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FAMILY, PEERS, AND RELIGIOUS COMMUNITIES

IN THE FORMATION OF ADOLESCENT RELIGIOUS IDENTITY

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by

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ABSTRACT

This study outlines a network-based model of religious identity development and produces an initial test of the model using Add Health data on religion and high school friendship networks. Three longitudinal models (fixed and random effects and lagged dependent variable) are examined predicting change in subjective religious importance among high school students based on measures of individual religiosity, parental religiosity, friendship network position and friendship network attributes. Results are consistent with identity theory's concepts of perceptual control and relative identity salience, and suggest that both the type and strength of friends' religious beliefs and actions can play important roles in religious identity development during this crucial period of self-differentiation. Self and friend worship attendance and friend religious heterogeneity are found to be more predictive of later religious importance than youth group participation of self or friends. Additionally, a new approach using multiple imputation to minimize bias due to missing religiosity data in Add Health is discussed and implemented.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGEMENTS

Chapter 1 Introduction

A teenager's parents promise to allow him to decide whether to attend church, but only after being baptized or confirmed. A high school sophomore invites her best friend to come meet her charismatic youth leader. An Islamic student newly arrived as a refugee with his family enrolls in a small-town Midwest school. These are only a few examples of the intersection of religion, identity and relationships. In reality, every instance of family religious modeling, every worship service, and every morally freighted decision an adolescent looks to her friends for advice about—each exists at the convergence of these basic social phenomena. Given the rapid development of formal methods of social network analysis over the last half century, it is all the more remarkable that little has been done until very recently to analyze them jointly as they develop throughout the life course.

Even a relatively basic analysis of existing data can provide important insights to guide both analysis and additional data collection in the future, and I propose to do just that: use structural data to construct a variety of relatively understandable measures with implicit or explicit social network elements and test specific propositions of identity theory in the context of adolescence. I will argue, in a nutshell, that as adolescents mature, the primary sources from which they receive feedback on their identities begin to shift from family to peer groups, setting up a critical moment for religious change. Identity theory gives legs to these ideas, and social networks provide the tools necessary to test them.

Chapter 2 Adolescents, Religion and Social Networks

Adolescent religiosity is important to study for a number of reasons. High school is a unique environment, a largely self-contained society with strong peer grouping and influence processes. This environment provides an opportunity to collect data from many members of the same social networks. More significantly, adolescence also marks the beginning of a process of self-differentiation from parental authority that is widely suggested to be critical in long-term religious decisions and change. While college or other post-high-school experiences may define early adulthood, the physical, mental and social maturation that occur during adolescence have lasting consequences throughout the life course (Steinberg and Morris 2001). Understanding how religious identity changes in adolescence thus is vital to tracing its development throughout the life course.[1]

Much of the writing in this area relies on retrospective interviews of target groups, such as young adults who have left the church. It often begins from the assumptions that religion is good and "the church" is in a crisis occasioned by the wholesale exit of young people. The Barna Group's alarmist treatments (Kinnaman and Lyons 2007, Kinnaman 2011) are neither unusual nor novel; the bell has been sounding at least since the peak cultural influence of liberal religion in the mid-20th century. This remains the primary narrative of religious change among youth to which most non-specialists are exposed. Even social scientists who study adolescent subcultures, while more detached concerning the generalized value of religion, tends to feature it either peripherally (Coleman 1961, Cusick 1973, Eckert 1989) or as an element in the construction of other social distinctions (Wilkins 2008).

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[1] Understanding the micro foundations of religious identity is also a critical, if often neglected, element of explaining changes in broader religious ecologies, including those addressed by secularism theory and the religious economies perspective (Stark and Finke 2000).

There is, however, one major exception to this broad neglect. Mixed methods studies using data from the National Study of Youth and Religion (NSYR) suggest that a less supernatural and demanding "moralistic therapeutic deism"[2] acts as a *religio franca* of U.S. youth (Smith and Denton 2005, Smith 2010). Data do show an average net decrease in both religious identity and practices across adolescence which would be consistent with Smith and Denton's conclusions. The difference between the number of adolescents who become more religious and those who become less religious is consistently small, however. Change and distinctiveness both constitute important elements of adolescent religion worthy of study in their own right, in addition to understanding general patterns such as moralistic therapeutic deism. Rather than reserving such study for emerging adults (Smith and Snell 2009), we should embrace the distinctive opportunity to investigate the commencement of the adolescent transition toward adulthood. It may be that the patterns Smith and colleagues find emerge as a result of this differentiation process, but the only way to find out is to explore more fully their social psychological foundations.

In this pursuit, we can start by considering a simplistic model of moral development, which we can later complicate and expand. If we accept the conclusion that adolescent religiosity tends to be moralistic rather than supernatural, this relationship between religious identity and practices could be considered in terms of an individual's moral preference. Ignore for the moment the effects of other individual sources of preference, such as the perceived potential non-moral benefits of an activity[3] and leave aside social embeddedness. We would expect, given these

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[2] Briefly, moralistic therapeutic deism is a belief in a generic divinity that expects people to play nicely with each other, rewards people who are generally moral, and is not intimately involved in worldly affairs. The primary goal of life is to be happy and produce happiness for others, rather than any explicitly existential good.

[3] This assumption is obviously unrealistic, but allows us to consider a more parsimonious model of only the mechanism of interest here; this observation also helps to understand the limited proportion of variability explained in many quantitative tests predicting moral decision-making or activities. In practice,

constraints, for people to enact moral decisions in accord with their moral beliefs with a

probability of nearly one hundred percent. Thus, for one individual,[4] we could draw a single path

from belief to action, which might be the top path in figure 1 from the blue box to the green line.

Adding a single level of contextual or community factors in keeping with the hypotheses, there

are two possible paths, the initial path or a reduced probability path as a result of interaction in

the "circle" context.[5] If the individual's belief and the dominant belief in the context are similar,

we would expect the relatively direct path to remain, but to the extent that they are dissimilar, we

would expect a related increase in the probability of behavior which is inconsistent with the

person's moral belief.

Additional levels of context act as additive conditioning or filter mechanisms, with each

successively more general level acting upon conditional probabilities from the prior level.

Because of increasing social distance from the individual (and likely increasing heterogeneity),

the net effect decreases at each level.[6] This is consistent with what moral communities theorists,

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outside preferences can be treated as either sources of either spuriousness or random-seeming variation in the moral belief-action relationship.

[4] Note that the figure is not intended to represent aggregate relationships or true path diagrams of multiple variables, but paths for a single hypothetical individual in moral decision-making. Also, note that the probability is not necessarily that of a more generally "moral" decision (like not committing a crime) but that of a decision that is consistent with one's own moral code. For more on this distinction, see the discussion of the identity verification process below.

[5] The reasoning given here is in probabilistic terms for simplicity of presentation in terms of a single individual, but the underlying empirical mechanisms are probably more consistent with a less-deterministic Bayesian understanding of sampling and effect paths. Also, note the additional simplifying assumption that contexts are largely homogeneous or unequivocal; that is, they either agree or disagree wholesale with the individual's moral belief. Again, empirical situations seldom follow this rule, but it allows us to see the implications of the theory more clearly.

[6] Support for this assumption is found in studies of cults and new religious movements, where the most likely recruits are either (a) family or close friends of founders or current members *or* (b) recent transplants and others with little or no local social support network. Stark and Finke (2000) follow Stark and Bainbridge (1987) in attributing this relationship to social control (Hirschi 1969). The model presented here is not incompatible with social control theories, although it does not require them and might be more consistent with more recent social learning perspectives (Akers 2003). I will argue later that social psychological identity theory provides a more general framework that also explains this phenomenon, but does so beyond the traditional application to criminology.

notably Mark Regnerus (2003a, 2002, 2003b), Amy Adamczyk and her coathors have proposed

over the last 10-15 years in relating moral belief and delinquency in adolescents.

