

Desistance and Protection from Binge Drinking between Adolescence and Emerging Adulthood: A Study of Turning Points and Insulators

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This study examines Sampson and Laub’s concept of turning point as process as well as event in the explanation of changes and stability in the behavior of binge drinking between adolescence and emerging adulthood. It is hypothesized that marriage and involvement in religious and volunteer activities during the transition to adulthood decrease binge drinking among those who engaged in the behavior during adolescence. For those who did not, marriage and prosocial involvement are expected to function as an insulator protecting them from initiating such use during emerging adulthood. Results from estimating OLS, logistic, and zero-inflated negative binomial regression models, using five waves of national survey data, provide support for the hypothesis about marriage and religious involvement, but not participation in volunteer work.

The Obama Administration’s 2011 National Drug Control Strategy (NDCS) identifies three “populations with unique challenges and needs in addressing their substance abuse issues” (White House Office of National Drug Control Policy 2011:4). One of them is “college and university students,” and the NDCS’ data supplement shows that 40 to 45 percent of full-time college students reported “binge drinking”—having five or more drinks on the same occasion on at least one of the past 30 days—between 2002 and 2009. While drinking among college students is often viewed as a rite of passage, previous studies confirm negative, long-term as well as short-term, consequences of binge drinking in college (Jennison 2004; Wechsler et al. 2002).

The prevailing high rate of binge drinking, however, is not unique to college students; their peers, whether enrolled in college part-time or not in school, report rates similar to that of college students. For example, persons aged 18 to 22, not in college full-time, reported 30-day prevalence rates of 38 to 39 percent between 2002 and 2009. Thus, research on binge drinking needs to focus on young adults, whether college students or not, especially those aged 18 to 29 who tend to show higher rates than do other age groups (Substance Abuse and Mental Health Services Administration 2010). Indeed, in recent years researchers have increasingly studied young adults

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as well as adolescents, though mostly college students, (e.g., Bingham, Shope, and Tang 2005; Chawla et al. 2007; Galen and Rogers 2004; Lum et al. 2009; Riala et al. 2004; Schulenberg and Maggs 2002; White et al. 2008; White, Johnon, and Buyske 2000; Windle, Mun, and Windle 2005). But they tend to study risk factors of binge drinking more often than protective factors (Weitzman and Chen 2005), and, further, the concept of turning points for reduced or terminated binge drinking remains understudied.

Taking risk factors into account, this article focuses on turning points as well as protective factors or insulators, drawing on Sampson and Laub's (2005) life-course theory of desistance from crime and deviance (see also Laub and Sampson 2001). Like desistance, a turning point is conceptualized as a process as well as a discrete event (Laub and Sampson 2008). For example, marriage as a turning point is a life event involving change in an individual's social status and relations with others at a single point in time. But it is also a part of subsequent causal processes (e.g., marital and family attachment) that redirect the individual's life path, leading him or her to decrease involvement in crime and deviance either abruptly or gradually over time. While Sampson and Laub have examined work and military as well as marriage to study the role of turning points in the process of desistance, other potentially relevant social institutions and contextual environments, like religion and volunteer work, have not often been studied.

To address this gap in criminological research and the understudied topic of binge drinking (i.e., turning points and insulators), the present study examines whether participation in religious and volunteer activities as well as getting married have turning-point effects explaining desistance from or even termination of binge drinking. The theory has been tested mostly for crime; in this study, binge drinking provides a unique opportunity to examine Sampson and Laub's life-course theory of desistance because it is non-criminal deviance and is, in fact, "normal" or culturally accepted behavior among young adults (Laub and Sampson 2008).

Specifically, desistance is examined here as a process of decrease in frequency of binge drinking between mid-to-late adolescence and "emerging adulthood" (Arnett 2000) with termination being the end point of desistance as a status change from "binge drinker" (i.e., involvement in excessive drinking during teen years to non-involvement in mid-to-late twenties). Thus, by definition, the concepts of turning point and desistance apply only to those who engaged in binge drinking during adolescence but decreased or terminated the behavior by the time they reached emerging adulthood.

