Interdisciplinary Journal of Research on Religion

Explaining Atheism:
Testing the Secondary Compensator Model and Proposing an Alternative

Laura A. Hunter*

Moreau Postdoctoral Fellow, Department of Sociology
University of Notre Dame
Notre Dame, Indiana

* lhunter4@nd.edu

Explaining Atheism:
Testing the Secondary Compensator Model and Proposing an Alternative

Laura A. Hunter

Moreau Postdoctoral Fellow, Department of Sociology
University of Notre Dame
Notre Dame, Indiana

Abstract

William Sims Bainbridge has proposed a compensator theory to account for atheism, specifically theorizing that a lack of social obligations allows more freedom for individuals to espouse atheism. Despite the development of testable hypotheses, Bainbridge relies on bivariate statistics to bolster his argument, and adequate empirical tests of these hypotheses have not yet occurred. In this article, data from the 2001 American Religious Identification Survey, an extensive random survey of American adults, are used to test several hypotheses derived from this theoretical model. Overall, the results from a series of logistic regression models, in which various extraneous factors can be controlled for, generally do not support the secondary compensator model. Drawing from these results, I propose an alternative theory to account for the development of atheism in individuals.

Sociological research on atheists is fairly uncommon, despite the growing visibility of atheism (Cimino and Smith 2007; for a review, see Zuckerman 2009). This scarcity of research is likely due in part to practical reasons, such as the relative rarity of atheism in the population and the fact that surveys often classify all nonreligious individuals in one catchall category, making it difficult to use existing surveys to study atheists (Bainbridge 2005). Atheists are a subset in the overall category of people who claim no religion; however, a large portion of individuals in the "no religion" category espouse some traditional religious beliefs, such as belief in God or a higher power. For example, Hout and Fischer (2002) found that only one third of the people who prefer no religion are either atheists or agnostics. Instead, most of the individuals in this category are unaffiliated believers. Baker and Smith (2009a) found somewhat different results in their sample: Of those claiming no religion, approximately 22 percent were agnostic, 30 percent were atheists, and over 40 percent espoused belief in God or a higher power. In either case, atheists likely make up one third of the "no religion" category at most.

Atheists differ from other subgroups in the "no religion" category in some ways, most obviously in their beliefs. Some individuals in the "no religion" category believe in God or a higher power but do not belong to an organized religion; Baker and Smith (2009a) call this group "unchurched believers." Agnostics neither affirm nor deny the existence of God because they claim that it cannot be known or determined; inherent in this viewpoint is the possibility of God. Conversely, atheists firmly believe that God does not exist, making their views about God distinct from those of other subgroups in the "no religion" category (Baker and Smith 2009a).

Because of the differences between them, recent research has highlighted the necessity of distinguishing between the subgroups of the nonreligious (see Baker and Smith 2009a). For example, compared to agnostics and unchurched believers, atheists have extremely low levels of private religiosity and spirituality, and both atheists and unchurched believers have greater levels of opposition to religion in the public sphere than agnostics do. However, there is little difference between these subgroups in political identification and measures of moral liberalism regarding issues such as abortion, stem cell research, and divorce (Baker and Smith 2009a).

Thus atheists are different in some ways from other individuals within the "no religion" category, and theories about members of this broad category might not be particularly relevant to explaining atheist identification. For example, Hout and Fischer (2002) argue convincingly that political identification is an important predictor of identifying as having no religion. They argue that the politicization of religion has caused some people who disagree with a conservative agenda to stop identifying with the religions that are associated with that agenda and even to turn

away from organized religion. In fact, Hout and Fischer (2002) found that the significant increase in having no religious preference was confined to liberals and moderates, and they argue that there is a growing number of unaffiliated believers, not a loss of religious belief. By contrast, it is unlikely that political factors would lead people to atheism. The processes that lead a person who believes in God to disengage from organized religion are likely different from the processes that lead a person to firmly believe that God does not exist. Therefore Hout and Fischer's theory seems mostly applicable to unaffiliated believers, as the authors speculate. There has been markedly less theorizing about atheists.

However, in a rare attempt to understand the development of atheism in individuals, Bainbridge (2005) has proposed a compensator theory in which the lack of social obligations allows more freedom for individuals to espouse atheism. Given that research and theories on atheists are scant, it is critical to assess the accuracy of what little exists, particularly because this theory has been cited in subsequent research (e.g., Baker and Smith 2009a, 2009b; Cimino and Smith 2007; Sherkat 2008). Nonetheless, the hypotheses that have been generated from Bainbridge's framework have not yet been adequately tested empirically. In fact, Bainbridge (2005) admits that his research is exploratory, intended to identify issues that need to be studied more methodically. Therefore, in the first part of this article, I empirically test hypotheses derived from the compensator framework, using a random sample of American adults. In the second half of the article, I develop an alternative theory for the development of atheism in individuals.

THE COMPENSATOR MODEL AND HYPOTHESES

While appropriately noting that atheism likely has many causes, Bainbridge (2005) proposes a compensator theoretical account in which the lack of social obligations allows individuals more freedom to espouse atheism. Certainly, the compensator theory of religion is not new (see Stark and Bainbridge 1987), nor is the distinction between primary and secondary compensators (see Bainbridge 2002). While these theoretical models have been fruitful in generating hypotheses (Bainbridge 2005), they have also been criticized on various grounds (e.g., Bruce 1999; Jerolmack and Porpora 2004). However, in this article, I focus exclusively on Bainbridge's argument regarding atheism, which I briefly summarize below. The entire framework, propositions, and background definitions can be found in his 2005 article.

As Bainbridge (2005) explains, in the absence of a desired reward, individuals will often accept explanations that the reward will be attained in a nonverifiable context, such as the distant future. Compensators are postulations of reward according to explanations that cannot be empirically tested (Bainbridge 2005). For example, people may be religious because being religious is expected to bring

them future rewards, such as eternal life, when that reward cannot otherwise be attained.

Bainbridge argues that the compensator theory is not only psychological, but also social, and he differentiates between primary compensation and secondary compensation: "Primary compensation substitutes a compensator for a reward that people desire for themselves" (Bainbridge 2005: 6). Primary compensation is psychological and satisfies the needs of the believer. Secondary compensation substitutes a compensator for a reward that a person is compelled to provide to another person. Thus secondary compensation is social in nature and sustains relationships when one person is unable to provide a reward to another person that the latter desires. Bainbridge (2005: 7) states that

> this line of argument suggests that Atheism might be most common among people who lack intimate, personal obligations of the kind that might benefit from secondary compensation. Someone on whom no one else is dependent, someone who lacks strong social bonds of a kind to incur such obligations, is more free to espouse Atheism.

In other words, Bainbridge argues that people may be religious not only for themselves, but also for others who rely on them. In the absence of people who rely on them, in this view, individuals have an increased likelihood of atheism. The general causal sequence in this argument is as follows:

Low social obligations → increased likelihood of atheism

Logically, children and spouses likely provide the greatest incentives for individuals to provide secondary compensators, and the following hypotheses are derived from Bainbridge's secondary compensator framework:

> *Hypothesis 1:* Compared to single individuals, married individuals will be less likely to identify as atheists.

> *Hypothesis 2:* Compared to their childless peers, individuals with one child will be significantly less likely to identify as atheists.

> *Hypothesis 3:* Compared to their childless peers, individuals with two or more children will be significantly less likely to identify as atheists, and the size of the effect will be slightly larger than the effect for one child.

Because women are disproportionately responsible for childcare (Hochschild 2003), women may have a higher level of obligation to their children to provide

secondary compensators (Bainbridge 2005). Accordingly, another hypothesis is derived from the secondary compensator framework:

> *Hypothesis 4:* Gender and the presence of children will interact; therefore women with children are the least likely to espouse atheism.

EXISTING EVIDENCE FOR THE SECONDARY COMPENSATOR MODEL

To support his general theoretical argument, Bainbridge (2005) provides simple bivariate relationships, mostly from a nonrandom study (though supplemented with data from the General Social Survey). He argues that the presence of children, and of more children, should increase family obligations and reduce atheism. His bivariate statistics show that for both women and men, having one child slightly reduces atheism but having two children markedly reduces atheism. If the causal direction is truly that low social obligations allows for atheism, this finding is quite curious. We would expect that individuals would want to provide secondary compensators for their children, regardless of how many children they had. Consequently, we would expect the largest difference to be between childless individuals and individuals with one child, each additional child providing a diminishing return on the effect.

Regarding marital obligations, Bainbridge (2005) uses bivariate statistics to show that atheism is most common among people who cohabitate with their partners, followed by single individuals and then married individuals. Atheism is least common among divorced individuals. Although this last group does not have marital obligations, Bainbridge suggests that divorced individuals have a greater need for primary compensators and are consequently less likely to be atheists. While atheism is most common among individuals who cohabitate, a group that seemingly has more obligations than single individuals, Bainbridge (2005: 13) argues that "the theory does not say that Atheists are antisocial hermits. Cohabiters are certainly social—they share intimate domestic life with another person—but they have explicitly failed to take on the obligations of marriage. Thus, the fact that Atheism is most common among cohabiters strongly supports the theory of secondary compensation."

While the largest desire to provide secondary compensators would likely come from having children and spouses, an idea that will be tested in this article, Bainbridge (2005) makes several other observations worth noting. He finds that atheists are more likely to have migrated geographically recently, perhaps indicating instability of social relationships. However, although research suggests that mobility tends to reduce religious involvement, recent research has argued that the total effect depends on whether the individual moves to an area of higher or lower religiosity; religiosity tends to rise among people who migrate to more

religious areas and to fall when people move to less religious areas (Iannaccone and Makowsky 2007).

Bainbridge (2005) also finds that atheists are less likely to report wanting a family reunion and more likely to agree that it is not fair to bring children into the world, and atheists evaluate their relationships as slightly lower in quality. Although the dataset that I utilize does not have similar measures, I will return to these issues later by drawing from research findings that have been published in the years since his 2005 article. Bainbridge (2005) also finds that men, overall, are more likely to admit being atheists than women are. However, whether this is to due to secondary compensation cannot be ascertained through available data, and the argument for the causal relationship is unconvincing, particularly if the other hypotheses that are generated from the framework fail to be supported. Consequently, I have not formulated a hypothesis regarding gender (besides interaction effects), nor should a gender difference in atheism be used as evidence for the secondary compensator model.