Blue: Initial state (p=100%)
Red: Proximal context
Yellow: Distal context
Green Line: Final probability of identity confirmation
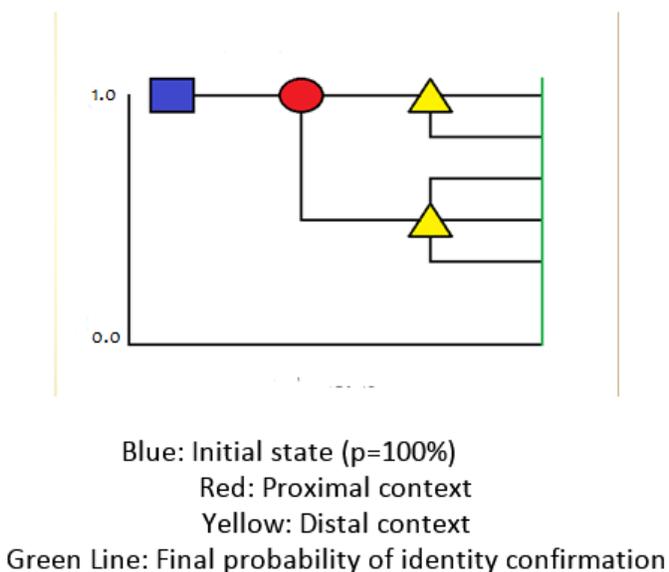
Figure 2-1. Identity Control Process for an Individual

We can summarize the most general version of their hypothesis thus: Strongly-held individual religious moral beliefs are likely to be acted upon to the extent that they are shared by members of the individual's community, with more proximate communities (such as friendship networks) being proportionally more important mechanisms than higher-order structures (such as schools or counties).[7] Religious moral communities do not have a direct effect on individual moral decision-making; any correlation works exclusively by moderating the direct effects of moral beliefs on moral decision-making in communities with a limited degree of shared moral understanding.

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[7] This combines Regnerus' multilevel theoretical approach with the methodological rigor of Amy Adamczyk and her coauthors' work (Adamczyk 2012a, 2012b, 2012c, Adamczyk and Felson 2006, Adamczyk and Finke 2008, Adamczyk and Palmer 2008).

Unfortunately, moral communities arguments were never intended to be applied to identity formation. The kernel, the importance of social distance in understanding contextual effects, can however be combined with another vocabulary, that of social identity theory. In doing so, we move toward the end goal of a systematic account of the types of social processes that play parts in religious identity formation.

Chapter 3 Identity Theory and Feedback Processes

Social psychological identity theory, specifically in its structural form (Stryker and Burke 2000) can add depth and realism to our hitherto-limited theory of self by integrating friendship networks, family and religious change. The feedback mechanisms explicit in this theory, in conversation with some prior work in religion, provide the necessary traction for this task. Thus, while this study is partly exploratory in nature and is intended to provide initial tests to support a variety of future endeavors in the study of religious development, it is also the first step toward integrating a major theory of social psychology into the scientific study of religion.

In the past 30 years, social psychologists (e.g. Burke and Stets 2009, Merolla et al. 2012, Stets and Cast 2007) have combined theories of identity construction and modern statistical methods to produce an empirically-supported hierarchical theory of social identity.[8] Central to their theory is the identity verification process, where individuals constantly compare their own sense of identity with feedback from relevant others. This is subsequently used to reconstruct their actions and/or identity to become more consistent with the feedback. Additionally, all individuals possess a variety of distinct identities that are nonetheless interrelated and often hierarchically structured. A general identity trait such as "honest" might provide a starting point for the verification process as, for example, a "Christian". There is a constant process of negotiation and reinterpretation that can be theoretically understood from a symbolic interactionist perspective and tested using multilevel statistical modeling.

If their perceptions are consistent with their self-identity, they continue as they are. If not, individuals can adjust either their behavior or their identities until the two match. This process circles back upon itself as individuals reevaluate changed situations. As a purely internal

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[8] This is not to be confused with classic symbolic interactionist identity theory oriented around the ideas of Mead, James, and Cooley. Identity theory here builds instead upon structural symbolic interactionism (Stryker 1980, 2008) and is less concerned with the content of individual interaction rituals than with the consequences of patterns of interactions across social locations.

psychological process, this should eventually reach a point of stasis, where a person has successfully negotiated their understanding of self in their environment throughout their daily lives. Identity construction, however, is social and contextual.

Factors outside of the individual's control can alter situations and demand renegotiation. Additionally, in the ongoing reconstruction of identity, individuals rely on the appraisals of others to evaluate the success or failure of identity verification. If we conceptualize social influence in this language, we find that the critical process is not one of directly influencing behavior but one where reflected appraisal from another person causes the ego to adjust their inputs and subsequently renegotiate their behavior. To put it simply, reflected appraisals mediate between context and self.

While religion has rarely been treated using identity theory, some recent results have been promising as to its potential applicability. Drawing on Stryker's (1980) distinction, Walker and Lynn (2013) found that embeddedness (having a high proportion of your ties connected at least indirectly to a role-based organization such as a church) was more important than attachment (the presence of strong ties to role-based others) in determining the generalized salience of identities across situations. Put in terms of the generalized identity process above, consistent feedback from a variety of people who are important to a person may be more important than emphatic feedback from a few in producing general identity change. This finding held true across work, student and religious identities. Other research on scientific training programs (Merolla et al. 2012) suggests that attachment does still hold an important position in role socialization, and cannot be minimized. In summary, current research paints a complex picture where preference for similar friends, exposure to like-minded people in role-based groups, and the diffusion of people connected with a religious group throughout one's network all play some role in the development of adolescent religiosity.

Returning to the moral consistency model represented in figure 1, it is a surprisingly small step to translate into something suited to consider religious identity as an outcome in itself. The paths from moral belief to consistent moral behavior can be reinterpreted in terms of identity verification. The top path involves regular verification and negligible disturbance, and thus requires little adjustment to match the appraisals reflected from others who share similar beliefs and expectations. This is the most common situation in identity processes; otherwise we would constantly be spending much of our time and energy just managing identities (Burke and Stets 2009). Each of the lower paths involves some error, engendered by perceptual adaptation to reflected appraisals which differ from the moral self-belief. In response to the error, some level of behavior adaptation becomes more likely, but the probability (in the figures) or degree (in the case of non-binary decisions) of behavior change is related to a number of factors.

First, each individual does not carry a single, monolithic, identity to which all inputs are compared. Researchers have found that every person has multiple identities. Their relative priority is determined by two linked processes of salience. Each individual has a general hierarchy of identities, so that some identities, for example gender or moral identities, may be salient across more domains and contexts than others such as recreational foosball player (Stryker 1980, Walker and Lynn 2013). Like the content of the identities themselves, this hierarchy is constantly being readjusted. The presence of others who evaluate behavior differently than us introduces at least temporary stress and instability into the perceptual control system and affects how the general salience of identities changes and develops over time.

The second process is situational and reflects changing standards for reflected appraisals. If our recreation foosball player is in mid-game, her sporting identity and her teammate identity are likely to be more prominent than compassion, which might be in direct competition with her other identities if it were considered salient. Similarly, the more distal contexts such as county or state in our theory of moral communities have a smaller apparent effect on behavior because they

are less likely to be salient, particularly as sources of reflected appraisal.[9] As a person becomes

embedded within a particular proximal social network, identities which are shared with those ties

(whether they be with friends, family members, or others) tend to increase in general salience

because they are more often invoked in the course of daily life. Stets and Carter (2011, 2012)

proposed just such a theory of self and morality, finding that students faced with real-life moral

dilemmas were more likely to report having behaved morally if they had stronger relevant moral

identities (honest, truthful, selfless, etc.) and framed the situation in terms of moral meanings.

This takes place both at the level of religious activities, such as church attendance, youth group

participation, or prayer, and also the level of identity as a religious person or even a certain type

of religious person (for example born-again or spiritual but not religious). Both the presence of

others with shared identities and the strength of those identities affects this relative salience

process.

If these identities are not fully verified by those in the immediate context (such as

friends), individuals can be expected to respond in one of two ways to reduce the error: (1) Adjust

their identity standard (self-understanding) in the situation so that behaving in a way that

produces positive reflected appraisals is consistent *or* (2) Adjust the relative salience of multiple

identities so as to reinterpret the situation in terms that allow the new identity to be verified.

These two responses are analogous to the homophily/socialization dilemma in analysis of social

influence (e.g. Cheadle and Schwadel 2012). Thus, we have adapted a basic feedback model of

morality to reflect a variety of potential sources of influence on religious (or other) change, all

through the lenses of identity and perceptual control.