On the other hand, the turning point variables are likely to function as insulators for those who did not engage in binge drinking in adolescence by protecting them from drinking heavily during emerging adulthood. In fact, prior research on resilience found some evidence that religious involvement protects youth, including those living in poor or disadvantaged communities, from using drugs (Jang and Johnson 2001; Johnson et al. 2000). However, the protective effects of participation in volunteer work and getting married have not often been studied. Consequently, I examine whether the life event of marriage and prosocial involvement in religion and volunteering have protective as well as desistance effects on binge drinking between adolescence and emerging adulthood.

First, I review the previous literatures on desistance and resilience as well as prior research on binge drinking. Then I hypothesize that an individual's prosocial involvement in religion and volunteer activities as well as getting married during transition to adulthood are likely to: decrease and/or terminate binge drinking between adolescence and emerging adulthood among those who

previously engaged in the behavior and protect those who did not engage in heavy drinking from doing so in emerging adulthood. To test these hypotheses, I analyze five waves of panel data from a national survey initially conducted when survey participants were in middle school (ages 13–16) and were then followed up four times with the last survey being administered eight years after graduation from high school (ages 25–28).

DESISTANCE AND TURNING POINTS

While conceptual and measurement issues of the desistance concept have not been fully resolved, an emerging consensus among criminologists has been the conceptualization of desistance as a process rather than an event. For example, Laub and Sampson (2001:11) define desistance as “the causal process that supports the termination of offending” with termination being “the time at which criminal activity stops.” That is, termination is a discrete outcome of the desistance process. Similarly, critiquing a static view of desistance, Bushway et al. (2001:494) define the concept as a developmental process: “the process by which criminality, defined as the propensity to offend, changes with age.” Specifically, desistance is a process of declining criminality—time-varying, systematic, causal component of crime—that consists of social, biological, and psychological factors. In sum, desistance refers to a causal process, which results in a trajectory of decreasing crime and eventually leads to the state of non-offending.

To operationalize desistance, Laub and Sampson (2001, 2003) focus on the process of turning points—lasting shifts that redirect a process, such as a life trajectory of crime. While their early work “tended to conceptualize turning points in terms of singular, sometimes rare events” (Sampson and Laub 2005:33), in a revised approach they not only emphasize life events as potentially repetitive (e.g., in and out of a marital relationship), but also conceptualize turning points as part of the desistance process (Laub and Sampson 2001, 2008). Thus, while the term “point” might give an impression that turning points involve only discrete life events, Laub and Sampson’s (2003) reconceptualization emphasizes processes as well as events that change behavioral trajectories, including termination of offending.

For example, the turning-point effects of marriage may have more to do with over-time change in social control (i.e., an increase in adult bonds as well as supervision and monitoring of behavior), which decreases offending, rather than a dramatic lasting change that takes place at a single point in time. Besides, marriage also has a potential to “knife off” an offender’s past from the present and lead to an increase in opportunities for new relationships of social support and growth, structured routines relative to unstructured time with peers, and situations that provide an opportunity for identity transformation (Sampson and Laub 2005).

In Sampson and Laub’s (1993) age-graded theory of informal social control and its modified version (Laub and Sampson 2003), the turning point process is a key explanation of the declining pattern of antisocial behaviors over the life course. Their theory incorporates the population heterogeneity argument, and recognizes the ability of early childhood factors in explaining later antisocial behaviors. However, Laub and Sampson (2003:34) reject the ontogenetic reasoning of maturation/aging and “developmental” accounts of the desistance process because both leave little room for “variability and exogenous influences on the course of development over time that cannot be predicted by focusing solely on enduring individual traits (population homogeneity) or even past experiences (state dependence).”

While being critical of a “structuralist” approach in sociological criminology, Laub and Sampson’s (2003) life-course theory focuses on structural turning points, although they could be non-structural (e.g., attributable to random events, like an accident or natural disaster). Their turning points are “structural” in that they involve institutions of social control, four of which are the focus of their theory: marriage and the family, work, the military, and the justice system. Prior research provides empirical evidence in support of their life-course theory of turning points (Laub and Sampson 2001; Sampson and Laub 1993).

For instance, a “good” marriage (i.e., a strong attachment to a prosocial spouse) has been found to be a predictor of reduced crime, whereas cohabitation tends to be a negative turning-point process associated with increasing criminal behavior. While the extent to which the turning-point effect should be attributed to social control is debated (Giordano, Schroeder, and Cernkovich 2007; Hardwick and Brannigan 2008; Warr 1998), previous studies tend to confirm the turning-point effects of marriage. Similarly, strong ties to work have also been found to decrease offending over time, and there is evidence of military service as a turning point (Sampson and Laub 1993, 1996; Laub and Sampson 2003; Uggen 2000). In addition, although justice system involvement is likely to be a negative turning point, according to Sampson and Laub’s (1997) concept of cumulative disadvantage, previous studies provide some evidence that it could, in fact, become a positive turning point (Benda 2005; Bhati and Piquero 2008).

