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Changes in Religiosity After First Intercourse in the Transition to Adulthood

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Abstract

Religiosity delays initiation of sexual behavior, but the association may be bidirectional, and individuals may become less religious after first intercourse. This study uses longitudinal data from college students to examine whether two aspects of religiosity change before and after first intercourse using multiphase growth curve models. Students' religiosity did not change in the six months preceding first intercourse, but on average they attended services less often and felt religion was less important in the twelve months after first intercourse. These findings suggest that sexual behavior can influence religious development in emerging adulthood, and underscore the importance of studying the impact of sexuality beyond the health outcomes typically studied, and of examining how life events influence religious development in adolescence and emerging adulthood.

Keywords

sexual behavior; religiosity; transition to adulthood

Emerging adulthood, the period from ages 18–25, is marked by identity exploration (Arnett, 2000). Two areas in which emerging adults may explore their identity are religiosity and sexual behavior. Although private religious beliefs continue to be important to emerging adults in the United States, attendance at religious services generally declines during emerging adulthood (Arnett & Jensen, 2002; Stoppa & Lefkowitz, 2010; Uecker, Regnerus, & Vaaler, 2007). Sexual behavior, however, shifts from being an uncommon occurrence in early adolescence to near universal by the late twenties, with first intercourse occurring in the late teens for the majority of individuals (Sandfort, Orr, Hirsch, & Santelli, 2008). Because most religions generally prohibit pre-marital sexual behaviors, changes in religiosity and sexual behavior may be associated (Regnerus, 2007). In cross-sectional studies, more religious adolescents (measured by attendance at services, importance of religion and composite measures) are less likely to be sexually active (for review, see Wilcox, Rostosky, Randall, & Comer Wright, 2001). Several longitudinal studies suggest

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religiosity is protective against sexual behavior, and religious individuals are less likely to initiate sex in later waves (see Rostosky, Wilcox, Comer Wright, & Randall, 2004 for review). Although less research has examined associations between religiosity and sexual behavior in emerging adults, some research with college students suggests religious service attendance is associated with lesser odds of engaging in sexual behavior (Lefkowitz, Gillen, Shearer, & Boone, 2004; Zaleski & Schiaffino, 2000), though other research did not find associations between religious attendance or beliefs and age at first intercourse (Leonard & Scott-Jones, 2010).

However, the association between religiosity and first intercourse may be bidirectional. Although research has investigated how religiosity may lead to delays in individuals' sexual behavior, it is also possible that after first intercourse, individuals become less religious to relieve cognitive dissonance resulting from violating their religion's teachings. Cognitive dissonance theory (Festinger, 1962) suggests that when individuals act against their beliefs or sense of themselves, they experience psychological distress. To relieve this distress they may alter either their behavior or beliefs. As being sexually active is seen as a permanent, qualitatively different state than virginity (Tsui & Nicoladis, 2004), individuals who become sexually active may primarily reduce cognitive dissonance by changing their religiosity, rather than their sexual behavior. The few studies that have investigated whether religiosity changes after first intercourse are inconsistent. One study suggested individuals who became sexually active were more likely to have decreased attendance at religious services from adolescence to early adulthood (Uecker et al., 2007). However, two other studies (Hardy & Raffaelli, 2003; Meier, 2003) found that adolescents who became sexually active between study waves did not experience a greater decrease in religiosity (a composite of attendance and beliefs) than those who remained abstinent.

Several possibilities might explain why some prior research did not detect changes in religiosity after first intercourse. First, these studies used large demographic samples with two waves separated by long intervals (1–2 years; Hardy & Raffaelli, 2003; Meier, 2003). Thus, it is possible there are short-term changes in religiosity after first intercourse but these had diminished by follow-up assessment. Theory and research on life events and well-being (Brickman, Coates, & Janoff-Bulman, 1978) suggests individuals adapt to major life events after a few months, and changes in beliefs after a transitional event could be similarly temporary. More recent research has suggested that individuals do not adapt to all kinds of life events (Lucas, 2007). However, marriage was associated with a temporary increase in life satisfaction, and a subsequent return to baseline levels within two years (Lucas, 2007), suggesting that relationship-related events may follow a pattern of changes in well-being followed by a return to a pre-event state. In addition to using a longer period between measurement occasions, prior studies of sexual behavior and religiosity used little information about the specific timing of first intercourse, although individuals who had first intercourse in the past month may be in a different stage of evaluating their sexual behavior than those who had first intercourse 11 months ago.