In addition to reflected appraisals, theorists have identified two other complementary

sources of identity change: social learning and direct socialization (Burke and Stets 2009:193-4).

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[9] The analysis of community proximity could also be profitably applied to the relative role of small groups, congregations, and superlocal religious structures (such as denominations) in influencing individual beliefs and practices.

Social learning, or modeling, occurs through observation and imitation of the individuals and cultures among which a person lives. Together with the related concept of differential association (Akers 1996), social learning has been fruitfully used in the study of adolescent delinquency in particular. Direct socialization refers to more direct, although not necessarily formal, instruction regarding what is expected of a person in a given social position. While it is exceedingly difficult to statistically distinguish these three processes in survey data, I focus primarily on perceptual feedback for both theoretical and practical reasons.[10]

First, direct socialization is less likely to be a primary mechanism of friend network influence than either social learning or perceptual control. Based on past investigations of influence in adolescent, parents and teachers are expected to have a decreasing influence on the behavior and identity of teens as they differentiate themselves from their parents and begin to establish adult identities. Social learning remains more plausible, particularly through mechanisms such as youth groups, which combine friendship among age-homogeneous groups with social conformity pressure and explicit teaching regarding moral standards. Preliminary findings, which were later supported by the models in this paper, however, indicated that youth group participation, either of self or friends, had little if any impact on the development of religious identity. In reality, we should expect that all three processes work in concert to some degree, but perceptual control is the most consistently applicable across the various models (e.g. ego, parents, friends) I consider here.[11]

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[10] Separating social learning and perceptual control could profitably be done using a controlled experiment or intensive longitudinal data, but short-term social processes can only be inferred indirectly with traditional surveys.

[11] Note that changing the theoretical model to be consistent with social learning would not affect the specification of models in this paper, but only the interpretation of results.

Chapter 4 Hypotheses

In order to apply identity theory to possible social influences on adolescent religious development, it is necessary to consider the various elements of the social world of high school students. I focus on three major contexts: religious communities, families and friendship groups.[12] Though not exhaustive of likely relationships, they represent primary social groupings through which adolescents are likely to receive feedback on religious identities.[13] The adolescents' pre-existing religious beliefs and practices are also important to consider, not only as controls but as an initial comparator. Put another way, the self is one of multiple contexts which influences how the future self is constructed.

The elements of the religious self can be characterized and divided any number of ways, depending upon the purposes of research. Here, I make two major distinctions. The first is between religious practices on one hand and beliefs and identity on the other. Unlike the line of eminent sociologists of religion who have treated belief or affiliation as primary independent variables, I leave both essentially as controls for spurious associations. This is for two reasons: private beliefs are outside my primary purpose of investigating the effects of social networks[14] and the substantive meaning of relationships is less clear than in the case of activities. Each is given meaning largely by self-definition, but is also influenced by social processes of transmission and interaction.

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[12] In the following discussion and tables, ego attributes refer to characteristics of the adolescent, network structure refers to the overall shape of the friendship network independent of which ego is chosen, network position refers to structural characteristics of ego's location in the network, and characteristics of individual friends or groups of friends are referred to as friend network attributes.

[13] Two other types of relationships which play prominent roles for adolescents are with teachers and romantic partners. Public school teachers, however, are constitutionally circumscribed in any religious expression toward students. Studying possible influence of romantic partners, while potentially fruitful, is simply beyond the scope of this analysis.

[14] In reality, this distinction is less clear. Those who are not exposed to certain varieties of American Evangelicalism, for example, are unlikely to identify as "born-again", even though theologically they may acknowledge their baptism as a kind of second birth.

By contrast, many religious activities are inseparable from association with others who might reinforce a religious identity. Not all activities, however, are equivalently social. Participation in intergenerational social structures (e.g. worship services, mission projects), age-graded social structures (e.g. youth groups) and private devotional practices (e.g. prayer, daily Bible reading) may each be distinctively salient to the development of religious identity.

Of the three, worship attendance and other intergenerational activities are the most likely to promote the general salience of religious identity. This occurs by producing supportive feedback from co-religionists who are significant throughout multiple domains of life.[15] Age-graded groups, by contrast, are only likely to impact *peer* feedback processes and thus produce lasting effects only when close friendship ties are shared within the religious group. Because prayer and other devotional practices are not public, they are less directly implicated in feedback processes. They may however increase generalized salience, however, by recalling religious beliefs to mind in situations that would not otherwise be defined as religious.[16]

We should also expect parental religiosity, as a close and frequent source of perceptual feedback, to be clearly related to adolescent religious identity, but to a lesser extent than the adolescents' own pre-existing identities. Communal elements such as worship attendance and family prayer are visibly expressed and can include compelling adolescents to take part in shared activities. Therefore they may have an important role relative to other, more internal, elements of parental religiosity. Finally, insofar as I analyze *change* in religious importance, parental religiosity may play a smaller and less consistent role than it would if considered cross-sectionally. As adolescents increasingly differentiate their own beliefs and activities from the activities and expectations of their parents, we should expect some divergence from previous religiosity that more closely resembled their parents.

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[15] In this sense, worship attendance and youth group are both measures of sociability.
[16] This is not a network process. It is included here as a reminder that not all identity processes (particularly reinforcing processes) are network-related.

It is reasonable to expect that at least some portion of this change is toward peer group norms. Adolescents spend increasing quantities of time with peers as they age, while simultaneously negotiating increased autonomy from family. Thus having very religious friends predicts increased salience over time of the religious identity.[17] In identity theory terms, this represents social attachment to others who share a commitment to the role-based group (Merolla et al. 2012, Walker and Lynn 2013). Furthermore, it is conceivable that having friends with a broad variety of religious beliefs might impact overall religious identity.

Such heterogeneity is likely to induce instability by promoting openness and exposure to alternative viewpoints, particularly in cases such as religiosity where mean levels tend to be quite high. In religious heterogeneity (when friends belong to a variety of religious groups), the inconsistent identity feedback one is likely to receive about religiously and morally freighted actions should decrease overall religious salience, even when one's friends are highly religious. In contrast to the attachment that inheres in shared high religiosity, heterogeneity represents a threat to the embeddedness of an individual in a certain role-based identity (Stryker 1980).

I have moved from relatively proximal to more distal potential sources of religious identity, but have focused exclusively thus far on religious effects themselves. Another possible network process cannot be ignored—that structural position (sociability, popularity, etc.) has an independent effect on religious identity development. Higher popularity in school friendship networks may signify one of two things: a higher relative salience of those role identities compared to others or a higher level of generalized social embeddedness. If it is the former, the very processes of seeking popularity or becoming involved in activities at school may decrease the relative salience of religious identities. If centrality and network position are more general indicators of embeddedness, however, we should expect the opposite association: lowered

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[17] This effect should be strongest in situations where peers are more religious than parents.

embeddedness in school friendship networks should mean weaker religious identity as well, at least as an expression of weaker attachment to religious social structures.

Taken together, these hypotheses are quite broad ranging. They are nonetheless all derived from a single basic set of propositions: (1) identities tend to be stable over time (2) identities are most likely to change when trusted others do not share similar kind and degree of an activated identity, and (3) when they do change, identities tend to become more similar to those of trusted others over time. In adolescence, this is complicated by changes in the relative importance of parental authority and individual autonomy. Religious, peer, and family communities all play important roles in this process, and to better understand it, we must consider all three together as a system. To do so, I draw on the National Longitudinal Study of Adolescent Health (Add Health, Harris 2009).

Chapter 5 Data and Methods

As the only major representative sample of adolescents to include both religion measures and structural data,[18] Add Health allows the precisely the kind of analysis necessary to test the performance of the propositions above in predicting specific relationships with additional outside controls. Add Health is a four-wave panel study of a nationally representative sample of students in grade 7-12 during the 1994-1995 school year. "A sample of 80 high schools and 52 middle schools from the US was selected with unequal probability of selection. Incorporating systematic sampling methods and implicit stratification into the Add Health study design ensured this sample is representative of US schools with respect to region of country, urbanicity, school size, school type, and ethnicity" (Harris et al., 2009). Data were collected in schools on a variety of information including up to five of each student's closest male and female friends, who could then be matched if they attended the same school. A sample of students in each school also received in-home follow up surveys the year of the original collection and at three subsequent times, the most recent being in 2008. These surveys included a wider variety of questions than the in-school questionnaires, including a module on religion containing the critical questions for this study.