While Laub and Sampson’s (2003) four institutions provide important structural context for turning points, two additional possibilities have not been studied as often: religion and volunteer work. The prosocial influence of involvement in religious and volunteer activities is likely to be greater during the transition into adulthood than in adolescence. This is partly because involvement in such activities during emerging adulthood is a stronger indicator of the participant’s prosocial tendency than in adolescence, given that young adults can choose whether they would participate in those activities or not, while adolescents who are often made or even forced to participate in religious or volunteer activities. Thus, involvement in prosocial activities is more likely to have turning-point effects on crime and deviance during a transition to adulthood than in adolescence. A review of the literature revealed only four studies on religious involvement and desistance from drug use or crime, while no published research was found on involvement in volunteer activities as a turning point.

First, analyzing three waves (Waves 5 to 7) of data from the National Youth Survey, Chu (2007) found that frequency of church attendance was associated with desistance from marijuana and other drug use. Although her analysis included few controls for other theoretically important predictors of marijuana use and desistance, such as social bonding, deviant peers, and strain, Chu’s study provides evidence of the turning-point effect of religious involvement on drug use. Second, Giordano and her associates (2008) examined the effects of church attendance as well as “spirituality” (i.e., perceived closeness to God) on desistance from crime using interview data from a sample of socioeconomically disadvantaged offenders. Their analysis of quantitative data showed no significant effect of either measure of religiosity on the likelihood of sustained desistance, but their qualitative data indicated the offender’s religious experiences were a potential “hook” for a life-course change away (i.e., desistance) from crime.

Third, Schroeder and Frana (2009), using qualitative interview data, investigated ways in which men in a halfway house used religion as an emotional coping mechanism in their attempts to desist from substance abuse and other deviance. They found that the men used religion as a form of emotional comfort, a distraction from stress, and a marker of personal change. Finally,

mostly recently, Ulmer and his colleagues (2010) analyzed the first three waves of the National Longitudinal Study of Adolescent Health (Add Health) to examine the effect of religiosity on the initiation of, persistence in, and desistance from marijuana use between adolescence and emerging adulthood. Results from estimating a series of multinomial logistic regression models showed that adolescent religiosity, measured partly by religious service attendance, did not predict desistance from marijuana use, while religious involvement consistently protected adolescents from initiating marijuana use in the first place.

PROSOCIAL INVOLVEMENT AS INSULATOR

The protective effect of religious involvement against crime and deviance, especially ascetic deviance (e.g., alcohol and drug use) is well established in criminology (Baier and Wright 2001; Johnson and Jang 2010). For example, following the tradition of resilience research (e.g., Reckless, Dinitz, and Murray 1956), Johnson and his associates (2000) examined whether religiosity, including church attendance, played a role as an insulator for at-risk youths. They found religious involvement significantly protected inner-city African American adolescents from crime and drug use. Similarly, based on a multilevel analysis of the data from waves 3 to 5 of the National Youth Survey, Jang and Johnson (2001) reported the significant protective effect of individual religiosity, measured by religious service attendance and religious salience. Specifically, they found religious involvement reduced the criminogenic influence of neighborhood disorder on illicit drug use among youths living in neighborhoods characterized by physical and social disorder, while controlling for variables of social bonding, drug-using peers, and attitudes favorable to drug use as well as sociodemographic characteristics.

On the other hand, participation in volunteer activities as insulator has neither been studied as often as religious involvement nor has it often been examined as a turning point. In fact, criminologists have rarely examined an individual's involvement in volunteer work as a predictor of crime and deviance, although volunteer work participation is likely to decrease the probability of committing crime and deviance. According to Wilson and Musick (1997), volunteering is a form of labor (i.e., work) rather than a leisure time activity, and thus is likely to have prosocial effects on deviant behaviors, similar to the influence of employment, because deviance is unlikely to be approved by other people with whom they interact through volunteering and incompatible with the prosocial nature of volunteer work. Consequently, increased involvement in volunteer work during the transition to adulthood is expected to have not only protective but also turning-point effects on deviant behavior, such as binge drinking.

