2005. Students' views on the relationship between religion and science: Analyses of results from a comparative study. *Canadian Review of Sociology & Anthropology* 42:249–65.
- Cherry, Conrad, Betty A. DeBerg, and Amanda Porterfield. 2001. *Religion on campus*. Chapel Hill, NC: University of North Carolina Press.
- Clydesdale, Tim. 2007. *The first year out: Understanding American teens after high school*. Chicago, IL: University of Chicago Press.
- Cornwall, Marie. 1989. The determinants of religious behavior: A theoretical model and empirical test. *Social Forces* 68:572–92.
- Costello, Anna B. and Jason W. Osborne. 2005. Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation* 10(7). Available at: <http://pareonline.net/getvn.asp?v=10&n=7>. Retrieved February 3, 2016.
- Darnell, Alfred and Darren E. Sherkat. 1997. The impact of Protestant fundamentalism on educational attainment. *American Sociological Review* 62(2):306–15.

- Glock, Charles Y. 1962. On the study of religious commitment. *Religious Education* 57(4):S98-S110.
- Hill, Jonathan P. 2011. Faith and understanding: Specifying the impact of higher education on religious belief. *Journal for the Scientific Study of Religion* 50(3):533-51.
- Hoge, Dean R., Benton Johnson, and Donald A. Luidens. 1994. *Vanishing boundaries: The religion of mainline Protestant baby boomers*. Louisville, KY: Westminster Press.
- Hout, Michael, Andrew Greeley, and Melissa J. Wilde. 2001. The demographic imperative in religious change in the United States. *American Journal of Sociology* 107(2):468-500.
- Hu, Shouping and George D. Kuh. 2003. Diversity experiences and college student learning and personal development. *Journal of College Student Development* 44(3):320-34.
- Johnson, Daniel Carson. 1997. Formal education vs. religious belief: Soliciting new evidence with multinomial logit modeling. *Journal for the Scientific Study of Religion* 36:231-46.
- Lee, Jenny J. 2002. Religion and college attendance: Change among students. *Review of Higher Education* 25:369-84.
- Lim, Chaeyoon, Carol Ann MacGregor, and Robert D. Putnam. 2010. Secular and liminal: Discovering heterogeneity among religious nones. *Journal for the Scientific Study of Religion* 49:596-618.
- Mayrl, Damon and Jeremy E. Uecker. 2011. Higher education and religious liberalization among young adults. *Social Forces* 90(1):181-208.
- McFarland, Michael J., Bradley R. E. Wright, and David L. Weakliem. 2011. Educational attainment and religiosity: Exploring variations by religious tradition. *Sociology of Religion* 72(2):166-88.
- Merrill, Ray M., Joseph L. Lyon, and William J. Jensen. 2003. Lack of a secularizing influence of education on religious activity and parity among Mormons. *Journal for the Scientific Study of Religion* 42:113-24.
- Ozorak, Elizabeth Weiss. 1989. Social and cognitive influences on the development of religious beliefs and commitment in adolescence. *Journal for the Scientific Study of Religion* 28(4):448-63.
- Pearce, Lisa D., Jessica Halliday Hardie, and E. Michael Foster. 2013. A person-centered examination of adolescent religiosity using latent class analysis. *Journal for the Scientific Study of Religion* 52(1):57-79.
- Petts, Richard. 2009. Trajectories of religious participation from adolescence to young adulthood. *Journal for the Scientific Study of Religion* 48(3):552-71.
- Putnam, Robert D. and David E. Campbell. 2010. *American grace: How religion divides and unites us*. New York: Simon & Schuster.
- Raudenbush, Stephen W. and Anthony S. Bryk. 2002. *Hierarchical linear models: Applications and data analysis*, 2nd ed. Thousand Oaks, CA: Sage Publications, Inc.
- Roof, Wade Clark and William McKinney. 1987. *American mainline religion*. New Brunswick, NJ: Rutgers University Press.