THE PROBLEM WITH BIVARIATE STATISTICS

The greatest strength of Bainbridge's (2005) argument is the development of testable hypotheses. However, to infer nonspuriousness, the researcher must show that the relationship is maintained when extraneous variables are held constant (Singleton and Straits 2005), and there have been no adequate empirical tests of the hypotheses that controlled for necessary factors. In other words, it could be that marital and parental status and atheism are statistically related but not causally linked, because the statistical relationship could be caused by other variables (see Vogt 2005).

Before it can be concluded that marital status and parental status affect atheism, several variables necessarily must be controlled for because they may affect both family status (i.e., parental and marital status) and atheism, which could create an artificial statistical link between family status and atheism that might disappear once these other variables have been properly controlled for. For example, age affects the probability of identifying as an atheist (Bainbridge 2005), and age affects family status. Therefore the relationship between family status and atheism may be spurious, both being consequences of age. Likewise, given the much stronger negative association of atheism with having two or more children than one child, it could be that atheism is less common among groups that tend to have higher fertility rates, such as African-Americans and Latinos in the United States (Hamilton, Martin, and Ventura 2006). These racial groups also have different cohabitation, marriage, and divorce rates than whites do (Bramlett and Mosher 2002), and race is a well-established predictor of religiosity in the United States. Again, family status and atheism could both be affected by race,

indicating a possible spurious relationship between family status and atheism due to race. There are also regional and city status differences in the United States in parental and marital status patterns (Mullins et al. 2004; Pandit and Bagchi-sen 1993; Zhang and Song 2007), as well as religious regionalism (Iannaccone and Makowsky 2007). Because of the relationship between region and both family status and atheism, region must be controlled for to test whether the effect of family status remains.

To summarize, because prior research has indicated that age, region, and race affect both religiosity and family status (i.e., parental and marital status), these must be controlled for when investigating the links between family status and atheism because these extra variables could be driving the statistical relationship. A bivariate relationship between family status and atheism would essentially be meaningless if it were a consequence of these other variables. Race, age, and region all occur prior to parental status and marital status. Therefore the former cannot mediate the relationship between family status and atheism (as family status cannot logically affect age). However, parental status and marital status may indeed be mediating variables (e.g., of age and atheism) if they prove to remain significant and reduce the effects of each on atheism. The question remains as to whether parental status and marital status significantly affect atheism when the necessary extraneous variables are controlled for. Therefore I will apply appropriate statistical models using a large representative dataset to adequately test the hypotheses derived from the secondary compensator model.

DATA

For the analyses, I utilize the 2001 American Religious Identification Survey (ARIS) (Kosmin, Mayer, and Keysar 2001). The survey is a large, nationally representative sample of the U.S. adult population ($N = 50,281$) within the forty-eight contiguous states based on random digit dialed telephone interviews in English or Spanish. The data are weighted to reflect current estimates of the U.S. adult population in the forty-eight states by age, gender, race/ethnicity, education, and geographic region to compensate for biases in the sample selection and data collection phases. The huge number of cases in this survey and its representative nature mean that it provides unparalleled profiles of religious groups in the United States with a high degree of statistical precision (Kosmin, Mayer, and Keysar 2001). Additionally, because of the extensive size and because atheists are differentiated from other nonbelievers, this survey overcomes many of the limitations that preclude using existing surveys to study atheists (see Bainbridge 2005) and make it particularly appropriate for assessing hypotheses generated from the secondary compensator framework.

Dependent Variable

Respondents were asked the open-ended key question "What is your religion, if any?" Respondents who said that they were atheists were coded as 1; nonatheists were coded as 0. In the models presented in Table 2 later in this article, respondents who claimed that they had no religion were excluded, as there were no follow-up questions to clarify specific views. To provide a more conservative test of the hypotheses, self-identified agnostics were also removed from the models presented in Table 2. Respondents who reported that they did not know their religious identification and those who refused to answer this question were excluded from all analyses. Removing these individuals (and individuals with other missing data on independent variables) provides a sample size of 38,712 individuals.

Thus these models compare atheists with respondents who have some sort of religious identification. In other words, to test the specific hypotheses generated from the secondary compensator framework, the models compare respondents who specifically disavow the existence of God with respondents who claim a religious identity. Therefore the models do not attempt to explain variation in levels of religiosity, nor do they look at the respondents in the "no religion" category, many of whom have traditional religious beliefs (Baker and Smith 2009a; Hout and Fischer 2002). Furthermore, when interpreting the results, remember that self-identification of atheists is a different measure from using indicators of belief in God, which the ARIS did not release. Nonetheless, Bainbridge (2005) also used self-identification measures in his original formulation.

However, to test the robustness of the models, I also performed all analyses without removing the "no religion" category and without removing agnostics. Table 3, later in the article, presents the models that include individuals who claim no religion and agnostics (both coded as 0, as they do not identify as atheists) ($N = 45,644$). Again, because the group of those with no religion may contain some atheists, this group is dropped, whereas agnostics are not, for a series of models reported in Table 4 ($N = 38,938$). As is evident, the results are remarkably similar (see Tables 2 through 4). Although the specific coefficients change depending on the comparison group, the variables do not change in level of significance across the three sets of models. Therefore we can be confident that the results do not depend on the specification of the comparison group, and the robustness of the results—even when other nonreligious individuals are included in the comparison group—is congruent with previous research on the distinctiveness of atheists in some ways, even compared to other nonreligious subgroups (Baker and Smith 2009a). For simplicity, I focus on the coefficient results for the set of models that excludes individuals with no religion and agnostics reported in Table 2.

Independent Variables

Traditional demographic variables related to religiosity (and to parental and marital status in some cases) were measured and controlled for, including age, race, and gender. In the survey, age was measured by a continuous variable based on self-reported age. Because age might not have a linear effect on atheism (Bainbridge 2005), I tested different ways to specify a nonlinear effect of age. First, I constructed an age-squared term. To reduce collinearity, age and age-squared were centered on the mean (mean = 45.07). Alternatively, age was logged so that the impact of each additional year of age decreased as age increased. Including the logged version of age provided slightly better-fitting models, judging from the Bayesian information criterion (BIC) statistics, so the models reported here include the logged version of age. Racial categories were based on self-reported racial identities. Binary variables were constructed for African-American, Latino/Hispanic, Asian-American, and "other race," which were compared to white, the reference category. Gender was measured by a dichotomous variable in which women were coded as 1 and men were coded as 0.

Because prior research has found region to be associated with atheism (e.g., Iannaccone and Makowsky 2007) and with parental status and marital status (Mullins et al. 2004; Pandit and Bagchi-sen 1993; Zhang and Song 2007), region was controlled for by using the four major regions of the United States. Dichotomous variables were constructed for living in the South, West, and Northeast, which were compared to the reference category, the North Central region (i.e., the Midwest). Living in a city may affect exposure to atheism, so a binary variable was constructed and coded as 1 if the individual lived in a metropolitan area. Prior research found that higher educational attainment increases the likelihood of claiming no religion (Hayes 2000), and campuses have often served as sites for atheist organizations (Cimino and Smith 2007), which may expose individuals to atheism. Consequently, dichotomous variables were constructed for having a college degree and for having a graduate degree, which were compared to respondents who had less than a college degree. Because the effects of education may be contingent on gender, interaction terms were constructed for gender by education.

Following Bainbridge (2005), dichotomous variables were constructed for having one child and having two or more children in the household, childless respondents serving as the reference category. Dichotomous variables are preferable to a continuous measure of children in testing these hypotheses to minimize reverse causation effects (in which religious tradition may affect overall fertility rates). Because women are disproportionately responsible for childcare (Hochschild 2003), interaction terms were constructed for women with one child and women with more than one child. Marital status was measured with a series

of dichotomous measures; the variables were constructed for being married, being divorced or separated, cohabitating, and being widowed, and these were compared to single individuals. The roles of income and employment status were also investigated but were dropped from final models for reducing model fit. (The inclusion of these variables did not change the results of the variables of interest.) Moreover, income data were missing for a large portion of the respondents.

STATISTICAL ANALYSIS

The causal direction in the secondary compensator model is that few social obligations increase the likelihood of atheism, indicating that a logistic regression model would be appropriate. However, because identifying as an atheist is extremely rare (for the results presented in Table 2, 240 = 1 and 38,472 = 0), I use the STATA-compatible program RELOGIT, developed by King and Zeng (1999), to test the robustness of the models. The program can analyze rare events in binary dependent variables with "dozens to thousands times fewer" events (1s) than nonevents (0s) (King and Zeng 1999: 138; see also Tomz, King, and Zeng 1999). This procedure recognizes that ordinary logit models underestimate the probability of rare events and consequently provides parameter estimates and standard errors that are more appropriate when the dependent variable is rarely coded as 1. The results from the rare-event models do not change the substantive results that are reported in the tables, and there are no changes in significance between the two types of models. To measure model fit and the value of introduced coefficients, I compare BIC statistics of nested models using the fitstat command created by Long and Freese (2006). I rely on odds ratios (e^{logits}) and percent changes when interpreting the results from the models, since changes in logits are not intuitive. All statistical analyses were performed by using STATA, Version 9.

Bivariate Results

Table 1 presents the results of *t*-tests of means comparing atheists and nonatheists. The *t*-tests were performed to compare atheists to nonatheists while excluding individuals with no religion and agnostics (Group 1), atheists to nonatheists including individuals with no religion and agnostics (Group 2), and atheists to nonatheists including agnostics but excluding individuals claiming no religion (Group 3). In other words, self-identified atheists are compared to nonatheists in the same comparison groups for the three sets of models reported in Tables 2 through 4.

Table 1: Bivariate Statistics

	Atheists (Mean)	Nonatheists (Mean)[a]		
		Group 1	Group 2	Group 3
Married	0.34	0.57***	0.55***	0.56***
One child	0.15	0.15	0.16	0.15
Two or more children	0.13	0.22***	0.22***	0.22***

***$p < 0.001$.

[a]In Group 1, respondents who claimed no religion and agnostics were removed. Group 2 includes both those with no religion and agnostics. Group 3 includes agnostics, but those with no religion were removed.

As Table 1 shows, bivariate statistics indicate that atheists are significantly less likely to be married than are nonatheists, which is consistent with the secondary compensator model. Interestingly, atheists do not significantly differ from nonatheists in the likelihood of having one child, but atheists are significantly less likely than nonatheists to have two or more children. Bainbridge (2005) also found a much larger difference for the likelihood of atheism among parents with two or more children than among parents with one child.

However, are these relationships spurious? As was outlined above, bivariate relationships can be meaningless if they are spurious. Because it is necessary to control for variables that could affect both family status and atheism, a series of multivariate models are specified to test whether these relationships hold when extraneous factors are controlled for.