BINGE DRINKING IN ADOLESCENCE AND EMERGING ADULTHOOD

Prior research has established a developmental pattern of binge drinking: it begins to increase in early adolescence, peaks in the early-to-mid 20s, and decreases with age thereafter. According to a recent Monitoring the Future survey (Johnston et al. 2010), for example, in 2009 the two-week prevalence of binge drinking increased from 8 percent (8th graders) to 18 percent (10th graders), 25 percent (12th graders), and 37 percent (college students and non-college young adults) before reaching a peak (42 percent) between ages 23 and 24. And it gradually declined to 32 percent

by ages 29–30 and 22 percent until age 35, remaining stable at around 20 percent through age 50. The largest increase in the data (46.4 percent, from 28 percent to 41 percent) was observed between ages 19–20 and 21–22, when young adults enter the legal drinking age of 21. According to the 2009 National Survey on Drug Use and Health data (Substance Abuse and Mental Health Services Administration 2010), the increase was more attributable to college students aged 18 to 22 than their non-college age-mates given that the former reported higher prevalence rate than the latter (30-day rate of 43.5 percent vs. 37.8 percent).

Given the higher prevalence among college students than their non-college counterparts (White House Office of National Drug Control Policy 2011), prior research on binge drinking among young adults tends to focus on college students, reporting negative consequences of their binge drinking. For example, Wechsler and his associates (2000) found binge drinkers in college to be five to 21 times as likely as non-binge drinkers to experience five or more of 12 different alcohol-related problems, which range in seriousness from missing a class and getting behind in schoolwork to unplanned sex, vandalism, physical injury, and drunk driving (see also Nelson et al. 2009; Wechsler et al. 2002).

Further, binge drinking was found to have long-term as well as short-term effects. For instance, Jennison (2004) reports that binge drinking and its negative consequences during the college years explained alcohol dependence and abuse 10 years after college, along with evidence of academic attrition, dropping out of college, and having less favorable labor market outcomes. Similarly, Sloan, Grossman, and Platt (2011) found binge-drinking young adults aged 19–27, whether in college or not, to be more likely than their non-binge counterparts to abuse alcohol and be alcohol-dependent 10 years later and to binge 25 years later. Also, other studies report significant short-term effects of binge drinking on job instability, labor turnover, and employee absenteeism (Bacharach, Bamberger, and Biron 2010; Kandel and Yamaguchi 1987). On the other hand, research on crime and deviance tends to causally link alcohol use to violence and aggression as well as a pattern of progression in drug use, ranging from “light” to “heavy” use (Fagan 1990; Yamaguchi and Kandel 1984).

Why then does binge drinking increase during the transition to adulthood? Arnett (2005) offers an explanation based on the developmental context of substance use in emerging adulthood, “the period from the late teens through the twenties, with a focus on ages 18–25” (Arnett 2000:469). Arnett (2005:239) posits that the high, increasing rates of substance use including binge drinking between age 18 and mid- to late twenties, can be explained by five main features of emerging adulthood: “it is the age of identity exploration, especially in terms of love and work; it is the age of instability; it is the most self-focused age of life; it is the age of feeling in-between, neither adolescent nor adult; and it is the age of possibilities, when hopes flourish, when people have an unparalleled opportunity to transform their lives.” These features involve decreasing social control and increasing exposure to pro-drug social learning, strain, and cultural labeling (e.g., binge drinking perceived to be informally tolerated and even normative for the age group) during the developmental period (Agnew 2006; Akers 1998; Hirschi 1969).

Thus, researchers have increasingly focused on the transitional period between adolescence and adulthood (Bingham, Shope, and Tang 2005; Schulenberg, et al. 1996; White et al. 2008). Research generally confirms the stability of binge drinking over time, with underage binge drinking in adolescence as a key risk factor of binge drinking during emerging adulthood. For instance, based on national survey data from college students, Wechsler et al. (1995) found binge drinking in the last year of high school remained a significant predictor of binge drinking in college after

controlling for variables of alternative explanations as well as demographic characteristics. Other studies demonstrate a similar pattern of stability that shows an increase in binge drinking between mid-to-late adolescence and emerging adulthood (Bingham et al. 2005; Schulenberg et al. 1996).