- Schmalzbauer, John. 2013. Campus religious life in America: Revitalization and renewal. *Society* 50:115–31.
- Schwadel, Philip. 2010. Period and cohort effects on religious non-affiliation and religious disaffiliation: A research note. *Journal for the Scientific Study of Religion* 49(2):311–19.
- . 2011. The effects of education on Americans' religious practices, beliefs, and affiliations. *Review of Religious Research* 53:161–82.
- . 2014. Birth cohort changes in the association between college education and religious non-affiliation. *Social Forces* 93(2):719–46.
- . 2015. Explaining cross-national variation in the effect of higher education on religiosity. *Journal for the Scientific Study of Religion* 54(2):402–18.
- . 2016. Does higher education cause religious decline? A longitudinal analysis of the within- and between-person effects of higher education on religiosity. *Sociological Quarterly* 57:759–86.
- Sherkat, Darren E. 1998. Counterculture or continuity? Competing influences on Baby Boomers' religious orientations and participation. *Social Forces* 76(3):1087–115.
- Sijtsma, Klaas. 2009. On the use, the misuse, and the very limited usefulness of Cronbach's alpha. *Psychometrika* 74(1):107–20.
- Singer, Judith D. and John B. Willett. 2003. *Applied longitudinal data analysis: Modeling change and event occurrence*. New York: Oxford University Press.
- Smith, Christian. 1998. *American evangelicalism: Embattled and thriving*. Chicago: University of Chicago Press.
- Smith, Christian and Melinda Lundquist Denton. 2003. *Methodological design and procedures for the National Study of Youth and Religion (NSYR)*. Chapel Hill, NC: National Study of Youth and Religion.
- . 2005. *Soul searching: The religious and spiritual lives of American teenagers*. New York: Oxford University Press.
- Smith, Christian and Patricia Snell. 2009. *Souls in transition: The religious and spiritual lives of emerging adults*. New York: Oxford University Press.
- Steensland, Brian, Jerry Z. Park, Mark D. Regnerus, Lynn D. Robinson, W. Bradford Wilcox, and Robert D. Woodberry. 2000. The measure of American religion: Toward improving the state of the art. *Social Forces* 79:291–318.
- Uecker, Jeremy E., Mark D. Regnerus, and Margaret L. Vaaler. 2007. Losing my religion: The social sources of religious decline in early adulthood. *Social Forces* 85:1667–92.
- Wald, Kenneth D. and Corwin E. Smidt. 1993. Measurement strategies in the study of religion and politics. In *Rediscovering the religious factor in American politics*, edited by David C. Leege and Lyman A. Kellstedt, pp. 26–49. Armonk, NY: M.E. Sharpe.
- Wilson, Bryan. 1982. *Religion in sociological perspective*. New York: Oxford University Press.

Supporting Information

Appendix A. Intercepts and Control Variable Results from Models in Table 3

	Frequency of Service Attendance		Frequency of Prayer		Religious Belief Scale		Personal Religiosity Scale		Religious Certainty Scale	
	b	se	b	se	b	se	b	se	b	se
Intercept	-.002	.013	.007	.015	-.008	.016	-.002	.014	.011	.014
TIME VARYING										
Live with Parent(s)	.154	.028***	.007	.028	-.004	.026	-.003	.026	.004	.028
Cohabit	-.117	.042**	-.102	.043*	-.071	.047	-.038	.041	-.047	.048
Married	.059	.044	-.002	.041	.084	.035*	.081	.039*	.106	.042*
Children	.195	.050***	.123	.047**	.125	.041**	.125	.046**	.080	.048
South	.045	.057	.092	.057	.052	.052	.048	.061	.045	.061
TIME INVARIANT										
Female	.069	.026**	.279	.032***	.162	.032***	.178	.030***	.008	.029
African American ^a	-.027	.060	.331	.070***	.241	.067***	.379	.067***	.160	.061**
Latino ^a	.056	.046	.178	.056***	.087	.057	.136	.050**	.001	.051
Other Race ^a	-.035	.050	.114	.079	-.044	.078	-.032	.072	-.192	.056***
Race Missing ^a	.152	.137	-.052	.135	.159	.134	-.076	.173	.283	.093**
Parochial School	.127	.043**	.191	.050***	.054	.054	.119	.049*	.154	.051**
Parent(s) Bachelor's	-.006	.028	-.116	.035***	-.142	.035***	-.111	.032***	-.051	.032
Religion Missing	-.152	.101	-.522	.110***	-.522	.149***	-.512	.124***	-.537	.113***
Mean:										
Live with Parent(s)	.091	.065	.079	.078	.116	.083	.154	.075*	.130	.075
Cohabit	-.380	.097***	-.147	.123	-.175	.140	-.199	.119	-.154	.107
Married	.565	.112***	.466	.132***	.519	.125***	.604	.120***	.701	.118***
Children	.297	.136*	.585	.164***	.465	.144***	.473	.145***	.291	.138*
South	.062	.028*	.143	.035***	.105	.033***	.150	.033***	.070	.030*
Age	-.012	.016	.039	.019*	-.011	.011	.023	.018	.027	.019
Age-Squared	-.005	.003*	-.007	.003*			-.007	.003*	-.008	.003**

^a White omitted reference category.* $p < .05$, ** $p < .01$, *** $p < .001$ (two-tailed test)