Multivariate Results

Table 2 presents the results of logistic regression models in which agnostics and individuals who specified that they had no religion were removed; these results are discussed in detail below. Table 3 presents the results of the models with both of these subgroups groups included, and Table 4 presents the results of the models with individuals claiming no religion excluded but agnostics included. As can be seen from the tables, the results are consistent regardless of whether certain groups are excluded from the comparison group. The specific coefficients change, but the relative size of the effect generally remains the same, and the significance does not change at all.

**Table 2: Effects on Atheist Identification (Coefficients and Standard Errors),
with "No Religion" and Agnostics Removed**

	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Age (logged)	−1.58***	0.01	−1.64***	0.25	−1.45***	0.29	−1.44***	0.29
Race/Ethnicity								
White [reference category]	—	—	—	—	—	—	—	—
African-American (1 = Yes; 0 = No)	—	—	−1.05*	0.47	−1.05*	0.47	−1.05*	0.47
Latino/Hispanic (1 = Yes; 0 = No)	—	—	−1.30**	0.44	−1.26**	0.44	−1.26**	0.44
Asian-American (1 = Yes; 0 = No)	—	—	0.05	0.46	0.01	0.47	0.03	0.47
Other race (1 = Yes; 0 = No)	—	—	0.55	0.31	0.55	0.31	0.55	0.31
Region								
North Central [reference category]	—	—	—	—	—	—	—	—
South (1 = Yes; 0 = No)	—	—	−0.45	0.28	−0.43	0.27	−0.43	0.27
West (1 = Yes; 0 = No)	—	—	0.76**	0.26	0.77**	0.26	0.77**	0.26
Northeast (1 = Yes; 0 = No)	—	—	0.50*	0.26	0.49	0.26	0.49	0.26
City Status								
City (1 = City; 0 = Non-city)	—	—	0.43*	0.20	0.40*	0.19	0.39*	0.19
Education								
Less than a college degree [reference category]	—	—	—	—	—	—	—	—
College degree (1 = Yes; 0 = No)	—	—	−0.19	0.22	−0.19	0.21	−0.29	0.24
Graduate degree (1 = Yes; 0 = No)	—	—	−0.04	0.32	−0.04	0.32	−0.48	0.38
Female × college degree	—	—	—	—	—	—	0.36	0.55
Female × graduate degree	—	—	—	—	—	—	1.23	0.65
Sex								
Female (1 = Female; 0 = Male)	—	—	−1.02***	0.22	−0.96***	0.22	−1.13***	0.28
Parental Status								
No children [reference category]	—	—	—	—	—	—	—	—
One child (1 = Yes; 0 = No)[a]	—	—	—	—	−0.51*	0.25	−0.60*	0.32
Two or more children (1 = Yes; 0 = No)[a]	—	—	—	—	−0.37	0.28	−0.26	0.30
Female × one child[a]	—	—	—	—	—	—	0.29	0.51
Female × two or more children[a]	—	—	—	—	—	—	−0.37	0.65
Marital Status								
Single [reference category]	—	—	—	—	—	—	—	—
Married (1 = Yes; 0 = No)[a]	—	—	—	—	−0.36	0.23	−0.35	0.23
Divorced/separated (1 = Yes; 0 = No)	—	—	—	—	−0.17	0.28	−0.16	0.28
Cohabitating (1 = Yes; 0 = No)	—	—	—	—	−0.21	0.29	−0.20	0.29
Widowed (1 = Yes; 0 = No)	—	—	—	—	−0.75	0.63	−0.72	0.63
Constant	0.43	0.88	0.98	0.93	0.65	1.02	0.66	1.02
Number of observations	38,712		38,712		38,712		38,712	
Bayesian information criterion	2445.52		2423.14		2471.05		2506.26	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
[a] Denotes one-tailed test.

**Table 3: Effects on Atheist Identification (Coefficients and Standard Errors),
with "No Religion" and Agnostics Included**

	Model 1		Model 2		Model 3		Model 4	
	Coef.	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**
Age (logged)	−1.45***	0.25	−1.51***	0.26	−1.36***	0.30	−1.35***	0.30
Race/Ethnicity								
White [reference category]	—	—	—	—	—	—	—	—
African-American (1 = Yes; 0 = No)	—	—	−0.99*	0.47	−0.98*	0.47	−0.98*	0.47
Latino/Hispanic (1 = Yes; 0 = No)	—	—	−1.17**	0.43	−1.13**	0.44	−1.13**	0.44
Asian-American (1 = Yes; 0 = No)	—	—	0.10	0.45	0.06	0.46	0.07	0.46
Other race (1 = Yes; 0 = No)	—	—	0.55	0.31	0.56	0.31	0.56	0.31
Region								
North Central [reference category]	—	—	—	—	—	—	—	—
South (1 = Yes; 0 = No)	—	—	−0.40	0.28	−0.39	0.28	−0.39	0.27
West (1 = Yes; 0 = No)	—	—	0.68**	0.25	0.68**	0.25	0.68**	0.25
Northeast (1 = Yes; 0 = No)	—	—	0.51*	0.26	0.49	0.26	0.49	0.26
City Status								
City (1 = City; 0 = Non-city)	—	—	0.41*	0.19	0.38*	0.19	0.38*	0.19
Education								
Less than a college degree [reference category]	—	—	—	—	—	—	—	—
College degree (1 = Yes; 0 = No)	—	—	−0.17	0.22	−0.17	0.21	−0.26	0.24
Graduate degree (1 = Yes; 0 = No)	—	—	−0.07	0.32	−0.07	0.32	−0.51	0.39
Female × college degree	—	—	—	—	—	—	0.32	0.55
Female × graduate degree	—	—	—	—	—	—	1.23	0.65
Sex								
Female (1 = Female; 0 = Male)	—	—	−0.96***	0.22	−0.90***	0.22	−1.07***	0.28
Parental Status								
No children [reference category]	—	—	—	—	—	—	—	—
One child (1 = Yes; 0 = No)[a]	—	—	—	—	−0.50*	0.25	−0.58*	0.31
Two or more children (1 = Yes; 0 = No)[a]	—	—	—	—	−0.33	0.28	−0.22	0.30
Female × one child[a]	—	—	—	—	—	—	0.27	0.51
Female × two or more children[a]	—	—	—	—	—	—	−0.37	0.65
Marital Status								
Single [reference category]	—	—	—	—	—	—	—	—
Married (1 = Yes; 0 = No)[a]	—	—	—	—	−0.29	0.23	−0.28	0.23
Divorced/separated (1 = Yes; 0 = No)	—	—	—	—	−0.13	0.28	−0.12	0.28
Cohabitating (1 = Yes; 0 = No)	—	—	—	—	−0.30	0.29	−0.30	0.29
Widowed (1 = Yes; 0 = No)	—	—	—	—	−0.64	0.63	−0.62	0.63
Constant	−0.19	0.89	0.25	0.94	0.06	1.03	0.08	1.03
Number of observations	45,644		45,644		45,644		45,644	
Bayesian information criterion	2546.82		2543.01		2594.24		2630.14	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
[a] Denotes one-tailed test.

**Table 4: Effects on Atheist Identification (Coefficients and Standard Errors),
with "No Religion" Removed and Agnostics Included**

|	Model 1		Model 2		Model 3		Model 4	
	Coef.	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**
Age (logged)	−1.57***	0.25	−1.64***	0.25	−1.44***	0.29	−1.44***	0.29
Race/Ethnicity								
White [reference category]	—	—	—	—	—	—	—	—
African-American (1 = Yes; 0 = No)	—	—	−1.04*	0.47	−1.04*	0.47	−1.05*	0.47
Latino/Hispanic (1 = Yes; 0 = No)	—	—	−1.29**	0.44	−1.25**	0.44	−1.25**	0.44
Asian-American (1 = Yes; 0 = No)	—	—	0.04	0.46	−0.01	0.47	0.01	0.47
Other race (1 = Yes; 0 = No)	—	—	0.54	0.31	0.54	0.31	0.53	0.31
Region								
North Central [reference category]	—	—	—	—	—	—	—	—
South (1 = Yes; 0 = No)	—	—	−0.45	0.28	−0.43	0.27	−0.43	0.27
West (1 = Yes; 0 = No)	—	—	0.75**	0.26	0.76**	0.26	0.76**	0.26
Northeast (1 = Yes; 0 = No)	—	—	0.50*	0.26	0.49	0.26	0.49	0.26
City Status								
City (1 = City; 0 = Non-city)	—	—	0.44*	0.20	0.41*	0.19	0.40*	0.19
Education								
Less than a college degree [reference category]	—	—	—	—	—	—	—	—
College degree (1 = Yes; 0 = No)	—	—	−0.19	0.22	−0.18	0.21	−0.28	0.24
Graduate degree (1 = Yes; 0 = No)	—	—	−0.04	0.32	−0.04	0.32	−0.47	0.38
Female × college degree	—	—	—	—	—	—	0.35	0.55
Female × graduate degree	—	—	—	—	—	—	1.22	0.65
Sex								
Female (1 = Female; 0 = Male)	—	—	−1.01***	0.22	−0.94***	0.22	−1.11***	0.28
Parental Status								
No children [reference category]	—	—	—	—	—	—	—	—
One child (1 = Yes; 0 = No)[a]	—	—	—	—	−0.50*	0.25	−0.60*	0.32
Two or more children (1 = Yes; 0 = No)[a]	—	—	—	—	−0.36	0.28	−0.25	0.30
Female × one child[a]	—	—	—	—	—	—	0.29	0.51
Female × two or more children[a]	—	—	—	—	—	—	−0.38	0.65
Marital Status								
Single [reference category]	—	—	—	—	—	—	—	—
Married (1 = Yes; 0 = No)[a]	—	—	—	—	−0.35	0.23	−0.35	0.24
Divorced/separated (1 = Yes; 0 = No)	—	—	—	—	−0.16	0.28	−0.16	0.28
Cohabitating (1 = Yes; 0 = No)	—	—	—	—	−0.20	0.29	−0.19	0.29
Widowed (1 = Yes; 0 = No)	—	—	—	—	−0.74	0.63	−0.72	0.63
Constant	−0.41	0.88	0.94	0.93	0.62	1.02	0.63	1.02
Number of observations	38,938		38,938		38,938		38,938	
Bayesian information criterion	2448.21		2427.68		2476.08		2511.34	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
[a] Denotes one-tailed test.