Of the 144 schools in the original sample, twelve were selected for the saturation sample, two of which were large (>700 students) and ten of which were small (<200 students). All students in the saturation sample received the in-home survey at each wave, and were additionally asked to nominate a full complement of friends again in the second wave, following the same procedure as the first. Unfortunately, due to a computer error, friendship nominations were not correctly collected from most of the small schools in the saturation sample during wave two. Because of the higher reliability of the structural data, my analytic sample is restricted to

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[18] This is as opposed to egocentric network measures, where individual are asked about the characteristics of their friends but participants cannot be directly linked to each other.

respondents in the two large saturated schools, referenced in prior literature as Jefferson and Sunshine (Bearman, Moody and Stovel 2004, Moody 2001).[19] Using data from these two schools in the first two waves, I explore the effects of religion and social networks on the strength of adolescent religious identity over approximately 1.5 years, only among those still in high school at the second wave. Below, I provide details on the variables and methods I have used.

Dependent Variable

I rely on a single indicator of religious identity prominence for my dependent variable. The question is worded "How important is religion to you?" with four possible response categories ranging from very important to not at all important. It is a relatively universal, direct, and coercion-free measure of the strength of a person's religious identity that is not explicitly tied to an empirical social structure. I unpack this below:

1. Universal- Religious importance is a question that should be equally meaningful to a Christian, a Buddhist, or an Atheist. Many commonly used measures of religious identity are proxy measures for evangelical Christianity, questions like those on Biblical literalism.

2. Direct- The question is clear, concise, and does not rely on proxies for the topic of interest.[20]

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[19] I combine the two schools into a single sample here, controlling for school community where appropriate. The differences, however, are worth noting. Jefferson is a suburban/rural four-year high school that is largely white non-Hispanic. Sunshine is larger despite being a three-year high school, is urban, poorer, and much more racially heterogeneous. Despite these differences, neither school nor race effects were significant in any of the three final models.

[20] Two notable groups are problematic here: those who identify as "spiritual but not religious" and the growing number who contrast true discipleship with "religion". Both are likely to attenuate any effects we might otherwise find. Thus estimated relationships may be conservative.

3. Coercion-free- Adolescents cannot be compelled to consider religion important in the same way family might require them to attend worship or youth group or even pray regularly. This is particularly vital because we expect changes in the latitude given many adolescents to make personal decisions concerning participation levels during the time period being studied.

4. Identity- Any activity, even those often included in scales of private religiosity (such as prayer and devotions) is conceptually distinct from a sense of self or identity itself. While each has implications for the other, identity construction is an internal psychological process.

5. Not wed to a specific structure- Many religious identity descriptors have recognizable meaning only for certain groups. One example in the US case is referring to oneself as born-again, which marks strength of religious identity primarily among evangelical Christians.

Religious importance thus is the best non-binary measure of religious identity available to us. While mean levels are relatively high (see Table 5-1), there is sufficient variability both between respondents and over time to allow for meaningful conclusions.

Table 5-1. Descriptives for Unimputed and Imputed Variables

	Unimputed Data				Imputed Data (N=1847)		
Variable	Valid N	Mean	Standard Deviation	Range	Mean	Standard Deviation	Range
Ego Characteristics							
Gender (1=female)	1362	.489	.500	0-1	.489	.500	0-1
Race (1=white non-Hispanic)	1355	.382	.486	0-1	.381	.486	0-1
School (1=Sunshine)	1362	.635	.482	0-1	.635	.481	0-1
Grade (wave 1)	1328	10.26	.683	9-11	10.26	.683	9-11
(wave 2)	1124	11.23	.727	9-12	11.26	.723	9-12
GPA (wave 1)	921	2.34	.750	1-4	2.38	.763	-.996-5.73
(wave 2)	692	2.33	.698	1-4	2.37	.729	-.596-5.35
Ego Religiosity							
Identifies with a Religious Group							
(1=yes)	1349	.902	.297	0-1	.901	.299	0-1
(wave 1)	1183	.898	.303	0-1	.894	.307	0-1
(wave 2)	1216	2.33	.717	0-3	2.27	.756	0-3

	Unimputed Data				Imputed Data (N=1847)		
Religious Importance (wave 1)	1058	2.24	.824	0-3	2.16	.882	0-3
(wave 2)	1216	2.01	1.06	0-3	1.94	1.09	0-3
Worship Attendance (wave 1)	1060	1.93	1.10	0-3	1.84	1.13	0-3
(wave 2)	1215	1.11	1.20	0-3	1.07	1.19	0-3
Youth Group Participation (wave 1)	1058	.948	1.18	0-3	.906	1.17	0-3
(wave 2)	1217	3.04	1.23	0-4	2.95	1.29	0-4
Frequency of Prayer (wave 1)	1059	2.94	1.29	0-4	2.83	1.36	0-4
(wave 2)	1166	.798	.401	0-1	.784	.412	0-1
Biblical literalism (wave 1)	1007	.776	.417	0-1	.743	.437	0-1
(wave 2)	1349	.227	.419	0-1	.227	.419	0-1
Born-again identity (wave 1)	1183	.225	.418	0-1	.227	.419	0-1
(wave 2)							
Parental Religiosity (wave 1 only)							
Identifies with a Religious Group	1091	.961	.195	0-1	.961	.195	0-1
Religious Importance	1047	2.60	.628	0-3	2.60	.640	0-3
Worship Attendance	1048	1.96	1.10	0-3	1.97	1.10	0-3
Frequency of Prayer	1044	2.51	.989	0-5	2.50	1.01	0-5
Biblical literalism	917	.772	.420	0-1	.763	.425	0-1
Friend Network Attributes							
Ego Network Mean Scores							
Mean GPA							
(wave 1)	966	2.29	.567	1-4	2.34	.583	-.244-4.88
(wave 2)	708	2.31	.598	1-4	2.35	.636	-.508-5.20
Proportion Claiming a Religion							
(wave 1)	1074	.903	.191	0-1	.900	.193	0-1.615
(wave 2)	931	.891	.234	0-1	.896	.237	-.021-1.77
Mean Religious Importance							
(wave 1)	1055	2.29	.479	0-3	2.31	.485	0-4.05
(wave 2)	900	2.18	.646	0-3	2.19	.668	-.581-4.98
Mean Worship Attendance							
(wave 1)	1055	1.97	.706	0-3	2.00	.713	-.612-5.18
(wave 2)	900	1.786	.921	0-3	1.75	.965	-2.41-5.66
Mean Youth Group Participation							
(wave 1)	1055	1.08	.780	0-3	1.06	.803	-2.39-4.09
(wave 2)	899	.926	.923	0-3	.907	.967	-3.11-4.96
Mean Frequency of Prayer							
(wave 1)	1055	3.00	.826	0-4	3.02	.833	0-6.25
(wave 2)	899	2.89	.985	0-4	2.89	1.02	-1.36-6.73
Mean Biblical Literalism							
(wave 1)	1052	.794	.260	0-1	.801	.264	-.363-1.82
(wave 2)	880	.772	.314	0-1	.778	.327	-.606-2.12
Ego Network Heterogeneity							
Grade Level Heterogeneity							
(wave 1)	1074	.245	.240	0-.75	.212	.249	-.786-1.00
(wave 2)	914	.168	.227	0-.78	.129	.238	-.708-.998
Race/Ethnic Heterogeneity							
(wave 1)	1074	.096	.184	0-.75	.092	.186	-.619-.788
(wave 2)	872	.050	.145	0-.67	.044	.150	-.555-.667
Gender Heterogeneity							
(wave 1)	1075	.294	.222	0-.5	.232	.245	-.664-.730
(wave 2)	874	.203	.230	0-.5	.140	.246	-.844-1.11
Religious Group Heterogeneity							
(wave 1)	1074	.434	.282	0-.844	.368	.300	-.862-.969
(wave 2)	931	.328	.290	0-.844	.258	.306	-.876-1.56