Previous studies, however, have examined not only stability but also changes in binge drinking to see whether the changes could be explained by (un)successful transitions embedded in developmental trajectories, such as marriage and prosocial involvement during emerging adulthood. For example, controlling for juvenile arrests and self-reported delinquency, Sampson and Laub (1990) found those who had been persistently delinquent during adolescence (before age 17) but reported social bonds to adult institutions of informal social control (e.g., strong marital attachment between ages 17 and 25) were less likely to engage in excessive drinking during emerging adulthood than their counterparts who had no such adult bonds. The same pattern was observed when they examined a later period, ages 25–32, and repeated the analysis for those who were “nondelinquent” during adolescence (see also Laub and Sampson 2003).

Similarly, Ellison, Barrett, and Moulton (2008) conclude religion is a key factor in explaining lower levels of binge drinking among married persons for both men and women. Also, Oesterle and his associates (2008) found positive functioning in emerging adulthood (e.g., involvement in religion and volunteer work) decreased the chance of young adult alcohol-use disorder, controlling for adolescent binge drinking and demographic factors as well as adolescent positive functioning (e.g., attachment to parents). On the other hand, White et al. (2008) examined the effects of participating in religious activities and volunteer work on alcohol use, including binge drinking, among emerging adults. Controlling for the previous measure of alcohol as well as pro-alcohol peer influence, they found a significant effect of prosocial involvement (in the fall of the year of high school graduation) on alcohol use (in the spring of the following year) among college students living away from home.

In sum, previous studies tend to show (1) successful transition to adulthood via the assumption of adult roles (e.g., having “good” marriage) and (2) participation in religion or volunteer work during the transition are negatively associated with binge drinking during emerging adulthood. However, research on the turning-point effects of an individual’s ties to the institutions of informal social control, especially religion and volunteer work on binge drinking tends to remain scant. Also, the protective effects of marriage and volunteering as an insulator have not been studied as often as religious involvement.

HYPOTHESES

To fill this gap in research on binge drinking, the present study hypothesizes about the turning-point effects of marriage and prosocial involvement on binge drinking between adolescence and emerging adulthood for those who engaged in the drinking behavior when they were adolescents. Binge drinking has not been examined as often as crime, in testing Sampson and Laub’s turning point concept perhaps because it is not a crime to drink excessively. However, because it is generally a disapproved behavior in society but, at the same time, “normal” or subculturally accepted or even encouraged behavior among emerging adults, binge drinking makes an interesting case to test whether the concept applies to non-criminal as well as criminal deviance. Also, the turning points are expected to function as insulators for those who did not engage in binge drinking during adolescence, protecting them from initiating it later.

First, it is hypothesized that the *event* of marriage (and its likely, resultant social bonds to spouse and children) and an *increase* in involvement in religious and volunteer activities are likely to result in a *decrease* or *termination* of binge drinking during a transition to adulthood among those who engaged in the drinking behavior during adolescence. That is, the hypothesized turning-point effect of marriage is to be tested in order to see whether a change in marital status (getting married) at a single point in time leads to desistance from binge drinking. For this test, desistance is operationalized in terms of change not only in levels (decrease in the frequency of binge drinking) but also status of binge drinking (termination or non-involvement vs. continued involvement) between adolescence and emerging adulthood. On the other hand, the turning-point effects of prosocial involvement are examined in terms of change in the levels of religious and volunteer activities during emerging adulthood.

Second, I hypothesize that marriage and increased involvement in prosocial activities during emerging adulthood are likely to work as an insulator for those who did not engage in binge drinking when they were adolescents. That is, getting married and its prosocial consequences (e.g., marital attachment and parental responsibility for children) are expected to help these young adults stay free from excessive use of alcohol in emerging adulthood. Also, involvement in religious and volunteer activities is likely to enhance the chance of those who were not binge drinkers in adolescence remaining binge-free in emerging adulthood.

METHOD

Data to test the hypotheses come from the National Education Longitudinal Study of 1988 (NELS:88, henceforth, NELS), which was initiated with a national sample of eighth graders drawn using a two-stage, stratified sampling design (U.S. Department of Education 2004).