As a model-building strategy, I include background demographics in Models 1 and 2 that cannot be affected by marital status and parental status (with the possible exception of education) and that have been previously shown to affect

religiosity (or atheism specifically). In Models 3 and 4, I introduce variables that were designed to test the specific hypotheses derived from the secondary compensator model. In these models, I control for necessary variables to reduce the possibility of arriving at spurious conclusions. To test for possible multicollinearity, I calculated the variance inflation factor, a multicollinearity diagnostic statistic. The highest value is 2.5, and nearly all other values are below 2 (well below most standard cutoffs).

Consistent with previous research, increasing age decreases the odds that a person identifies as an atheist, although the negative effect of age is not linear. Figure 1 shows the relationship between age and the probability of identifying as an atheist. An examination of the nonlinear effects of age reveals that the odds of being an atheist decline most rapidly during the ages 18 to about 40 years, the difference between 18-year-olds and 25-year-olds being the greatest. The effect of each additional year of age has fairly marginal effects after the age of 50. This indicates that rather than the elderly being especially unlikely to be atheists, it is the young who are especially likely to identity as atheists.

Figure 1: The Relationship Between Age and Atheist Identification
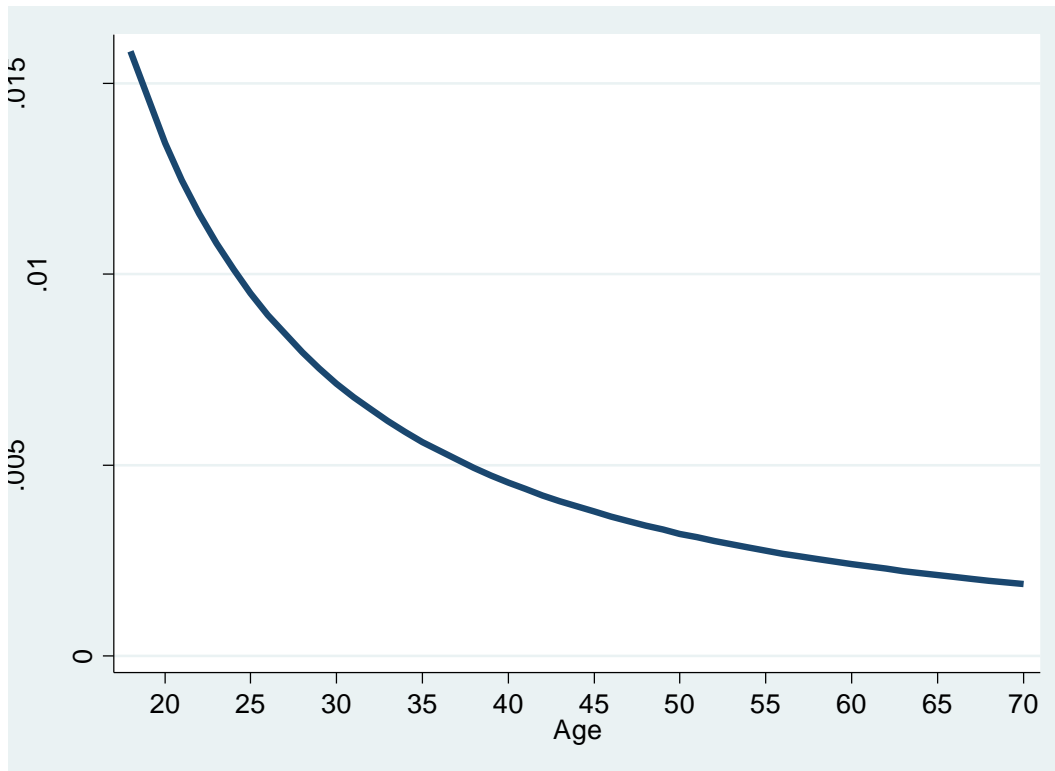
Model 2 introduces demographic variables, and race and gender matter for identifying as an atheist. The odds of identifying as an atheist are 64.9 percent smaller for African-Americans than for whites, while the odds of identifying as atheist for Latinos are 72.7 percent smaller than for whites, all other variables being held constant. The odds of atheism did not significantly differ for Asian-Americans compared to whites, and the "other" racial category had marginally higher odds of atheism (<0.08 level). Thus atheism is least likely to be found among Latinos, followed by African-Americans. Like some racial groups, women are less likely to identify as atheists; the odds of identifying as atheist are 63.9 percent smaller for women than for men. Although this effect is smaller than the negative effect for Latinos, it is of a size similar to that of the effect for African-Americans, indicating that race might matter more than—or as much as—gender for atheist identification. Interactions between race and gender were tested for (results not shown). There was a large significant interaction effect for Asian-American women (coefficient $= 2.82$, $p < 0.01$), but no other interactions between race and gender were significant. The BIC model fit statistics demonstrate that the models that included the interaction terms fit considerably worse, so they are not included in the remaining models. However, it is notable that the results indicate that Asian-American women are more likely to be atheists than Asian-American men are.

Region and city status also affect identifying as atheist. Compared to living in the North Central Region, living in the West increases the odds of being atheist by a factor of 2.14; alternatively stated, people who live in the West are 114 percent more likely to be atheists, all other variables being held constant. Individuals residing in the Northeast are 66 percent more likely to be atheists than their counterparts in the North Central Region (although this effect drops to $p < 0.06$ in later models), while those living in the South are slightly less likely ($p < 0.10$) to identify as atheists than their counterparts in the North Central Region, but this becomes insignificant in later models. Living in a city also affects the likelihood of atheist identification. Individuals living in cities are 54 percent more likely to identify as an atheist than are individuals who do not live in cities.

Model 3 introduces two sets of variables—marital and parental obligations—that are likely the social obligations that would induce the greatest desire to provide secondary compensators, and the results generally do not support Bainbridge's hypotheses. When controlling for other necessary factors, we see that marital status does not affect the probability of identifying as atheist, contrary to the predictions drawn from the secondary compensator model. In other words, individuals who are single are no more (or less) likely to identify as atheists than are people who are married, even though married individuals would have the greatest desire to provide secondary compensators, according to this theory. Whereas Bainbridge (2005) found that atheist identification was highest among

individuals who cohabitate, I did not find any significant difference in the likelihood of atheism for people who cohabitate (or any other marital status) when controlling for other necessary factors.

I tested for interactions with gender and marital status (results not shown) because there may be gender differences in expectations to provide secondary compensators. The only interaction term that was significant and negative was that for female widows ($p < 0.05$). However, comparison of the models' BIC statistics provided strong support that the model fit was superior when the interactions were not included. Furthermore, that the interaction effect was significant only for widows, who have less need to provide compensators, offers more evidence that is contrary to the predictions generated from the secondary compensator model.

Compared to childless individuals, people with one child are less likely to identify as atheists. While this appears consistent with a secondary compensator model, the effect of having two or more children is not significant, indicating that people with two or more children are no less likely to identify as atheists than are their childless counterparts, which is inconsistent with the secondary compensator model. Although it is intriguing that individuals with only one child are less likely to be atheists than are people with more than one child, this does not provide strong evidence for the secondary compensator hypotheses. Rather, we would expect a significant and slightly larger effect for having two or more children if secondary compensators were driving the difference between childless individuals and individuals with one child. Interestingly, the *t*-tests (see Table 1) indicated that the relationship between atheist status and having one child was the only nonsig-nificant relationship when other factors were not controlled for. When we control for other factors, the relationship between one child and atheism becomes signi-ficant, suggesting suppression.

Model 4 introduces several interactions with gender, and the results do not support Hypothesis 4. As Bainbridge (2005) notes, because women are disproportionately responsible for childrearing (Hochschild 2003), women may have greater needs (or desires) to provide secondary compensators. Consequently, drawing from the secondary compensator model, we would expect women with children to be especially unlikely to espouse atheism. However, the results in this area do not support the secondary compensator model. Women with one child and women with two or more children are not significantly less likely to be atheists. (The results hold when the interaction terms with gender and education are excluded.)

An interaction between gender and education approaches significance, however. Women who have graduate degrees are more likely to espouse atheism ($p < 0.057$, two-tailed test). Interestingly, the results of these data indicate that educational attainment may matter for women to identify as atheists but not for

men. Indeed, when other factors are controlled for, women with graduate or professional degrees are more likely to be atheists than are their male counterparts. However, BIC statistic comparisons of model fits suggest that both sets of interaction terms decrease the model fit, and this fails to reach the standard 0.05 significance level (although this was a two-tailed test).

Consequently, the results from Model 4 fail to support Hypothesis 4, and model fit statistics indicate that this is not the best-fitting model. In fact, Model 2, which does not include parental and marital indicators, provides the best-fitting model, judging by the BIC statistics. Furthermore, using the deviance likelihood ratio test, an alternative measure of model fit (in which the difference in the deviance statistics for a full and a reduced model is compared with a chi-square distribution and the degrees of freedom are equivalent to the difference in the number of parameters) also indicates that Model 2 fits better than Model 3. Therefore the model fit statistics provide more evidence contrary to the secondary compensator model.

Thus while the bivariate statistics showed relationships between atheism and marital and parental status (for having two or more children), these relationships do not hold once other important variables are controlled for, suggesting that these simple correlations were spurious. For example, because African-Americans tend to have more children and are less likely to identify as atheists, controlling for race would reduce the relationship between having children and atheism. It is important to note that the relationship between race and atheism is not a function of the increased likelihood of being a parent because the models control for parental status, and African-Americans—even those without children—are still less likely to identify as atheists.

To summarize, the empirical results generally refute the secondary compensator model as a way to account for atheism. Marital status had no significant effect on the likelihood of identifying as atheist, a finding consistent with previous research that found that being married did not affect the likelihood of being religiously unaffiliated (Baker and Smith 2009b). Moreover, being a mother—thus having arguably higher needs to provide secondary compensators—did not significantly affect the likelihood of identifying as atheist. Only one of the hypotheses was supported, in that individuals with one child were less likely to espouse atheism. However, if this effect were due to the desire to give secondary compensators, we would expect that having two children would have a significant effect, and likely a larger effect, but parents with two or more children do not differ from childless individuals. Therefore it does not appear that the desire to give secondary compensators is driving this effect. The data at hand cannot account for this fairly puzzling finding, but future research might be able to disentangle the causal mechanism.