Independent Variables

Three major classes of social network predictors have already been introduced above: religious involvement, parental religiosity, and peer friendship networks. Each captures a different (although sometimes overlapping) piece of the people and settings in which a person receives identity feedback. Because of the exploratory nature of the study and because of our interest in the differences between types of network effects, religiosity is treated as a series of individual variables, rather than combined into scales. The primary measures of religious involvement are frequency of worship attendance and frequency of youth group participation, both ordinal scales ranging from "never" to "once a week or more". While both worship and youth group are likely to increase the salience of religious identities in general, worship provides direct contact with ties who potentially include not only peers (like youth group) but significant others with a variety of outside relationships with the adolescents. Compared to the relatively frequent and close associations youth experience with their peers, this should produce a more generalized identity effect that is not compartmentalized to certain times or circumstances. Formally stated:

h_1: *Worship attendance and youth group involvement both have significant positive relationships with change in religious importance, but worship has a noticeably larger coefficient.*

Identical measures on nearly all religion items were collected from a parent of each adolescent (most often the mother) during the first wave of Add Health.[21] Of the six measures of parental religiosity thus collected, only two were significant predictors in any of a battery of preliminary models (Appendix I), but they are the most theoretically implicated of the group: parental worship attendance and parental religious importance. Assuming parents generally wish

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[21] The exception is that no measure of religious non-worship participation analogous to youth group was included.

to transmit their religious preferences to children, religious importance is likely to be associated primarily through early efforts at religious socialization. By contrast, the visible and social act of attending worship constitutes a direct modeling and feedback process that might mitigate expected decreases in religiosity as adolescents gain more freedom to choose their religious preferences. Thus, I predict that:

h2: Parental worship attendance has a significant positive relationship with change in adolescent religious importance.

h3: Parental religious importance has limited, if any, relationship with change in adolescent religious importance independent of parental worship attendance and preexisting adolescent religiosity.

Finally, theory suggests that adolescent peer (friendship) groups could affect religious identity via two types of processes: religious influence/feedback processes and general sociability or role salience processes. [22] Friendship network attributes were calculated from the mean value of religious importance, mean worship and youth group attendance, and proportion claiming a religion or subscribing to scriptural infallibility.[23] The measure of religious heterogeneity measures the variety of different religious or denominational groups represented among the adolescent's friends. Thus, a friendship group with lower heterogeneity is likely to belong to congregations with similar beliefs and practices to each other, if not the same congregation. Explicitly religious feedback processes suggest that having friends who are more religious and share similar beliefs and associations is likely to promote strong religious identities:

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[22] All network measures are calculated using the network analysis package designed by Jim Moody (Ongoing) in conjunction with Add Health. Results for wave 1 were cross-checked for consistency with data in the "networks" module of the Add Health restricted data.

[23] I refer to this subsequently by the more common term "Biblical literalism" although the question "Do you agree or disagree that the sacred scripture of your religion are the word of God and are completely without any mistakes?" does not exclude other religious sources such as the Quran or Bhagavad Gita.

h4: Friend network mean religiosity of any kind has a positive relationship with change in religious importance.

h5: Friend network religious heterogeneity has a negative relationship with change in religious importance.

The position an adolescent occupies in their peer network can signify peer sociability and the relative dominance of school-related activities and networks compared to that of religious or family networks. As a rough measure of sociability, we can use outdegree (the total number of friends nominated by the adolescent).[24] A clear prediction is difficult without additional information, given that those friends may or may not find religion salient in their daily lives, but I nonetheless include it in the analysis. Peer popularity should more clearly reflect the relative salience of school/peer and religious identities. Bonacich centrality is calculated using Jim Moody's (2001, Ongoing) specifications. Rather than merely counting the number of people who chose an adolescent as their friend, Bonacich centrality weights nominators by their own position in the social hierarchy (Bonacich 1987, Wasserman and Faust 1994). Thus, an adolescent who is chosen by other who are popular will have a higher score than one who is chosen by relative isolates. Those who are most popular by this measure are likely highly invested in school social networks (Coleman 1961) and thus find specifically religious networks less salient:

h6: Adolescents with high Bonacich centrality will experience decreasing religious importance.

Additional non-network measures of religiosity and personal characteristics are included to provide comparison and serve as controls. Standard controls for gender and race[25] are included where possible, as well as racial heterogeneity with friendship groups. Other adolescent

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[24] While indegree (the number of other students who nominated the adolescent) and total degree were included in preliminary models, they are less theoretically relevant and demonstrate weak, if any, relationships with the dependent variable.
[25] The race measure is relatively rough and distinguishes only non-Hispanic whites from all others.

religiosity measures include Biblical literalism, self-identification as "born-again" and frequency

of prayer. All of these can support religious identity formation through in-group boundary

definition (literalism, born-again) and/or increased general attention to religion (prayer) but they

are considered peripheral here because they are not directly implicated in the proposed feedback

and perceptual control mechanism. An indicator of which of the two schools the adolescent

attended is also included where appropriate to capture any contextual differences that might not

be measured directly in the equation.[26]

Missing Data

A major challenge in using Add Health data on religion for longitudinal analysis has been

the skip patterns employed as time-saving devices in the first two waves of data collection.

Regrettably, anyone who said at either wave that they had no religion or nothing in particular

were not asked any of the other religion questions, despite evidence that many people who do not

claim ties to a specific religious group may feel or act somewhat religious, going to worship

occasionally or considering themselves somewhat religious or spiritual (Baker and Smith 2009,

Lim, MacGregor and Putnam 2010). As a result, many panel analysis methods would entirely

exclude anyone who ever said they had no religion (or worse, anyone who was not a Protestant

Christian if using born-again) from the analysis. For an analysis of religious change measured as

increase or decrease in religiosity, this would be a fatal flaw. The most common approach to the

problem of this skip pattern has been to interpolate 0 (no or none) for all other variables. This

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[26] School-level network properties include connectivity, network centralization and school composition and homogeneity on attributes such as race and gender. These measures are excluded from my models in favor of the simple binary indicator because they are statistically indistinguishable from each other in a two-school sample.

addresses the technical inestimability but not the substantive assumption that anyone who does

not claim a specific religion is entirely irreligious.

This skip pattern was changed in the third and fourth waves of data collection, however,

and thus it is possible to use later data on similar questions to multiply impute these, using Stata's

ice procedure (Royston 2009) to inform estimates using patterns for the same individuals in

combination with other substantive variables.[27] This approach independently estimates both

missing values and standard errors for multiple copies of a dataset and adjusts estimates of

regression coefficients and standard errors to reflect the dependency of the datasets and the

artificially inflated number of cases. This allowed the successful inclusion of all who responded

"none" or "nothing in particular" to their religious group at one or both waves in the analysis

without biasing regression coefficients or standard errors, as well as to utilize cases which are

missing data on other key variables. All measures including calculated network measures were

imputed,[28] although (following Add Health methodology) Born-Again was imputed only after

setting all respondents who were not Protestant Christians to zero.

Two specific concerns regarding multiple imputation have been raised which could be of

consequence here. First, missing patterns for data here do not meet the traditional imputation

assumption of missing at random (MAR) or missing completely at random (MCAR) structure.

However, unlike in the case of panel attrition, for example, we know the precise mechanism by

which this missing data was generated. Furthermore, the available of comparable data without the

unfortunate skip pattern at later waves provides a plausible basis on which to produce estimates.

Comparisons of descriptives for imputed and unimputed data (see Table 5-1) conform to

expectations; means with imputation are lower than original response means on every religion

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[27] All variables were imputed using either OLS or logistic link functions after the construction of network measures and interactions, following the recommendation of Allison (2002).
[28] The network measures here function as a type of interaction effects (between network structure and the attributes of its members. Thus they should be treated as other interactions, which are subject to potential bias if left unimputed in a multiply imputed dataset (Allison 2002).

variable, reflecting the typically low religiosity of those who do not identify explicitly with a religious tradition (Baker and Smith 2009, Lim, MacGregor and Putnam 2010). Thus while multiple imputation may be subject to some bias due to failure to meet MAR assumptions, it appears to be robust to this violation and is preferable to the alternative of selection bias.