For this panel study, after the base-year survey of 1988 (Wave 1), follow-ups were conducted in 1990, 1992, 1994, and 2000 (Waves 2, 3, 4, and 5), spanning a 12-year period of ages from, on average, 14 to 26. The five waves of data were collected from a total of 12,144 participants, 89 percent of whom completed all surveys ($n = 10,827$). To adjust for the NELS' oversampling (e.g., Asians and Hispanics) as well as the effects of nonresponse across waves, weights were used in the subsequent analyses for the generalizability of our findings.

While all five waves of data were employed, Waves 2 and 3 were combined, being called "Time 2," because they tap high school years (tenth and twelfth grades) with Waves 1, 4, and 5 being referred to as "Times 1, 3, and 4." Thus, Times 1 and 2 approximately correspond to the periods of early-to-mid (ages 13–16, mean = 14.4) and mid-to-late adolescence (ages 15–19, mean = 17.3), respectively. On the other hand, Times 3 and 4 are jointly emerging adulthood (ages 19–22, mean = 20.4; and ages 25–28, mean = 26.4). All variables were constructed based on youth data with one exception: family socioeconomic status, which is from parent survey.

Measurement

The NELS began including an item about binge drinking after the base-year (i.e., Time 1) survey. Specifically, the first two follow-up surveys asked how often respondents had had five or more drinks in a row over the last two weeks prior to survey (0 = none, 1 = once, 2 = twice, 3 = 3–5 times, 4 = 6–9 times, 5 = 10 or more). So, for the measure of binge drinking in adolescence

(i.e., Time 2), mean of the first two follow-up items was calculated. On the other hand, while the third follow-up at Time 3 (a first survey conducted in emerging adulthood) had no item about binge drinking, instead of choosing among the response categories of frequency of binge drinking as they were asked to in Time 2 survey, respondents were asked at Time 4 (a second survey in emerging adulthood) to report actual count (i.e., frequency) of their binge drinking during the last two weeks before the last survey with the maximum being 10 or more times.

While this count variable was analyzed as is, it was recoded to have the same response categories as the item of binge drinking at Time 2 so it might be used as an alternative measure of the dependent variable, controlling for the Time 2 measure of binge drinking as well as for sociodemographic variables. In addition, the count variable was dichotomized for a measure of termination for those who engaged in binge drinking during adolescence and a measure of protection for those who did not (i.e., 0 = once or more binge drinking, 1 = no binge drinking).

Items of hypothesized turning points and insulators were also drawn from surveys conducted in emerging adulthood, that is, Times 3 and 4. First, to construct a measure of religious involvement, this study focused on participation in religious activities, which criminological research has found to have more construct validity than non-behavioral measures, such as religious salience (Baier and Wright 2001; Johnson and Jang 2010). A single item is available at both Times 3 (whether or not a respondent participated in religious activities, at least once a week during an average week: 0 = no, 1 = yes) and 4 (number of days a respondent participated in organized religious activities in a typical 30-day month: 0 = never, .5 = less than one day, 1–30 = 1–30 days per month). The latter was recoded to have the same categories as the former: whether a respondent participated in organized religious activities, on average, once a week in a typical 30-day month (i.e., 4 or more days per month = 1) or not (i.e., less than 4 days per month = 0). Then a difference-score measure was constructed by subtracting Time 3 score from Time 4 score. So, a positive score (i.e., 1) means an increase from no-or-less-than-once-a-week to at-least-once-a-week religious participation, whereas a negative score (i.e., -1) indicates a decrease, that is, a reversed change during emerging adulthood with zero being no change.

Second, the NELS also provide items of volunteer activities, while not the same, at Times 3 and 4. An item of Time 3 survey asked about number of hours per week respondents participated in volunteer work, and at Time 4 it was asked whether they volunteered in a youth organization and/or a civic or community organization during the last 12 months prior to survey (0 = no, 1 = yes). These two Time 4 survey items were combined into a composite measure, indicating whether a respondent volunteered in either organization (= 1) or not (= 0), whereas Time 3 item was dichotomized (0 = no volunteering, 1 = one or more hours of volunteering) to be consistent with the Time 4 item. Then Time 3 score was subtracted from Time 4 score for a difference-score variable of volunteer involvement, which measures an increase (= 1), a decrease (= -1), or no change (= 0) in volunteering during emerging adulthood.