Additional Analyses

As supplementary analyses, I first model atheism by including only measures of family status and age and then introduce sets of variables (e.g., region) with significant predictors (according to the results outlined above) to assess the effects of the introduction of these variables on marital and parental status coefficients. I include all racial categories because some of the racial categories (e.g., African-American) were significant, but I exclude all education variables (and interaction terms) because all failed to reach statistical significance. Although it might not be empirically appropriate to model atheism without all logical control variables included and by not first including variables that occur prior to marital and parental status, these models supplement the ones that were reported above and might help to elucidate which variables eliminate any possible significant effects of marital status and having two or more children. Following the logic and modeling strategy above, and to test the robustness of the findings, I model atheism when respondents who claimed no religion and agnostics were excluded (Table 5), when both of these groups were included in the reference category (Table 6), and when the "no religion" group was dropped but agnostics were included (Table 7).

First, I include measures of marital status and parental status with only age as an additional covariate (see Tables 5 through 7, Model 1), and the results show that individuals with any number of children (including those with two or more children) are less likely to identify as atheists than are childless individuals, indicating that age alone, perhaps unsurprisingly, does not fully account for the spurious relationships. However, the significance of marital status depends on which groups are included in the reference category. Married individuals are significantly less likely to identify as atheists than are single individuals when the reference category excludes those with no religion (see Tables 5 and 7; notably, these are significant only for a one-tailed test), but this variable misses the standard cutoff for significance (i.e., $p < 0.05$) for a one-tailed test when individuals who claim no religion are included in the reference category (see Table 6), and being married fails to reach significance in the subsequent models as well (see Table 6, Models 1 through 4). This could be due to the fact that some of the individuals in the "no religion" category are in fact atheists. Nonetheless, these different results do not favor the secondary compensator model. Besides the difference in the significance of marriage, the results reported in Tables 5 through 7 are consistent, although there a changes in the specific coefficients (but not whether they are significant or not).

Table 5: Significant Predictors of Atheist Identification (Coefficients and Standard Errors), with "No Religion" and Agnostics Removed

	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Age (logged)	−1.33***	0.29	−1.35***	0.29	−1.37***	0.29	−1.47***	0.29
Parental Status								
No children [reference category]	—	—	—	—	—	—	—	—
One child (1 = Yes; 0 = No)[a]	−0.65**	0.25	−0.52*	0.25	−0.50*	0.25	−0.50*	0.25
Two or more children (1 = Yes; 0 = No)[a]	−0.56*	0.26	−0.36	0.28	−0.35	0.28	−0.36	0.28
Marital Status								
Single [reference category]	—	—	—	—	—	—	—	—
Married (1 = Yes; 0 = No)[a]	−0.42*	0.22	−0.45*	0.24	−0.44*	0.24	−0.38	0.23
Divorced/separated (1 = Yes; 0 = No)	−0.33	0.28	−0.23	0.29	−0.23	0.28	−0.16	0.28
Cohabitating (1 = Yes; 0 = No)	−0.21	0.28	−0.17	0.29	−0.18	0.29	−0.20	0.29
Widowed (1 = Yes; 0 = No)	−1.15	0.61	−0.81	0.64	−0.79	0.63	−0.72	0.63
Gender								
Female (1 = Female; 0 = Male)	—	—	−0.95***	0.22	−0.96***	0.22	−0.96***	0.22
Race/Ethnicity								
White [reference category]	—	—	—	—	—	—	—	—
African-American (1 = Yes; 0 = No)	—	—	−1.13*	0.47	−1.26**	0.47	−1.05*	0.47
Latino/Hispanic (1 = Yes; 0 = No)	—	—	−0.94*	0.41	−1.05**	0.41	−1.26**	0.44
Asian-American (1 = Yes; 0 = No)	—	—	0.44	0.44	0.30	0.50	−0.02	0.46
Other race (1 = Yes; 0 = No)	—	—	0.75*	0.35	0.70*	0.35	0.54	0.35
City Status								
City (1 = City; 0 = Non-city)	—	—	—	—	0.45*	0.20	0.39*	0.20
Region								
North Central [reference category]	—	—	—	—	—	—	—	—
South (1 = Yes; 0 = No)	—	—	—	—	—	—	−0.42	0.28
West (1 = Yes; 0 = No)	—	—	—	—	—	—	0.78**	0.26
Northeast (1 = Yes; 0 = No)	—	—	—	—	—	—	0.48	0.26
Constant	0.07	0.96	0.60	1.00	0.52	1.00	0.68	1.01
Number of observations	38,712		38,712		38,712		38,712	
Bayesian information criterion	2481.16		2457.79		2459.75		2451.75	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
[a] Denotes one-tailed test.

Table 6: Significant Predictors of Atheist Identification (Coefficients and Standard Errors), with "No Religion" and Agnostics Included

	Model 1		Model 2		Model 3		Model 4	
	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.	Coef.	S.E.
Age (logged)	−1.26***	0.29	−1.28***	0.30	−1.30***	0.30	−1.38***	0.30
Parental Status								
No children [reference category]	—	—	—	—	—	—	—	—
One child (1 = Yes; 0 = No)[a]	−0.63**	0.25	−0.51*	0.25	−0.48*	0.25	−0.49*	0.25
Two or more children (1 = Yes; 0 = No)[a]	−0.52*	0.27	−0.33	0.28	−0.31	0.28	−0.32	0.28
Marital Status								
Single [reference category]	—	—	—	—	—	—	—	—
Married (1 = Yes; 0 = No)[a]	−0.36	0.22	−0.38	0.24	−0.37	0.23	−0.31	0.23
Divorced/separated (1 = Yes; 0 = No)	−0.29	0.28	−0.19	0.28	−0.19	0.28	−0.12	0.28
Cohabitating (1 = Yes; 0 = No)	−0.32	0.28	−0.29	0.28	−0.30	0.29	−0.30	0.28
Widowed (1 = Yes; 0 = No)	−1.04	0.61	−0.70	0.63	−0.69	0.63	−0.63	0.63
Gender								
Female (1 = Female; 0 = Male)	—	—	−0.90***	0.22	−0.90***	0.22	−0.91***	0.22
Race/Ethnicity								
White [reference category]	—	—	—	—	—	—	—	—
African-American (1 = Yes; 0 = No)	—	—	−1.07*	0.47	−1.19**	0.48	−0.98*	0.48
Latino/Hispanic (1 = Yes; 0 = No)	—	—	−0.87*	0.41	−0.98*	0.42	−1.13**	0.44
Asian-American (1 = Yes; 0 = No)	—	—	0.42	0.44	0.29	0.45	0.03	0.45
Other race (1 = Yes; 0 = No)	—	—	0.73*	0.35	0.68*	0.35	0.56	0.35
City Status								
City (1 = City; 0 = Non-city)	—	—	—	—	0.43*	0.19	0.38*	0.19
Region								
North Central [reference category]	—	—	—	—	—	—	—	—
South (1 = Yes; 0 = No)	—	—	—	—	—	—	−0.38	0.28
West (1 = Yes; 0 = No)	—	—	—	—	—	—	0.68**	0.25
Northeast (1 = Yes; 0 = No)	—	—	—	—	—	—	0.48	0.26
Constant	−0.42	0.98	0.08	1.01	0.01	1.02	0.12	1.03
Number of observations	45,644		45,644		45,644		45,644	
Bayesian information criterion	2587.02		2572.71		2575.51		2574.40	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
[a] Denotes one-tailed test.

Table 7: Significant Predictors of Atheist Identification (Coefficients and Standard Errors), with "No Religion" Removed and Agnostics Included

	Model 1		Model 2		Model 3		Model 4	
	Coef.	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**
Age (logged)	−1.33***	0.29	−1.35***	0.29	−1.36***	0.29	−1.46***	0.29
Parental Status								
No children [reference category]	—	—	—	—	—	—	—	—
One child (1 = Yes; 0 = No)[a]	−0.64**	0.25	−0.52*	0.25	−0.49*	0.25	−0.50*	0.25
Two or more children (1 = Yes; 0 = No)[a]	−0.56*	0.26	−0.35	0.28	−0.34	0.28	−0.35	0.28
Marital Status								
Single [reference category]	—	—	—	—	—	—	—	—
Married (1 = Yes; 0 = No)[a]	−0.42*	0.22	−0.45*	0.24	−0.43*	0.24	−0.37	0.23
Divorced/separated (1 = Yes; 0 = No)	−0.33	0.28	−0.23	0.28	−0.22	0.28	−0.16	0.28
Cohabitating (1 = Yes; 0 = No)	−0.21	0.28	−0.17	0.29	−0.18	0.29	−0.19	0.29
Widowed (1 = Yes; 0 = No)	−1.14	0.61	−0.80	0.64	−0.79	0.63	−0.72	0.63
Gender								
Female (1 = Female; 0 = Male)	—	—	−0.94***	0.22	−0.95***	0.22	−0.95***	0.22
Race/Ethnicity								
White [reference category]	—	—	—	—	—	—	—	—
African-American (1 = Yes; 0 = No)	—	—	−1.12*	0.47	−1.25**	0.48	−1.04*	0.47
Latino/Hispanic (1 = Yes; 0 = No)	—	—	−0.93*	0.41	−1.05**	0.42	−1.25**	0.44
Asian-American (1 = Yes; 0 = No)	—	—	0.43	0.45	0.29	0.45	−0.03	0.46
Other race (1 = Yes; 0 = No)	—	—	0.74*	0.35	0.69*	0.35	0.53	0.35
City Status								
City (1 = City; 0 = Non-city)	—	—	—	—	0.46*	0.19	0.40*	0.20
Region								
North Central [reference category]	—	—	—	—	—	—	—	—
South (1 = Yes; 0 = No)	—	—	—	—	—	—	−0.42	0.28
West (1 = Yes; 0 = No)	—	—	—	—	—	—	0.77**	0.26
Northeast (1 = Yes; 0 = No)	—	—	—	—	—	—	0.49	0.26
Constant	0.05	0.96	0.56	1.00	0.49	1.01	0.65	1.01
Number of observations	38,938		38,938		38,938		38,938	
Bayesian information criterion	2484.31		2462.47		2464.21		2456.72	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
[a] Denotes one-tailed test.

Next, I introduce background demographics related to atheism: racial categories and gender (Model 2). The results show that women, African-Americans, and Latinos are less likely to identify as atheists (consistent with the earlier models

reported), but "other race" is statistically significant (inconsistent with the earlier models reported). However, in Model 4, once region is included, race is no longer significant, suggesting that this result is more of an artifact of regional racial segregation. Once these demographics are included and controlled for, having two or more children is no longer a significant predictor of atheism, suggesting that these demographics are responsible for the negative association of atheism with having two or more children. Moreover, the significance and the size of the effect for having one child are reduced with the addition of the demographic variables. Marriage remains significant (and the coefficient increases in size) in the results reported in Tables 5 and 7 and insignificant in the results reported in Table 6.