Second, there has been some debate in the methodological literature regarding the consequences of imputing a dependent variable. Imputation procedures, however, do not add information but rather produce a series of estimates with relationships and standard errors proportional to known data. This has been tested empirically (Johnson and Young 2011) with the finding that "excluding from the analysis cases that have missing values on the dependent variable is acceptable only under certain circumstances. Even in these situations, imputing the outcome does no harm and yields perfectly acceptable estimates when there are good auxiliary variables in the imputation model" (941). In order to ensure consistency and non-bias in using this method, I imputed 25 datasets, each using 100 cycles to allow sufficient time for convergence (Johnson and Young 2011, von Hippel 2009). Additionally, I estimated models using all three regression methods utilized in the primarily analysis in combination with each of four different missing data techniques, the results of which can be found in Appendix I. Results using listwise deletion and multiple imputation were relatively similar, although imputed models tended to have substantially lower standard errors. Models using zero substitution (following previous research) were less consistent, particularly for network and family effects, suggesting that concerns about the consequences of this method may have been justified.

Analytic Method

An ever-expanding menu of methods is available to social network analysts working with structural data on friendship ties. The lone major structural network study of religious change (Cheadle and Schwadel 2012) focused on the co-development of the network and religious identity, using SIENA network simulation. While this contributes to our overall understanding of the development of religious networks, the question I wish to address here is less directly concerned with how networks develop than with how religion develops. This, combined with the ready interpretability of regression, suggest that the most appropriate method for this study is a regression-based panel design.

I estimated equations using three of the most common panel-analytic methods: lagged dependent variable, random effects and fixed effects models. Lagged models estimate the effects of a variety of independent variables at wave one, including religious importance, on religious importance at wave two. They are prone to endogeneity bias from including the lagged variable when outcome variables are relatively stable over time. They are, however, the simplest of the three methods to interpret coefficients. Fixed effects models mark another extreme by using only within-person change to estimate coefficients. Thus, for the two wave case, fixed effects coefficients represent the effect of a one-unit change between waves in the independent variable on change in the dependent variable. Random effects are slightly less restrictive, in that they also include between person differences and thus allow for the inclusion of time-invariant characteristics such as race, gender, and school in longitudinal models. They are only efficient, however, when all salient controls are measured and included.

I primarily interpret fixed effects models because they have the advantage of controlling for unobserved time-invariant heterogeneity in individual characteristics and because fixed effects is the most explicitly change-based model.[29] The discussion to follow will make mention of important differences between the results based on the model chosen and the implications those

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[29] Hausman tests, when usable, presented mixed results as to the necessity of fixed effects estimation.

differences may have for theory and future research. Because of multicollinearity problems, a number of variables were removed from the analysis based on findings of non-significance across exploratory model specifications (Appendix I) or because of non-correlation with the dependent variable.[30]

Up to five blocks of variables were added sequentially using each technique.[31] The five block resemble the groups discussed in my hypotheses, but I follow convention by grouping religiosity questions together based on to whom they were asked without separating social expressions (worship and youth group) from personal identities and expressions (prayer, born-again, and Biblical literalism). The five blocks are ego religiosity, demographic controls (genders, race, and school), parental religiosity, network structure and position, and friend network attributes. Blocks with no significant coefficients ($p<.05$) were excluded from subsequent models. Because models were estimated using multiply imputed data, tests of model fit and explained variance were not available.

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[30] Any variable that was significant in more than a single combination of model and missing data specification was automatically retained, allowing for streamlining of models without risking the exclusion of key variables.

[31] Because time-invariant traits cannot be included in fixed effects models, table IV has only three blocks of variables.

Chapter 6 Results

The choice of analytic method proved to have importance consequences on results, likely due both to differences in the variables that can be included and the assumptions made concerning longitudinal relationships. I will summarize results with each method individually before discussing their implications as a whole. As mentioned above, the models reported here use multiply imputed data. Summaries of models estimated using other approaches to missing data can be found in Appendix A.

Table 6-1. OLS Regression of Wave One Ego and Network Characteristics on Wave Two Subjective Religious Importance (N=1362)

	Model I	Model II	Model III	Model IV	Model V
Ego Religiosity					
Religious Importance	.466 (.040)***	.414 (.040)***	.441 (.039)***	.424 (.039)***	.418 (.039)***
Worship Attendance	.065 (.024)**	.043 (.024)	-.001 (.027)	.000 (.027)	.002 (.028)
Youth Group Participation	.030 (.019)	.043 (.019)*	.033 (.019)	.040 (.019)*	.039 (.019)*
Frequency of Prayer	.158 (.021)***	.134 (.021)***	.151 (.021)***	.143 (.021)***	.142 (.021)***
Biblical Literalism	.191 (.060)**	.177 (.058)**	.187 (.059)**	.187 (.058)**	.174 (.060)**
Born-again	.057 (.052)	.092 (.051)	.051 (.051)	.072 (.051)	.068 (.051)
Ego Characteristics					
Gender (1=female)		.042 (.041)			
Race/Ethnicity (1=white non-Hispanic)		-.178 (.117)			
School (1=Sunshine)		.148 (.117)			
Grade level		.028 (.032)			
Core subjects GPA (4-point scale)		-.054 (.032)			
Parental Religiosity					
Parent Religious Importance			.047 (.048)	.042 (.047)	.046 (.048)
Parent Worship Attendance			.122 (.026)***	.100 (.027)***	.097 (.027)***
Network Structure & Position					
Outdegree				-.073 (.016)***	-.068 (.019)***
Bonacich (Prestige) Centrality				.264 (.069)***	.232 (.074)**
Friend Network Attributes					
Ego Network Mean Scores					
Proportion Claiming a Religion					.165 (.161)
Mean Worship Attendance					-.019 (.035)
Mean Biblical Literalism					.139 (.093)
Ego Network Heterogeneity					
Racial/Ethnic Heterogeneity					.083 (.126)
Religious Heterogeneity					.018 (.099)
Constant	.315 (.095)***	.334 (.371)	.161 (.133)	.340 (.137)*	.129 (.215)

Turning to the lagged dependent variable results (Table 6-1), religious importance at wave I unsurprisingly had the strongest and most consistent relationship with wave II religious importance, although frequency of prayer and biblical literalism both had consistent significant positive associations with wave II religious importance and worship attendance and youth group participation had small but significant coefficients in some models. None of the demographic controls in model II were significant at p<.05, so they were dropped from subsequent models. Parental worship attendance had a significant and strong positive relationship with the dependent variable, and its inclusion reduced any coefficient for ego worship attendance (previously marginally significant) to essentially zero in all remaining models. Parental religious importance was not significant. Of network variables in models IV and V, network structure showed modest association, although the opposite signs of outdegree (negative) and centrality (positive) were unexpected. Neither friend religiosity nor network heterogeneity had significant associations.

Table 6-2. Two-wave Random Effects Regression on Subjective Religious Importance (N=2724)

	Model I	Model II	Model III	Model IV	Model V
Ego Religiosity					
Worship Attendance	.173 (.016)***	.148 (.016)***	.132 (.017)***	.149 (.016)***	.147 (.015)***
Youth Group Participation	.031 (.014)*	.039 (.013)**	.038 (.013)**	.039 (.013)**	.036 (.013)**
Frequency of Prayer	.232 (.013)***	.203 (.013)***	.201 (.013)***	.203 (.013)***	.202 (.013)***
Biblical Literalism	.379 (.034)***	.342 (.034)***	.339 (.034)***	.343 (.034)***	.336 (.034)***
Born-again	.139 (.032)***	.161 (.032)***	.153 (.032)***	.159 (.032)***	.154 (.032)***
Ego Characteristics					
Gender (1=female)		.021 (.026)	.024 (.026)	.022 (.026)	.023 (.026)
Race/Ethnicity (1=white non-Hispanic)		-.075 (.074)	-.051 (.075)	-.076 (.074)	-.077 (.075)
School (1=Sunshine)		.232 (.073)**	.228 (.073)**	.232 (.076)**	.154 (.084)
Grade level		-.014 (.018)	-.015 (.018)	-.012 (.020)	-.010 (.019)
Core subjects GPA (4-point scale)		-.037 (.021)	-.035 (.022)	-.039 (.021)	-.036 (.022)
Parental Religiosity					
Parent Religious Importance			.056 (.036)		
Parent Worship Attendance			.019 (.017)		
Network Structure & Position					
Outdegree				.003 (.012)	
Bonacich (Prestige) Centrality				-.024 (.038)	
Friend Network Attributes					
Ego Network Mean Scores					
Proportion Claiming a Religion					.009 (.083)
Mean Worship Attendance					.045 (.020)*
Mean Biblical Literalism					.103 (.056)
Ego Network Heterogeneity					
Racial/Ethnic Heterogeneity					.089 (.098)
Religious Heterogeneity					-.106 (.062)
Constant	.867 (.048)***	1.12 (.228)***	.980 (.244)***	1.12 (.257)***	.996 (.259)***