Third, to operationalize marriage as a turning point or insulator, a measure was constructed to indicate whether a respondent entered marriage between Times 3 and 4 (0 = no, 1 = yes). While, according to Sampson and Laub (1993), only a “good” marriage—where the marital partner is conventional or non-criminal—is likely to function as a turning point, the present data do not provide information about a respondent’s spouse, whether s/he engaged in deviant behavior, such as binge drinking. Given this data constraint, subsequent analysis provides a rather conservative test of the hypothesis about marriage as a turning point.

Next, to adjust for alternative explanations, measures of two protective and three risk factors of alcohol use in adolescence were constructed by calculating an average of multiple items from the Time 2 survey. The protective factors are two variables of social bonding theory (Hirschi 1969): attachment to parents and attachment to school, which tap the youth's close communications with parents and their positive attitudes toward school and teachers, respectively. Items of both protective factors were found to have relatively high factor loadings (ranging from .47 to .77 and from .38 to .73) and inter-item reliability ($\alpha = .86$ and .78).

On the other hand, the three risk factors are drawn from social learning, strain, and labeling theories (Agnew 2006; Akers 1998; Sampson and Laub 1997). First, a social learning variable of deviant attitudes is based on 18 items asking how often the respondent felt it was okay for them to engage in a list of minor (e.g., late for school) and serious deviance (e.g., bringing weapons to school) as well as drug use (e.g., drinking alcohol during school day). The items' factor loadings range from .38 to .72 with a high Cronbach's alpha ($\alpha = .88$). Second, another social learning variable, deviant peer association, was constructed using three items about whether the respondent thought it was important to his or her close friends to: drink alcohol, use drugs, and have sex. These items have high loadings (.61, .58, and .89) and a good inter-item reliability ($\alpha = .72$). Third, a five-item index of negative life events as strain measures whether the respondent received official, school and state, sanctions during high school (e.g., suspension and arrest). All are stressful life events that are likely to generate labeling and negative and harsh societal reactions, thereby increasing the probability of binge drinking. All of the items have high factor loadings, ranging from .50 to .76, and inter-item reliability ($\alpha = .78$).

Finally, included in all subsequent analyses are sociodemographic controls that tend to be correlated with binge drinking and the independent variables, thereby being potential sources of spuriousness (Hawkins, Catalano, and Miller 1992): sex (1 = female, 0 = male), age (at Time 1), race (four dummy variables of black, Hispanic, Asian/Pacific Islander, and Native American with white as a reference category), intact family background (whether the respondent lived with both biological parents [= 1] or not [= 0] at Time 1), and family socioeconomic status (SES) as a measure of social class (which NELS constructed based on family income and parents' education and occupation at Time 2). According to prior research, for example, binge drinking is more prevalent among males than females, whereas whites, Native Americans, and Hispanics tend to show higher rates of binge drinking than blacks and Asians with whites and Asians usually reporting the highest and the lowest rate, respectively (Andersen et al. 2003; Bachman et al. 1991; Hawkins et al. 1997; Johnston et al. 2010; Substance Abuse and Mental Health Services Administration 2010; Watt 2004). In addition, lifetime prevalence rate of drinking at Time 2 (i.e., whether the respondent had ever used alcohol by 12th grade) was held constant as well given the previous finding that it affects, whether directly and indirectly, binge drinking during emerging adulthood (Hawkins et al. 1997; Oesterle et al. 2008; Riala et al. 2004; Wechsler et al. 1995; White et al. 2008).

Analytic Strategy

Stata 12 was used to analyze the NELS' "complex survey" data, applying not only sampling weights but also adjustments for its sampling design (i.e., 963 primary sampling units and 28 strata) so standard errors of coefficients might not be underestimated. To test the hypotheses,

three analytic methods were employed for different, alternative dependent variables. First, ordinary least squares (OLS) regression was conducted to analyze the ordinal measure of binge drinking at Time 4 (i.e., 0 = none, 1 = once, 2 = twice, 3 = 3-5 times, 4 = 6-9 times, 5 = 10 or more), holding its Time 2 counterpart constant. This statistical control for the previous measure enables us to interpret the coefficients of turning points and other independent variables as their effects on *change* in binge drinking between Times 2 and 4. Although this regression analysis is not relevant to hypothesis testing for those who reported no binge drinking at Time 2, the results are reported as well for the sake of contrast and completeness.