In Models 3 and 4, I add location variables, and I first control only for whether the respondent lives in a city (see Model 3). The introduction of this variable slightly reduces the size of the effect for having one child and marriage from Model 2, but urbanization does not have a large effect on these variables. However, the size of the effect for being African-American and Latino grows larger when city status is controlled for.

Finally, I introduce region (which is associated with marital status, parental status, and atheism), and the results indicate that although having one child remains a significant predictor of atheism (and the size of the effect is not reduced), marriage is no longer statistically significant (see Model 4). Living in the West significantly increases the likelihood of identifying as atheist, and living in the Northeast approaches significance ($p < 0.06$; two-tailed test). These additional analyses suggest that demographics seem particularly responsible for the bivariate association of atheism with having two or more children, whereas region seems particularly responsible the bivariate association of atheism with marriage.

AN ALTERNATIVE THEORY

Because the results do not support the secondary compensator model, alternative theories should be constructed and tested. Drawing from the present results and previous literature, I theorize an alternative framework that can be empirically tested in the future. To develop this alternative theory, I use an inductive approach by focusing on what factors do matter for atheist identification. I propose a multi-level theoretical explanation that considers both social and social psychological factors that could affect atheist identification. Both are likely to have an effect and need to be considered, and neither alone is sufficient to explain atheism.

Social Factor: Exposure and Support

Where a person lives affects the odds of being an atheist. My results indicate that region significantly affects atheist identification and that living in a city signi-

ficantly increases the likelihood of identifying as atheist. Moreover, previous research has found country-level differences in atheist identification, such as a relatively high level of atheism in Germany (Bainbridge 2005). Additionally, research suggests that migration affects religiosity and that religiosity tends to rise among people who migrate to more religious areas and fall among people who move to less religious areas. Consequently, the West acquires "accidental atheists" (Iannaccone and Makowsky 2007). Therefore the results that are reported here and previous research findings suggest that where a person lives affects the likelihood of identifying as an atheist.

Social exposure to and social support of atheism constitute a causal factor for identifying as atheist (albeit a fairly obvious factor). However, investigating only individual-level attributes misses this effect. To adopt a religious (or nonreligious) preference, an individual must both be exposed to such a preference and find it plausible. People living in the West and in cities are more likely to be exposed to atheism and to atheist individuals, and knowing others who identify as atheists would increase the plausibility of atheism. Conversely, living in highly religious areas makes it more likely that one's family and friends are religious, so the plausibility structure of religion is especially strong. Related research has found that having spouses and peers who lack religious affiliation increases the likelihood of an individual's claiming no religion (Baker and Smith 2009b). Citing previous research on the importance of social networks and interpersonal relationships for recruiting new members to religious groups (Lofland and Stark 1965; Stark and Bainbridge 1980), Baker and Smith (2009b) argue that this relationship is in part due to selection but that these social networks likely also have a continued influence on claiming no religion, as one's peer group serves as an influential frame of reference. These findings suggest that peer support and acceptance (or rejection) of atheism could affect the perceived plausibility of atheism and the perceived sanctions for adopting this viewpoint. Exposure and peers' attitudes toward atheism could be mechanisms through which urban, regional, and country-level differences in atheism arise.

The following hypotheses would be generated for social exposure and support. Note, however, that each hypothesis may contain reciprocal effects. For example, although people must have initial exposure to atheism, they could increase their exposure to it the more they start to identify with it. Nonetheless, these social factors likely influence identifying as an atheist.

> *Hypothesis A:* Increasing exposure to atheism increases the likelihood that an individual will identify as an atheist.

> *Hypothesis B:* Having social support of atheism will increase the likelihood that an individual will identify as an atheist.

> *Hypothesis C:* Perceptions of decreasing social sanctions for identifying as an atheist will increase the likelihood of identifying as an atheist.

Data could be collected to test whether exposure to and social support of atheism affect atheist identification and whether these are partly responsible for creating regional and city status differences in atheism. Data on whether individuals have been exposed to atheism could be collected, and if they have been exposed, a count measure could be made of how many exposure events they have had and through what sources this exposure occurred (e.g., book, newspaper article, atheist group, friend). Network measures should be collected to determine whether a respondent ever knew anyone who identified as an atheist and, if so, how many of the respondent's alters (and particularly close alters) identify as atheists. Finally, data on the respondent's perception of the plausibility of atheism should be collected. Whether exposure and network ties affect the plausibility of atheism, which in turn affects the likelihood of identifying as an atheist, could then be empirically tested. Empirical tests could also assess whether exposure, networks, and perceptions of plausibility (partly) account for the effects of region and city status on atheism. Again, while finding atheism plausible and having atheist peers might have reciprocal effects, the data could still provide insight into whether these relationships exist. If they do, alternative data collection techniques could help to elucidate the causal direction.

However, not everyone who is exposed to atheism later identifies as an atheist, and theories about micro-level factors are also needed. Certain groups are more likely or less likely to identify as atheists than others. African-Americans, Latinos, women, and older individuals are less likely to identify as atheists, and conversely, whites, men, and young adults are more likely to identify as atheists even when where an individual lives is controlled for. Therefore I theorize that social psychological factors associated with these groups are likely responsible for different rates of atheism.

Social Psychological Factor: Locus of Control

In *The Elementary Forms of Religious Life*, Durkheim (1995 [1912]) sets out to examine why and how religions originate, and his theory can perhaps give us insight into why members of certain groups are more or less likely to identify as atheists. Durkheim posits a profound relationship between religion and society. He argues that society is an external force that individuals can feel and recognize as existing and present, and they ultimately identify this force as an external religious force. He claims that society places demands on individuals, requires their cooperation, and subjects individuals to restraints, privations, and sacrifices without which social life would be impossible. Society is also a source of moral

authority and provides rules of action that may be contrary to one's inclination. Because people feel a moral power that is outside of them, they have no choice but to locate the source as external to them, and Durkheim (1995 [1912]: 211) argues that "because social pressure makes itself felt through mental channels, it was bound to give man the idea that outside him there are one or several powers, moral yet mighty, to which he is subject." An ordinary observer cannot see where the external influence comes from; a person is aware that he or she is acted upon but not by whom. Therefore an individual considers this force to be a religious force. In other words, individuals feel society's power and influence over them and conclude that the power and influence are religious in nature.

Although Durkheim (1995 [1912]) claims that society places demands on individuals and subjects individuals to restraints, privations, and sacrifices and provides rules of action, groups are not all equally subject to restraints, control, or sacrifices. Societal norms have perpetuated inequities, which keep certain groups disadvantaged and subordinate to dominant groups. Individuals from groups that have historically had more external sources of control influencing their lives may be less likely to identify as atheists because these individuals will attribute the external sources of control to a religious force.

In other words, drawing from Durkheim, I argue that individuals who feel strong external forces affecting their life will be more likely to identify these as a religious force, and because certain groups—women, some racial minorities, and older individuals—feel greater external control in their lives, they will be less likely to identify as atheists than will individuals from groups that feel more free from external sources of control. To support this theory, I draw from literature on the concept of locus of control. Previous research has found age, gender, and race to be associated with external control, which has also been found to correlate with religiosity (Fiori et al. 2006).

Individuals who have an external locus of control believe that outcomes, rewards, and opportunities are determined mostly by external forces such as fate, luck, or powerful others, whereas individuals who have an internal locus of control perceive that they have more personal control and expect that outcomes are contingent on a person's own choices and actions (Mirowsky and Ross 2003; Rotter 1966). Locus of control is a social psychological factor that has been shown to affect a variety of outcomes, such as motivation, academic performance, social maturity and independence, and educational and occupational attainment (Nelson and Mathia 1995; Nowicki and Strickland 1973; Wang et al. 1999). Although most researchers have treated external and internal loci of control as lying on a continuum, locus of control has not always been found to lie on a continuum (Parkes 1985), and recent research has recognized that a person may feel both internal and external control (Fiori et al. 2006). Because of these results, it has been argued that locus of control should be measured orthogonally rather than

on one continuum because of empirical and theoretical justifications (see Fiori et al. 2006); locus of control may also be domain-specific (Lachman 1986), and Fiori and colleagues' (2006) factor analysis revealed that these were orthogonal.

Locus of Control and Religiosity

Recent research has found a positive relationship between external locus of control and religiosity, although there was generally not a relationship between internal locus of control and religiosity (Fiori et al. 2006). Similarly, Shaw and Krause (2001) found that religiosity was associated with less personal control. However, Fiori and colleagues (2006) hypothesized that religiosity would affect an individual's locus of control. I, on the other hand, am arguing that an individual's locus of control will affect religiosity. Specifically, individuals with greater external locus of control will be less likely to identify as atheists. Interpreting the results of the present study and citing previous findings on locus of control, I posit that this is a causal mechanism for differences in atheism by gender, age, and race as outlined below. Drawing from this theory, I hypothesize as follows:

> *Hypothesis D:* Greater perceptions of external control reduce the likelihood than an individual will identify an atheist.

Locus of Control and Gender

Consistent with previous research, my results indicate that women were less likely to identify as atheists than were men, and I theorize that this difference is in part due to gender differences in locus of control. Many studies show that women have greater external locus of control than do men (e.g., Fiori et al. 2006; Mirowsky and Ross 2003; Parkes 1985). In other words, women are more likely to believe that their circumstances are controlled by others, chance, fate, or another external force than men are. This gender difference in locus of control was found in all of the fourteen countries that were assessed in a cross-country study (Smith, Dugan, and Trompenaars 1997).

The gender difference in locus of control has been theorized to be a consequence of gender differences in structural location. For example, Fiori and colleagues (2006: 243–244) argue that "based on a history of economic dependency, restricted opportunities, and role overload, the theory of personal control predicts that women have a lower sense of control than do men (in other words, women have a stronger external locus of control)." Thus these gender differences in locus of control may be a result of the economic, political, and social reality in which women are typically disadvantaged in comparison to men (see Babcock and Laschever 2003), a situation that is found to varying degrees in

all other countries. In other words, women typically do have less control over their lives than men do, and as a result, women tend to have a greater perception of external control.