Second, most prior studies have used brief, composite measures of religiosity. However, religiosity is a multifaceted construct (King & Boyatzis, 2004). Some research has found declines in behavioral aspects of religion in emerging adulthood, but stability or

strengthening of personal religious beliefs (Barry, Nelson, Davarya, & Urry, 2010; Stoppa & Lefkowitz, 2010). There may be similar differences in changes in religiosity after engaging in sexual behavior. For example, an individual may feel ashamed after having sex and be less likely to attend church services, but still feel religion is important. These distinctions could be lost in studies combining different facets of religiosity into a single measure.

Finally, prior studies examined individuals in early and middle adolescence, when they are living at home with their parents. Adolescents may not have complete control over their religiosity, particularly behavioral aspects like religious service attendance (Barkan, 2006; Rostosky et al., 2004). However, individuals who move out of their parents' home (e.g., transition to college) may be more likely to experience changes in religiosity (Arnett & Jensen, 2002; Lefkowitz, 2005), and their attendance at religious services may better reflect their own attitudes compared to adolescents, who may be under more direct control of their parents. Studying religiosity and first intercourse in college students may give a clearer picture of individuals' changes in both their religious attendance and their personal beliefs.

In this paper we examine whether college students' religiosity changes immediately before and after first intercourse using four waves of longitudinal data. We focus on two aspects of religiosity: one public, behavioral aspect (attendance at religious services) and one private, attitudinal aspect (importance of religion in daily life). Based on cognitive dissonance theory (Festinger, 1962) and prior research that has not shown long-term effects of sexual behavior and religiosity (Hardy & Raffaelli, 2003; Meier, 2003), we predict individuals will experience short-term, but not long-term, changes in religiosity after first intercourse. However, there may be differences by aspect of religiosity studied. Individuals may feel more dissonance about engaging in sexual behavior related to religious service attendance because it occurs in a public environment in which individuals may feel judgment if they do not conform to their religion's teachings. Thus, we predict changes in religious service attendance after first intercourse may be stronger or longer lasting than changes in the importance of religion in daily life, a more private facet of religiosity.

Method

Participants

Participants are college students ($N = 434$) from a large, public, Northeastern university in the United States recruited as part of a larger study of sexual behaviors and experiences during college (see Lam & Lefkowitz, 2013; Lefkowitz & Espinosa-Hernandez, 2007). From a list of all first year students at the University, participants were chosen using random sampling stratified by race/ethnicity and gender (i.e., African American and Latino American students were oversampled to achieve a diverse sample). The response rate was 52%. To examine changes after first sexual intercourse, we include the participants ($N = 100$, 45% female, 49% European American, 26% Latino American, 25% African American, 97% heterosexual, 3% bisexual, Time 1 $M_{age} = 18.4$, $SD = 0.3$) who reported transitioning to first intercourse during the study. The participants included in this sample were not significantly different from those in the larger study with respect to gender, race/ethnicity and parents' education. Self-reported religion was 38% Catholic, 36% Protestant, 16% Agnostic and 10% other.

Procedures

Participants completed a paper and pencil questionnaire in groups of up to 25 in university classrooms at four measurement occasions (Time 1: fall first year, Time 2: spring first year, Time 3: fall second year, Time 4: fall fourth year), and received \$25 (Time 1), \$30 (Time 2), or \$35 (Times 3 and 4) per occasion.

Measures

Attendance at religious services—At each measurement occasion participants replied to the question, “How many times have you attended religious services during the past 12 months (52 weeks)?” Participants filled in the blank with any number they chose. On average, participants reported attending 21.0 services per year at Time 1 ($SD = 20.3$).