Random effects regression on subjective religious importance (Table 6-2) showed the same general pattern as lagged models for ego religiosity, although all relationships were significant at p<.05 in all models. The only notable difference is that worship attendance was among the strongest associations and remained so even after the inclusion of parental religiosity. Only two other variables had significant effects, school attended and friend mean worship attendance. The school effect may be in part the result of differing racial and ethnic makeup of the two schools (see Moody 2001) and is attenuated with the inclusion of friend network attributes and heterogeneity. The relative paucity of important time-invariant predictors, together with significant Hausman tests in a number of models suggests that we should instead turn to a fixed effects model as our best longitudinal approach to understanding religious identity change.

Table 6-3. Two-wave Fixed Effects Regression on Subjective Religious Importance (N=2724)

	Model I	Model II	Model III	Model IV
Ego Religiosity				
Worship Attendance	.173 (.016)***	.168 (.016)***	.160 (.016)***	.154 (.016)***
Youth Group Participation	.030 (.014)*	.035 (.014)*	.038 (.013)**	.036 (.013)**
Frequency of Prayer	.232 (.013)***	.227 (.014)***	.219 (.013)***	.212 (.013)***
Biblical Literalism	.377 (.034)***	.371 (.034)***	.363 (.034)***	.342 (.034)***
Born-again	.141 (.033)***	.146 (.032)***	.154 (.032)***	.149 (.032)***
Ego Characteristics				
Grade level		.081 (.021)***	.048 (.022)*	.039 (.022)
Core subjects GPA (4-point scale)		-.023 (.021)	-.030 (.021)	-.030 (.022)
Network Structure & Position				
Outdegree			-.067 (.011)***	-.033 (.014)*
Bonacich (Prestige) Centrality			.175 (.039)***	.102 (.042)*
Friend Network Attributes				
Ego Network Mean Scores				
Proportion Claiming a Religion				.078 (.080)
Mean Worship Attendance				.049 (.021)*
Mean Biblical Literalism				.132 (.055)*
Ego Network Heterogeneity				
Racial/Ethnic Heterogeneity				.181 (.094)
Religious Heterogeneity				-.200 (.068)**
Constant	.870 (.048)***	.080 (.247)	.551 (.263)*	.443 (.278)

Unlike previous models, fixed effects regression for two waves only considers the relationship between within-person change in different variables between waves. Nevertheless, the pattern of coefficients for ego religiosity in fixed effects models (Table 6-3) is again consistent with both prior approaches: all variables show significant positive relationships, with

worship attendance, prayer frequency and biblical literalism having the strongest and most

consistent. Grade level had small but significant positive coefficient until network variables were

included despite the relative homogeneity of students.[32] Outdegree and centrality showed the

same pattern of opposite signs found in the lagged models, suggesting the need to consider its

meaning more closely. Finally, fixed effects estimates showed significant positive effects for

friend mean worship attendance and biblical literalism and a negative effect of friend religious

heterogeneity (the variety of denominations or religious groups to which friends belong). None of

these three variables has as strong of a net impact on subjective religious importance as ego

religiosity, but both the variables and their patterns suggest that influence or feedback processes

are likely playing a role in the development of identity across high school. I consider the

implications of these and other findings below.

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[32] It is not the grade level but the change in grade level being compared. Because surveys for wave I and II were collected during successive school years, over 90 percent of respondents advanced one grade between waves.

Chapter 7 Discussion

Indicators of ego religiosity consistently demonstrate the expected significant positive relationship with religious importance in fixed and random effects models (Tables III and IV), confirming that although the degree may vary, people tend to increase or decrease in overall religiosity rather than a single area over time. Prayer frequency, Biblical literalism and worship attendance dominate other religious predictors in fixed effects, suggesting that multiple expressions of religiosity tend to intensify (or de-intensify) together as religious importance develops. Coefficients for youth group are notably smaller in all models and not significant in lagged models (Table II). Coefficients for born-again, although smaller and subject to higher standard errors than other items, may be confounded by its status as an implicit interaction with denominational identity.

Non-religious individual characteristics appear to have little effect on the development of religious importance. In random effects, females had significant higher religious importance, but the difference of around $1/20^{th}$ of a point (on a four-point scale) is extremely small. Any racial/ethnic and school effects were small and inconsistent, although racial/ethnic heterogeneity was marginally significant ($p<.10$) in fixed effects. It may be that differences in the racial makeup of the two school communities explain apparent school effects in the random effects model.

Parental religiosity could not be included in fixed effects because it was only asked at the first wave. While there was a consistent effect of parental religious importance in random effects models, it was relatively small. In the lagged model, by contrast, the inclusion of parental worship attendance (not significant in random effects) attenuated any personal religious attendance effect. Position in school friendship networks had similarly small but significant associations with change in religious importance, which were partially attenuated when friend religiosity and

heterogeneity were added. The only cases in which outdegree and centrality would predict notable religious identity change is the contrast between an adolescent who considers less people their friends but increasing popular and its converse. Even in that case, the predicted difference would be only 0.373 units of religious importance, or about 1/3 of the distance from "fairly important" to "very important". Friend religiosity showed a similar pattern of small but significant coefficients. As predicted, increasing mean friend worship attendance and an increasing proportion of friends who consider scripture to be without error were associated with increasing religious importance. Increasing friend religious heterogeneity was notable for its consistent negative relationship. Despite sometimes larger coefficients in the lagged model, high standard errors indicate that co-development of religious identity with friends may be more the case than influence.

The endeavor to integrate social networks into the analysis of religion and identity has clearly proven profitable, despite the mixed results of this analysis as to the formal hypotheses presented. The most strongly supported hypothesis was the first, predicting that age-graded ties are important but may not be as effective of support for religious identity development as intergenerational worship services. However, the importance of private prayer and belief demonstrates that other belief, values, and practices can support generalized salience of religious identities by invoking them more frequently in the course of daily life.

Parental religiosity too behaved as predicted, but in the process demonstrated the relative lack of clarity inherent in current models of religious identity. Parent worship attendance did have a positive relationship with adolescent religious importance (hypothesis 2) in the lagged model, but change in one did not produce change in the other in random effects. At that early stage, the consistent influence of parents is more likely than a decision by adolescents to attend on their own to produce a long-term sense of the importance of religion. Even combined with the expected small effects of parental religious importance (hypothesis 3), these findings are only

suggestive of how parents of teens influence the religious development of their children. Something, however, does appear to be limiting parents' influence on their children's religious identity as they grow through adulthood.

Friends, instead, may provide one key to understanding what happens as adolescents grow and differentiate themselves from strict family rules and expectations. The fact that meaningful associations are found only in change models and not the lagged models leads to a further specification of hypotheses 4 and 5: it is the development over time of religious attitudes, behaviors and beliefs among friends that is important, rather than precisely how religious they may have been earlier in high school. That religious heterogeneity was more salient to identity than mean levels of various aspects of religiosity lends further support to Walker and Lynn's (2013) finding that attachment is relatively less important than embeddedness in the development of role identities. Befriending others who are relatively religious overall (mean scores) but come from a variety of denominations or religions may temper strong expressions of personal religiosity. The type of religious friends one has may matter more in developing salience than exactly how religious those friends are.

A more complete causal analysis could potentially produce rich information on to what extent this is evidence of mutual influence and to what extent it might be the result of common outside variable leading to similar changes. The final hypothesis (6), the only one directly contradicted by my findings, could benefit from a similar treatment. The most likely case based on findings so far is that popularity within school friendship networks reflects a general social embeddedness that is shared with religion, but it is difficult to know based on a single study.