Because women tend to feel more external forces acting on their lives, they have an increased likelihood of attributing this experience to religious forces in the Durkheimian sense. Therefore women would be less likely to believe that God does not exist than men would. Despite recent attempts to attribute the sex difference in religiosity to biological differences in risk preference, subsequent empirical cross-country analyses have found that risk preferences do not account for the observed gender difference in religiosity (Freese 2004; Freese and Montgomery 2007; for additional critiques, see Collett and Lizardo 2009; Roth and Kroll 2007). However, Freese and Montgomery (2007) argue that psychological characteristics are likely crucial to understanding the gender difference in religiosity, though not risk preference. Locus of control as a social psychological characteristic could help to explain gender differences in religiosity, since perceptions of greater external control might account for part of the gender difference in religiosity. Moreover, like the gender difference in religiosity, gender differences in external locus of control have been documented in a variety of countries (Smith, Dugan, and Trompenaars 1997). Therefore I hypothesize as follows:

> *Hypothesis E:* The gender difference in perceptions of external control is a mechanism through which gender differences in atheism arise. Controlling for perception of external control will reduce or eliminate the effect of gender on the likelihood of identifying as an atheist.

Locus of Control and Race

In comparison with the effect of gender, the results show that being a member of some racial groups has a larger effect (for Latinos) or as large an effect (for African-Americans) on atheist identification, and previous research generally finds that minority group members tend to have a lower average sense of personal control than white Americans do (see Mirowksy and Ross 2003). For example, Fiori and colleagues (2006) found that African-Americans had both significantly lower feelings of internal control and significantly greater feelings of external control than did people who were not African-American.

Similar to theories of gender and locus of control, the relationship between race and greater feelings of external control has been theorized to be a result of relative deprivation and discrimination (e.g., Fiori et al. 2006; Joe 1971) and a consequence of the reality in which minorities have less opportunity to control their environment (Coleman et al. 1966). Unfortunately, most of the research has focused almost exclusively on African-Americans and whites (e.g., Krause and

Hoelter 1983; Shaw and Krause 2001). However, if a greater external locus of control is a result of the reality of less opportunity and discrimination, it seems reasonable to assume that both African-Americans and Latinos would have greater feelings of external control. While Asian-Americans certainly experience discrimination (especially the glass ceiling), they are a relatively advantaged minority group on average, although perceptions of their being a model minority may be a disservice (Omi 2008). Therefore, Asian-Americans might not be as likely as other minority groups to experience a reality that leads to perceptions of greater external control.

Racial differences in external locus of control could account for racial differences in atheist identification. Because some minority groups may be more likely to feel external forces acting on their lives, they would be more likely to attribute this to a religious force or God. Some members of minorities would therefore be less likely to conclude that religious forces do not exist. Conversely, whites tend to view themselves as being under less external control. As a result, they might be more likely to conclude that there are not external religious forces affecting their lives and would therefore have an increased likelihood of identifying as atheists in comparison to members of some minority groups. I hypothesize as follows:

> *Hypothesis F:* The race difference in perceptions of external control is a mechanism through which race differences in atheism arise. Controlling for perception of external control will reduce or eliminate the effect of race on the likelihood of identifying as an atheist.

Locus of Control and Age

The results indicate that young individuals are especially likely to identify as atheists (see Figure 1). It has been speculated that the relationship between age and religiosity could be a result of nearing death (Stark and Finke 2000), but if this were the case, we would expect the likelihood of atheism to be fairly equal among younger groups of people (e.g., those below 35 years of age), and we would expect the likelihood of atheism to decline dramatically after middle age. However, this is not the case, as can be seen in Figure 1. Rather than the old being especially unlikely to be atheists, it is the young who are especially likely to identify as atheists. We see that the sharpest decline in the likelihood of atheism occurs among individuals in their twenties, a group that probably does not focus on their mortality. However, the data cannot ascertain whether the relationship between age and atheism results from a cohort effect or an effect of biological age, although Sherkat (2008) does not find trends revealing an increase in atheism, providing evidence against a cohort effect.

Religion may follow a family life cycle, which is also associated with age, in that people may disengage from organized religion when they leave their family

of origin but later reenter organized religion when they start a family of their own (Greeley and Hout 1988). Nevertheless, age still has a persistently significant effect on the likelihood of identifying as an atheist when family life factors, such as marital status and children, are controlled for. Thus regardless of family life status, age matters for atheism. The family life cycle explanation may be more applicable to unaffiliated believers (see Hout and Fischer 2002) than for explaining atheism.

Age might be associated with locus of control and could account for the relationship between age and atheism. However, the literature on locus of control and aging has been inconsistent, which could be due to the methodological limitation of treating locus of control as a one-dimensional construct on a continuum (Fiori et al. 2006; Lachman 1986). Nonetheless, Jensen, Olsen, and Hughes (1990) found that young individuals (ages 18 to 34 years) had the lowest perceptions of external control, whereas older individuals (55 years of age or older) had the greatest perceptions of external control. Fiori and colleagues (2006) found that individuals over 60 years of age had lower scores on internal control and higher scores on external control than did individuals younger than 60. Older individuals tend to have a lower sense of personal control than younger individuals do (Mirowsky and Ross 2003), although this measure is most con-gruent with measures of internal control (rather than external control), and decline happens after age 50. Other research indicates that locus of control becomes more domain-specific with age (Lachman 1986), which might be a reason for the inconsistent findings in the literature. Future research could improve on the methodological limitations of previous research by measuring both internal and external control orthogonally, rather than on a continuum, to better understand the relationship between age and external control and to test whether this accounts for the relationship between age and atheism. Locus of control does remain a plausi-ble explanation for the effect of age on atheism, since family life cycle and nearing death do not seem to be able to explain the pattern of the relationship between age and atheism. I hypothesize as follows:

> *Hypothesis G:* Age differences in perceptions of external control are a mechanism through which age differences in atheism arise. Controlling for perception of external control will reduce or eliminate the effect of age on the likelihood of identifying as an atheist.

Socioeconomic Status Background and Locus of Control

Previous research found that socioeconomic status matters for how parents socialize their children, resulting in different loci of control between middle- and working-class children, wherein middle-class children are socialized to have greater internal locus of control than are working-class children (see Kohn 1959;

Kohn and Schooler 1983). However, the results showed that measures of current socioeconomic status—income (results not shown) and education—did not have a significant effect on atheism. Perhaps this could be due to not having measures of class background or occupational prestige and using the fairly rough proxies of education and income (the latter also had a great deal of missing data). It is noteworthy that prior research found that higher educational attainment increases the likelihood of claiming no religion (Hayes 2000) and that educational attainment is especially predictive of agnosticism (Sherkat 2008). If future research finds that class background predicts atheism, locus of control should be assessed as a mediating variable.

The above hypotheses regarding the social psychological factor of locus of control can easily be empirically tested. Data on religiosity (including a separate category for atheists) should be collected, along with demographics and orthogonal measures (see above) of internal and external control. Existing measures of each of these could be employed. Again, reciprocal effects may be an issue. However, if perceptions of external control change with age, as some previous research suggests, a longitudinal panel study could help to elucidate the causal direction.

DISCUSSION

The best analyses to date do not support the secondary compensator model to account for atheism, so I have proposed a theory in which social factors (social exposure and support) and social psychological factors (locus of control) affect atheist identification. Both social and psychological factors matter, and future research should include measures of both. For example, if a person has not encountered atheism, that person is not going to identify as an atheist. However, psychological constructs also likely affect atheist identification. Even when we control for where a person lives, women, Latinos, and African-Americans are less likely to identify as atheists, indicating that some groups are less (or more) likely to accept atheism when exposed to it. Previous research has found age, gender, and race to be associated with external control, and external control has also been found to correlate with religiosity (Fiori et al. 2006). I theorize that perceptions of external control influence the likelihood of identifying as an atheist and mediate the relationships between gender, race, and age with atheism. Future research can test whether these proposed causal mechanisms do indeed have the hypothesized effects. Theorizing about both social and psychological factors improves on individual-level theories that ignore the larger contextual effects that interact with individual-level attributes.

Returning to Bainbridge's (2005) findings, given the lack of evidence to support the secondary compensation argument with the indicators that would

likely have the strongest effects, what are we to make of his findings that atheists are less likely to want to attend a family reunion, are more likely to agree that it's not fair to bring children into the world, and report slightly lower quality of relationships? The dataset that I utilize does not have comparable questions, so I cannot test whether these statistical relationships hold when other variables are controlled for. However, if the relationship between atheism and these factors is not spurious, recent research helps to elucidate the more likely causal direction. Rather than the lack of social ties leading to atheism, data suggest that identifying as an atheist could cause alienation. A particularly poignant statement reported by an atheist in a qualitative study elucidates the likely causal direction:

> It's traumatic to be surrounded by a community that is hostile to you. It's not politically correct to disrespect blacks, gays or the handicapped, but it's still all right to disrespect atheists. . . . Religious people are usually the extremists and they represent a much larger group. But they consider us not to be fully human. One of the things that rules your life when you're an atheist is fear. You never know when you're going to be attacked (Cimino and Smith 2007: 421).

Empirical work also supports the idea of a hostile social environment for atheists. A recent survey shows that Americans choose atheists as the least likely to share their vision of U.S. society from a long list of groups that included Muslims, recent immigrants, and homosexuals. Americans are also more likely to disapprove of their children marrying atheists than members of other groups (see Edgell, Gerteis, and Hartmann 2006). Moreover, when describing themselves, atheists frequently use language that expresses a minority status, and the declaration of their atheist identity is commonly referred to as "coming out of the closet" (Cimino and Smith 2007: 421), which seemingly recognizes the fear and shame of publicly announcing a stigmatized identity.

Atheists live in a society that is very hostile to them, so it should not be surprising that they would be less likely to want to attend a family reunion at which their religious views (or lack thereof) might be attacked. And atheists might be more likely to view the future as too dismal for them to want to bring children into the world given the hostility toward them, although notably, the analyses indicate that atheists do not uniformly differ from nonatheists in number of children (suggesting that this relationship might be spurious or that expressed attitudes do not match childbearing behavior). Of course, the stigmatization of atheists is likely not uniform across the United States; some areas, such as the West, are more accepting of atheism (see Iannaccone and Makowsky 2007). But in general, there seem to be negative stereotypes about atheists (see Zuckerman 2009). However, this is speculation, and future research should assess whether the relationship between indicators of alienation (such as quality of relationships and desire to attend family reunions) and atheism are spurious by controlling for

necessary extraneous factors; if the relationships are not spurious, future research could better disentangle the causal direction.