Importance of religion—Importance of religion was assessed using an established measure (see Rohrbaugh & Jessor, 1975), which has high reliability in college student samples (e.g., Buchko, 2004; Vasilenko, Duntzee, Zhang, & Lefkowitz, 2013). Participants completed a 7-item measure which examines importance of personal religious beliefs (i.e., prayer, help with personal problems, influence on daily life, certainty in existence of God, belief in life after death, feelings of devotion, religion giving comfort and security). Four items had five response options (sample item, “During the past 12 months (52 weeks), how often have you experienced a feeling of religious reverence or devotion?” with response options ranging from: “1 = never to 5 = daily”) and three items had four response options (sample item, “When you have a serious problem, how often do you take religious advice or teaching into account?” with response options ranging from 1 = *never* to 4 = *almost always*). Responses were summed to create a composite score, with higher scores indicating greater importance of religion (Time 1 $M = 15.5$, $SD = 6.4$). Reliability exceeded .90 at all measurement occasions ($\alpha = .91-.92$).

Timing of first intercourse—At each measurement occasion, participants were asked, “Have you ever engaged in penetrative sex (sex in which the penis penetrates the vagina or anus)?” When they first reported penetrative sex, participants reported the month and year in which it occurred. We used this information to calculate several timing variables. The first was a time index measuring *time to/from first intercourse* (TTFI), which “person-centered” time around each individual’s month of first intercourse. The month in which they engaged in first intercourse was set at 0; if an individual completed a survey four months before first intercourse, that occasion was coded as -4 . To test whether individuals’ religiosity at points after first intercourse differed from what would be predicted by the developmental trajectory, we created one *before first intercourse* (BFI) and three *after first intercourse* (AFI) variables. The BFI variable (0–6 BFI) indicated that a given measurement occasion was between six and zero months prior to the month of first intercourse. AFI variables indicated whether a measurement occasion was within six months after first intercourse (0–6 AFI), between 6 and 12 months after first intercourse (6–12 AFI), or more than 12 months after (12+ AFI); 1 indicated a measurement occasion was within the time period and 0 indicated a measurement occasion was not.

Demographics—We controlled for self-reported gender, race/ethnicity, and age, as these are associated with sexual behavior and religiosity (for review see Rostosky et al., 2004). We used three binary variables for male (male = 1, female = 0), African American (African American = 1, all others = 0) and Latino American (Latino American = 1, all others = 0) with female European American students as the reference group. Age was assessed with a mean-centered indicator of age in months.

Results

We used two multiphase growth curve models (Preacher, Wichman, MacCallum, & Briggs, 2008; Ram & Grimm, 2007; Singer & Willett, 2003) centered around the month of first intercourse, similar to the strategy used in our prior work (Vasilenko, Ram, & Lefkowitz, 2011). Because religiosity changes over the course of college (Stoppa & Lefkowitz, 2010) it was necessary to not only compare before and after intercourse scores on religiosity, but to examine how individuals' religiosity after first sex differed from what would be predicted by a normative developmental trajectory. Thus, this analysis estimates a pre-sex trajectory of religiosity (either attendance at services or importance in daily life), then examines whether levels of religiosity after first intercourse differed from what would be predicted by the overall developmental trajectory of religiosity prior to first intercourse. Within-person (Level 1) changes were modeled as:

$$\text{Religiosity}_{it} = \beta_{0i} + \beta_{1i} (\text{TTFI}) + \beta_{2i} (\text{0–6 months BFI}) + \beta_{3i} (\text{0–6 months AFI}) + \beta_{4i} (\text{6–12 AFI}) + \beta_{5i} (\text{12+ months AFI}) + r_{it}$$

β_{0i} represents an individual-specific intercept for the reference group (European American female students), and β_{1i} represents a developmental trajectory of religiosity centered around first intercourse. To test whether there were discrete shifts from this trajectory at particular periods before and after first intercourse, we modeled coefficients β_{2i} to β_{5i} . Between-person (Level 2) differences were modeled as:

$$\beta_{0i} = \gamma_{00} + \gamma_{01} (\text{Male}) + \gamma_{02} (\text{African American}) + \gamma_{03} (\text{Latino American}) + \gamma_{04} (\text{Age}) + U_{0i}$$

$$\beta_{1i} = \gamma_{10} + U_{1i}$$

$$\beta_{2i} = \gamma_{20}$$

$$\beta_{3i} = \gamma_{30}$$

$$\beta_{4i} = \gamma_{40}$$

$$\beta_{5i} = \gamma_{50}$$

These equations include an intercept (γ_{00}), the effect of being male (γ_{01}), African American (γ_{02}), and Latino American (γ_{03}), and age (γ_{04}) as covariates within each individual's intercept.