Chapter 8 Limitations and Conclusions

The results of this analysis are still remarkably consistent with what a primarily identity-oriented understanding of religious change would predict. While general properties of adolescent's position in school friendship networks were sometimes important, the characteristics of those friends themselves, and particularly the strength and homogeneity of their religiosity were the strongest and most consistent structural predictors of both worship attendance and religious importance. If we revisit figure I as a perceptual control model of identity feedback and change, religious importance among adolescents behaves as we expect. Individual religious activities and beliefs appear to play the largest roles in identity salience, but family and friends also have important parts. Moreover, the salience of parental religiosity relative to adolescent religious identity appears to decrease over time, partially supplanted by interactions with friends.

It is not primarily through structured religiously-oriented association with other youth, however, that friend religiosity plays its role. Instead, having friends who strongly identify with countercultural religious claims such as scriptural literalism and are integrated into congregations through regular worship attendance may increase the likelihood of drawing on a religious identity in interactions which are not explicitly religious. By contrast, a religiously diverse friendship group was found to temper the general salience of religious identity, likely through encouraging adolescents to draw upon identities which are held in common with others, such as academic or sporting identities.[33]

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[33] More than one criminologist has suggested that social learning is an equally plausible alternative, given the evidence presented here. While addressing this concern fully would require substantial additional theoretical discussion, the point is well-made. I choose to emphasize identity because religious self-definition is typically considered to be a personal belief and choice by practitioners in the United States. Thus, I would argue that given equal plausibility, a social psychological theory is more germane to the subject matter.

None of these findings are conclusive; this study was meant to be exploratory and suggest avenues for further research in an underdeveloped area of the study of religion. Given the measurement limitations, relatively simplistic models, and two-school sample, my finding are likely a lower bound on the actual importance of social networks in the development of adolescent religious identity. In a general sense, it has produced a number of comparison models and suggested various types of network characteristics that might be important to the production and maintenance of individual religiosity.

Two alternative approaches to ego network attributes may prove important. The first is to more explicitly separate processes of regression toward mean levels of friend or parent religiosity from movement beyond or in the opposite direction. This kind of path modeling, while more methodologically challenging, will provide a more direct means of connecting theory and qualitative data with quantitative analysis. Combined with formal causal analysis, it may also explain some of the difference between lagged and change models of friend influence.

Second, the measurement of social embeddedness effects needs to be improved to more closely approximate the general salience of religious identity among friendship groups. This may not be possible with Add Health, given that it does not collect data on membership in specific congregations, but novel data collection methods hold promise in this area (e.g. Walker and Lynn 2013). A more comprehensive networks perspective can bring us the next step from testing individual effects to understanding the structuring of networks and characteristics through social processes in relation to religion.

Methodologically, the method of multiply imputing even planned missing data using outside variables to inform the imputation can be applied in other studies, marking another step toward acknowledging the religiosity of less religious people explicitly, as well as preventing the associated bias in analytic results. Alternate codings might also be used, such as binary codings of high religiosity vs. less or none, standardized measures, or the construction of scales of religiosity

(either behavior and identity or public and private). Finally, future analysis can be extended to predict additional types of variables (such as worship attendance) and the enduring effects of adolescent friendship networks beyond high school.

Its position as an early exploration notwithstanding, this study provides a baseline for future research in religious change, particularly among adolescents, and demonstrates means to test some of the more theoretically interesting propositions around morality, public and private religiosity, and the development of identity from childhood to adulthood. Identity theory provides a previously missing bridge between social psychological processes and the role of structure and interaction in the development in religion. The study affirms common wisdom and previous qualitative findings concerning the relative role of parents and peers as adolescents begin to differentiate themselves religiously from their families. Finally, it suggests that the intergenerational and multivalent nature of ties produced among co-worshippers may be more important in religious development than the strong sense of shared experience available through youth groups and other age-graded activities.

Appendix

Lagged Dependent Variable (OLS), Random Effects, and Fixed Effects Regression on Subjective Religion Importance by Missing Data Method

Significant Predictor[a34]	Listwise Deletion	Zero Substitution	Imputation After Zero Substitution	Full Multiple Imputation
Lagged DV (N of cases)	*347*	*404*	*1362*	*1362*
Religious Importance	.523 (.062)***	.412 (.063)***	.365 (.037)***	.423 (.040)***
Worship Attendance		[.031 (.051)]	[.030 (.031)]	[.001 (.027)]
Youth Group Participation			.046 (.022)*	.040 (.019)*
Frequency of Prayer	.132 (.033)***	.120 (.037)***	.104 (.024)***	.146 (.021)***
Biblical Literalism	.296 (.083)***	.251 (.093)**	[.103 (.061)]	.174 (.061)**
Born-again	.162 (.079)*			
School (Sunshine)		.353 (.080)***	.304 (.078)***	
Grade Level (wave 1)	.102 (.041)*			
Core GPA (4 point scale)			-.074 (.035)*	
Parent Religious Attendance	.122 (.034)***	.144 (.038)***	.120 (.032)***	.115 (.025)***
Mean Biblical Literalism			.233 (.108)*	
Random Effects (N of cases)	404	446	*1362*	*1362*
Worship Attendance	.156 (.024)***	.210 (.024)***	.185 (.015)***	.140 (.017)***
Youth Group Participation			.035 (.013)**	.038 (.013)**
Frequency of Prayer	.254 (.021)***	.322 (.020)***	.266 (.012)***	.208 (.013)***
Biblical Literalism	.365 (.055)***	.497 (.053)***	.537 (.035)***	.336 (.034)***
Born-again	[.093 (.054)]		.125 (.035)***	.147 (.032)***
School (Sunshine)				.258 (.032)***
Race (non-Hispanic white)			-.223 (.030)***	
Parent Religious Importance				[.070 (.035)]
Bonacich (Prestige) Centrality	[.035 (.033)]	[.041 (.033)]		
Mean Worship Attendance	.161 (.032)***			
Fixed Effects (N of cases)	56	71	*1362*	*1362*
Worship Attendance	.155 (.021)***	.209 (.021)***	.191 (.015)***	.157 (.016)***
Youth Group Participation			.034 (.013)**	.037 (.013)**
Frequency of Prayer	.224 (.018)***	.317 (.017)***	.275 (.011)***	.216 (.013)***
Biblical Literalism	.314 (.048)***	.489 (.047)***	.547 (.036)***	.342 (.032)***
Born-again	.132 (.047)**		.120 (.033)***	.152 (.032)***

[34] The following variables were not significant predictors in any model: race/ethnicity, grade level, GPA, parent frequency of prayer, parent Biblical literalism, indegree, total degree, ego send/receive network density, friend mean youth group attendance, friend mean GPA, friend racial/ethnic heterogeneity, friend gender heterogeneity, friend grade level heterogeneity. Except for race/ethnicity and friend racial/ethnic heterogeneity, they have been excluded from reported models in order to decrease multicollinearity and endogeneity problems.

Bonacich (Prestige) Centrality	.143 (.047)**	.059 (.028)*	.142 (.039)***	.131 (.041)***
Outdegree	-.036 (.014)*		-.042 (.012)***	-.037 (.014)**
Proportion Religious Friends			.167 (.074)*	
Mean Worship Attendance	.099 (.030)***			
Mean Biblical Literalism	[.144 (.081)]			.145 (.058)*
Religious Heterogeneity			-.151 (.062)*	-.208 (.068)**
Racial/Ethnic Heterogeneity				.189 (.093)*

Notes: Lagged dependent variable models on religious importance at wave II; all other models on religious importance. Reported coefficients represent models with only significant variables included. Non-imputed lagged dependent variable models use reverse stepwise procedures for variable inclusion. Variables included in imputed, random effects, and fixed effects are selected using a nested procedure where non-individual and non-religion variables are included in subsequent steps only if significant at p<.10. Full results for models not presented in body of paper available upon request. Standard errors are given in parentheses following coefficient. Coefficients in square brackets are significant at p<.05 in some but not all specifications.

*: p<.05, **: p<.01, *** p<.01

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