Consequently, in addition to empirically testing the causal mechanisms that affect atheist identification outlined above, I suggest an additional avenue for future research. We should further investigate the effects of atheist identification on atheists themselves, given the high level of social stigma attached to atheism. For example, does atheist identification increase alienation? Does atheist identification strain family relationships? How do such contextual differences as region and city size affect the experiences of atheists? As was noted above, using existing survey data to study atheists is difficult, given their relative rarity and the tendency not to differentiate the nonreligious into separate categories (e.g., atheist, agnostic). Unless a survey is extremely large and defines atheists as a separate group, as the ARIS does, alternative data collection techniques will be needed. Therefore qualitative data collection will likely be necessary to garner a better understanding of atheists today. The rich nature of qualitative data could provide invaluable data for this avenue of research.

REFERENCES

Babcock, Linda, and Sara Laschever. 2003. *Women Don't Ask: Negotiation and the Gender Divide*. Princeton, NJ: Princeton University Press.

Bainbridge, William Sims. 2002. "A Prophet's Reward: Dynamics of Religious Exchange." In *Sacred Markets, Sacred Canopies*, edited by Ted G. Jelen, 63–89. Lanham, MD: Rowman and Littlefield.

Bainbridge, William Sims. 2005. "Atheism." *Interdisciplinary Journal of Research on Religion* 1(article 2): 1–26.

Baker, Joseph, and Buster Smith. 2009a. "None Too Simple: Examining Issues of Religious Nonbelief and Nonbelonging in the United States." *Journal for the Scientific Study of Religion* 48: 719–733.

Baker, Joseph, and Buster Smith. 2009b. "The Nones: Social Characteristics of the Religiously Unaffiliated." *Social Forces* 87: 1251–1263.

Bramlett, Matthew D., and William D. Mosher. 2002. *Cohabitation, Marriage, Divorce, and Remarriage in the United States*. Vital and Health Statistics Series 23, Number 22. Hyattsville, MD: National Center for Health Statistics.

Bruce, Steve. 1999. *Choice and Religion: A Critique of Rational Choice*. New York: Oxford University Press.

Coleman, James, Ernest Q. Campbell, Carol J. Hobson, James McPartland, Alexander Mood, Fredrick Weinfield, and Robert York. 1966. *Equality of Educational Opportunity*. Washington, DC: U.S. Government Printing Office.

Collett, Jessica L., and Omar Lizardo. 2009. "A Power-Control Theory of Gender and Religiosity." *Journal for the Scientific Study of Religion* 48: 213–231.

Cimino, Richard, and Christopher Smith. 2007. "Secular Humanism and Atheism Beyond Progressive Secularism." *Sociology of Religion* 68: 407–424.

Durkheim, Emile. 1995 [1912]. *The Elementary Forms of Religious Life*, translated by Karen E. Fields. New York: The Free Press.

Edgell, Penny, Joseph Gerteis, and Douglas Hartmann. 2006. Atheists as "Other": Moral Boundaries and Cultural Membership in American Society." *American Sociological Review* 71: 211–234.

Fiori, Katherine L., Edna E. Brown, Kai S. Cortina, and Toni C. Antonucci. 2006. "Locus of Control as a Mediator of the Relationship Between Religiosity and Life Satisfaction: Age, Race, and Gender Differences." *Mental Health, Religion, and Culture* 9: 239–263.

Freese, Jeremy. 2004. "Risk Preferences and Gender Differences in Religiousness: Evidence from the World Values Survey." *Review of Religious Research* 46: 88–91.

Freese, Jeremy, and James Montgomery. 2007. "The Devil Made Her Do It: Evaluating Risk Preference as an Explanation of Sex Differences in Religiousness." In *Advances in Group Processes: The Social Psychology of Gender*, edited by Shelley J. Correll, 187–230. Oxford: Elsevier.

Greeley, Andrew M., and Michael Hout. 1988. "Musical Chairs: Patterns of Denominational Change in the United States, 1947–1986." *Sociology and Social Research* 72: 75–86.

Hamilton, B. E., J. A. Martin, and S. J. Ventura. 2006. *Births: Preliminary Data for 2005*. National Vital Statistics Reports 55. Hyattsville, MD: National Center for Health Statistics.

Hayes, Bernadette. 2000. "Religious Independents Within Western Industrialized Nations: A Socio-Demographic Profile." *Sociology of Religion* 62: 191–210.

Hochschild, Arlie. 2003. *The Second Shift*. New York: Penguin Books.

Hout, Michael, and Claude Fischer. 2002. "Americans with 'No Religion': Why Their Numbers Are Growing." *American Sociological Review* 67: 165–190.

Iannaccone, Laurence R., and Michael D. Makowsky. 2007. "Accidental Atheists?: Agent-Based Explanations for the Persistence of Religious Regionalism." *Journal for the Scientific Study of Religion* 46: 1–16.

Jensen, Larry, Joe Olsen, and Chris Hughes. 1990. "Association of Country, Sex, Social Class, and Life Cycle to Locus of Control in Western European Countries." *Psychological Reports* 67: 199–205.

Jerolmack, Colin, and Douglas Porpora. 2004. "Religion, Rationality, and Experience: A Response to the New Rational Choice Theory of Religion." *Sociological Theory* 22: 140–160.

Joe, V. 1971. "Review of the Internal-External Control Construct as a Personality Variable." *Psychological Reports* 28: 619–640.

Kohn, Melvin. 1959. "Social Class and Parental Values." *American Journal of Sociology* 64: 337–351.

Kohn, Melvin, and Carmi Schooler. 1983. *Work and Personality: An Inquiry into the Impact of Social Stratification*. Norwood, NJ: Ablex.

Kosmin, Barry, Egon Mayer, and Ariela Keysar. 2001. *American Religious Identification Survey*. Retrieved June 23 2009, from http://prog.trincoll.edu/ISSSC/DataArchive/index.asp.

King, Gary, and Langche Zeng. 1999. "Logistic Regression in Rare Events Data." Retrieved July 5, 2009, from http://gking.harvard.edu.

Krause, Neal, and Jon W. Hoelter. 1983. "Race Comparisons on Rotter's I-E Scale: Difference in Locus of Control or in Concept Being Measured?" *Quality and Quantity* 17: 225–237.

Lachman, M. E. 1986. "Locus of Control in Aging Research: A Case for Multidimensional and Domain-Specific Assessment." *Psychology and Aging* 1: 34–40.

Lofland, John, and Rodney Stark. 1965. "Becoming a World-Saver: A Theory of Conversion to a Deviant Perspective." *American Sociological Review* 30: 862–875.

Long, J. Scott, and Jeremy Freese. 2006. *Regression Models for Categorical Dependent Variables Using Stata.* College Station, TX: Stata Press.

Mirowsky, John, and Catherine E. Ross. 2003. *Education, Social Status, and Health.* Hawthorne, NY: Aldine de Gruyter.

Mullins, Larry C., Kimberly P. Brackett, Donald W. Bogie, and Daniel Pruett. 2004. "The Impact of Religious Homogeneity on the Rate of Divorce in the United States." *Social Inquiry* 74: 338–354.

Nelson, Eileen S., and Kristi E. Mathia. 1995. ''The Relationships Among College Students' Locus of Control, Learning Styles, and Self-Prediction of Grades.'' *Education Research and Perspectives* 22: 110–117.

Nowicki, S., and B. R. Strickland. 1973. ''A Locus of Control Scale for Children.'' *Journal of Consulting and Clinical Psychology* 40: 148–154.

Omi, Michael. 2008. "Asian-Americans: The Unbearable Whiteness of Being?" *Chronicle of Higher Education* 55: B56–B58.

Pandit, Kavita, and Sharmistha Bagchi-sen. 1993. "The Spatial Dynamics of U.S. Fertility, 1970–1990." *Growth and Change* 24: 229–246.

Parkes, Katherine. 1985. "Dimensionality of Rotter's Locus of Control Scale: An Application of the 'Very Simple Structure' Technique." *Personality and Individual Differences* 6: 115–119.

Roth, Louise Marie, and Jeffrey C. Kroll. 2007. "Risky Business: Assessing Risk Preference Explanations for Gender Differences in Religiosity." *American Sociological Review* 72: 205–220.

Rotter, Julian. B. 1966. "Generalized Expectancies for Internal Versus External Control of Reinforcements." *Psychological Monographs* 80: 1–28.

Tomz, Michael, Gary King, and Langche Zeng. 1999. R*ELOGIT: Rare Events Logistic Regression*, Version 1.1. Cambridge, MA: Harvard University. Retrieved July 5, 2009, from http://gking.harvard.edu.

Shaw, Benjamin A., and Neal Krause. 2001. "Exploring Race Variations in Aging and Personal Control." *Journals of Gerontology Series B* 56: S119–S124.

Sherkat, Darren. 2008. "Beyond Belief: Atheism, Agnosticism, and Theistic Certainty in the United States." *Sociological Spectrum* 28: 438–459.

Singleton, Royce, and Bruce C. Straits. 2005. *Approaches to Social Research*. Oxford, UK: Oxford University Press.

Smith, Peter B., Shaun Dugan, and Fons Trompenaars. 1997. "Locus of Control and Affectivity by Gender and Occupational Status: A 14 Nation Study." *Sex Roles* 36: 51–77.

Stark, Rodney, and William Sims Bainbridge. 1980. "Networks of Faith: Interpersonal Bonds and Recruitment to Cults and Sects." *American Journal of Sociology* 85: 1376–1395.

Stark, Rodney, and William Sims Bainbridge. 1987. *A Theory of Religion*. New York: Lang & Toronto Studies in Religion.

Stark, Rodney, and Roger Finke. 2000. *Acts of Faith: Explaining the Human Side of Religion*. Berkeley: University of California Press.

Vogt, W. Paul. 2005. *Dictionary of Statistics & Methodology: A Nontechnical Guide for the Social Sciences.* Thousand Oaks, CA: Sage.

Wang, Li-Ya, Edward Wang, Li-Ya, Edward Kick, James Fraser, and Thomas Jerome Burns. 1999. "Status Attainment in America: The Roles of Locus of Control and Self-Esteem in Educational and Occupational Outcomes." *Sociological Spectrum* 19: 281–298.

Zhang, Junfu, and Xue Song. 2007. "Fertility Differences Between Married and Cohabitating Couples: A Switching Regression Analysis." *The Institute for the Study of Labor Discussion Paper Series*. IZP DP No. 3245. Available at http://ftp.iza.org/dp3245.pdf.

Zuckerman, Phil. 2009. "Atheism, Secularity, and Well-Being: How the Findings of Social Science Counter Negative Stereotypes and Assumptions." *Sociology Compass* 3: 949–971.