Prior to first intercourse, there were no significant declines in religiosity over time, although the coefficient for attendance at religious services was approaching significance ($\beta = -.3$, $p = .07$). No significant changes in either measure of religiosity were observed 0–6 months BFI (see Table 1; Figure 1). Attendance at religious services was significantly lower than

predicted by the developmental trajectory at both 0–6 months ($\beta = -5.4$, 95% $CI = -9.7, -1.0$, equivalent to a .25 SD shift) and 6–12 months AFI ($\beta = -7.3$, 95% $CI = -13.6, -1.14$, equivalent to a .33 SD shift); however, attendance did not differ from the trajectory at 12+ months AFI ($\beta = -.5$, 95% $CI = -8.4, 7.4$). Importance of religion significantly differed from the predicted developmental trajectory at 6–12 months AFI ($\beta = -1.7$, 95% $CI = -3.1, -.3$, equivalent to a .25 SD shift), but not 12+ months AFI ($\beta = -1.4$, 95% $CI = -3.1, 0.6$) AFI. These findings supported our prediction of a temporary decline in religiosity after first intercourse.

Discussion

In this paper we examined whether college students' religiosity changes before and after first intercourse. We found that prior to first intercourse, students' trajectories of religiosity were similar to those found in earlier research on emerging adults with this full sample and other samples (Stoppa & Lefkowitz, 2010; Uecker et al., 2007), with a marginally significant decline in attendance at religious services and stability in importance of religion. Although some have argued that by the end of high school, sexual behavior may be considered normative enough that it is not affected by religiosity (Leonard & Scott-Jones, 2010), we found that in the 12 months after first intercourse, individuals, on average, experienced a greater decline in religiosity than would be predicted by these overall trajectories. Consistent with cognitive dissonance theory (Festinger, 1962), these findings suggest individuals see themselves as less religious after becoming sexually active, possibly as a way to relieve cognitive dissonance that results from engaging in prohibited behaviors. Religiosity returned to the level predicted by developmental trends after 12 months, however, suggesting such changes are temporary. Over time, students may incorporate the state of being sexually active into their identity and feel less dissonance about their beliefs and behavior, similar to the way individuals' mental health returns to baseline levels after a major life event (Brickman et al., 1978). Religiosity may return to baseline due to its stability as a component of identity, or due to the strength of family influences on religious beliefs, even after leaving home to attend college (McGoldrick & Shibusawa, 2012). Individuals thus may temporarily change their feelings about religion, but feel compelled to return to their prior, family-influenced state. The temporary nature of these changes may explain why some prior studies (Hardy & Raffaelli, 2003; Meier, 2003) did not find a decline in religiosity after first intercourse, as our study had shorter intervals and more precise information about timing of sex.

Prior research and theory have focused on how religiosity serves as a social control against risky behavior (DeLamater, 1981; Wilcox et al., 2001). Our findings demonstrate the transition to sexual behavior may also precede changes in religious development, suggesting that there are bi-directional associations between the two constructs. Current findings suggest the importance of contextual factors during college, including those related to relationships and sexuality, for emerging adult religious development. The lack of a decline in religiosity immediately prior to intercourse does not contradict the protective role of religion in sexual behavior; research consistently demonstrates that adolescents and college students who are more religious are less likely to have engaged in sexual intercourse or do so at a later time (Wilcox et al., 2001; Zaleski & Schiaffino, 2000). Instead, our findings

suggest the temporal ordering of *changes* in religiosity around first intercourse is that first intercourse precedes the changes in religiosity, not vice versa. These findings also suggest sexual behavior may play a role in emerging adults' lives beyond the health outcomes generally studied. Much past research on adolescent and emerging adult sexuality research has focused on STI and pregnancy prevention with some recent research on mental health outcomes (e.g., Meier, 2007; Vasilenko et al., 2011). However, this study suggests sexual activity is associated with changes in personal beliefs. Future research could explore how the transition to first intercourse is associated with both positive and negative changes in other areas, such as spirituality, liberal sexual attitudes or commitment to a romantic relationship.

This study documents changes in religiosity after first intercourse, and future research should examine the underlying process. Although cognitive dissonance is one explanation, another possible pathway is that religion is used as a buffer against social isolation (Aydin, Fischer, & Frey, 2010; Epley, Akalis, Waytz, & Cacioppo, 2008), and thus when in a romantic relationship, individuals' needs previously met by religion are now met by their partner. In addition, identity exploration during emerging adulthood (Arnett, 2000) may be associated with changes in both religiosity and sexual behavior.

This study has several limitations. First, we had relatively few measurement occasions, and more precise temporal information could help understand the processes taking place. Our sample was restricted to students who completed measurement occasions both before and after intercourse (only 100 out of 434 participants), and thus our sample was relatively small, limiting the ability to detect small effects. Thus, future research with a larger sample would help to determine more precisely how long changes in religiosity after first intercourse last. Second, our sample only included students from one university in the United States, so it is not known how these associations would differ in emerging adults from different regions or countries. Third, we did not have a measure of spirituality, which may be differentially associated with sexual behavior. Finally, certain moderators such as age, race/ethnicity, denominational differences in religious teachings, or whether sex was consensual may lessen or heighten the association between transition to first intercourse and religiosity. Our sample consisted of college students who transitioned to first intercourse during college, and it is unknown whether these findings would hold for individuals who engaged in first intercourse at an earlier or later age, or who did not attend college. Adolescents, for example, may experience smaller changes in religiosity, because their religious behavior is largely under the control of their parents. Individuals who engage in first intercourse as adults may engage in sex with a fiancé or spouse, and thus may feel less dissonance between their sexual behavior and their religion. Despite these limitations, this study suggests first intercourse is associated with a temporary decline in religiosity. This information contributes to our understanding of religious development in emerging adulthood, and also expands our knowledge of emerging adult sexual behavior by broadening the focus from health outcomes to include personal beliefs.

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Figure 1.

Multiphase growth curve models showing changes in religiosity before and after first intercourse. Dotted lines indicate month of first intercourse. Asterisks indicate periods that differ significantly from the predicted developmental trajectory.

Table 1

Multiphase Growth Curve Models Testing Changes in Religiosity Before and after First Sexual Intercourse, Centered around Month First Sexual Intercourse Reported

	Attendance at Services		Importance in Daily Life	
	β	<i>SE</i>	β	<i>SE</i>
Fixed Effects				
Intercept, γ_{00}	16.0***	3.0	15.3***	1.3
Male, γ_{01}	-2.0	2.8	-2.6*	1.3
African American, γ_{02}	-3.2	3.4	1.8	1.6
Latino American, γ_{03}	-2.4	3.3	-1.4	1.5
Age, γ_{04}	0.2	0.1	0.1	0.1
TTFI, γ_{10}	-0.3	0.1	-0.1	0.1
0-6 Months BFI, γ_{20}	-0.7	1.7	-0.6	0.3
0-6 Months AFI, γ_{30}	-5.4*	2.2	-0.7	0.5
6-12 Months AFI, γ_{40}	-7.3*	3.1	-1.7*	0.7
12+ Months AFI γ_{50}	-0.5	4.0	-1.4	1.0
Random Effects				
Variance Intercept, σ^2_{u0}	161.5***	27.2	37.3***	5.6
Covariance of Intercept and TTFI, σ_{u0u1}	-1.0***	0.6	-0.1	0.1
Variance of TTFI, σ^2_{u1}	0.1*	0.0	0.0***	0.0
Residual Variance, σ^2_r	79.6***	8.3	3.8***	0.4

Note. Time to/from First Intercourse (TTFI) refers to the number of months to/from an individual's first report of intercourse. Before first intercourse (BFI) is the number of months before first intercourse. After first intercourse (AFI) indicates the number of months after first intercourse. *SE* = standard error.

*
 $p < .05$,

**
 $p < .01$,

 $p < .001$.