Second, logistic regression analysis was conducted for the dichotomous dependent variable of involvement (= 0) versus non-involvement in binge drinking (= 1) at Time 4. For those who engaged in binge drinking at Time 2, the dichotomous variable measures termination of binge drinking, whereas, for those who did not, it is a measure of protection from initiation of binge drinking during a transition to adulthood. Third, this study also conducted zero-inflated negative binomial (ZINB) regression analysis for the count variable of binge drinking at Time 4 (i.e., actual frequency of binge drinking, 0 to 10). ZINB regression is an appropriate method when a dependent variable is a count outcome with “excessive” zeros. In the present data, 81 percent of the respondents who did not engage in binge drinking at Time 2 reported no binge drinking at Time 4, whereas 59 percent of those who did reported so. A caveat here is that the “count” of 10 refers to 10 or more times. However, less than 1 percent of respondents in each group—specifically, .4 percent of the former and .7 percent of the latter—fell in the category, so it is unlikely to bias ZINB estimation.

In estimating zero-inflated count model, two latent groups are assumed: Always Zero and Not Always Zero (Long and Freese 2006). Individuals in the former have an outcome of 0 with a probability of 1, whereas those in the latter might have a zero count, but there is a nonzero probability that they have a positive count. As a result, unlike Poisson or negative binomial regression models, zero-inflated Poisson and ZINB models simultaneously estimate binary as well as count process, allowing zeros to be generated by the two distinct processes. Preliminary analysis was conducted, and it was indicated that the ZINB regression model fits the present data significantly better than its Poisson, negative binomial, or zero-inflated Poisson counterparts.

RESULTS

Table 1 shows descriptive statistics of variables included in the present analysis. While the initial sample consists of 10,827 respondents who participated in all surveys, listwise deletion of missing cases reduced the sample size to 7,506. To examine whether the excluded cases are different from the final sample, a series of *t*-tests were conducted for all the 26 variables with Bonferroni adjustment using the significance level of .001 ($\alpha/26 = .05/26 = .00192 . . .$). As shown in the table, they tend to be older, black or Hispanic (rather than white or Asian/Pacific Islander), and at-risk or disadvantaged in terms of family and some other backgrounds compared to the final sample. Although the number of missing cases is not trivial in size, they were found to be no different from those included in the subsequent analysis in all the key independent variables (i.e., prosocial involvement and getting married) and alternative measures of the dependent variable with one exception: the final sample reported higher levels of participation in volunteer activities at Time 3 than those excluded due to missing data.

TABLE 1
Descriptive Statistics (Weighted) of Variables Analyzed

Variables	Initial sample (n = 10,827)		Excluded cases (n = 3,321)		Total sample (n = 7,506)		Binge drinking T2 (n = 2,758)		No binge drinking T2 (n = 4,748)		
	Mean	SE ^a	Mean	SE	Mean	SE	Mean	SE	Mean	SE	
Female	.503	.007	10,827	.482	.015	.514	.008	.429 ^c	.014	.565 ^c	.010
Age T1	14.404	.011	10,688	14.517^b	.020	14.349 ^b	.012	14.408^c	.018	14.313 ^c	.014
White	.726	.012	10,727	.648 ^b	.019	.764^b	.012	.815^c	.014	.734 ^c	.015
Black	.123	.010	10,727	.167^b	.016	.102 ^b	.010	.067 ^c	.012	.122^c	.012
Hispanic	.107	.008	10,727	.147^b	.013	.088 ^b	.007	.090	.008	.084	.009
Asian or Pacific Islander	.034	.002	10,727	.024 ^b	.003	.038^b	.003	.024 ^c	.003	.047^c	.005
Native American	.010	.002	10,727	.014	.003	.008	.002	.009	.002	.007	.002
Intact family T1	.666	.009	10,709	.622 ^b	.016	.687^b	.010	.654	.018	.707	.011
Family SES T2	-.031	.019	10,827	-.188 ^b	.028	.048^b	.020	.017	.036	.067	.020
Attachment to parent T2	2.002	.008	10,178	2.012	.015	1.999	.008	1.912 ^c	.016	2.051 ^c	.008
Attachment to school T2	2.813	.007	10,461	2.797	.014	2.819	.008	2.724 ^c	.013	2.876^c	.008
Deviant attitudes T2	1.398	.008	10,692	1.401	.010	1.397	.010	1.564^c	.021	1.297 ^c	.006
Deviant peer association T2	1.511	.008	9,989	1.522	.014	1.507	.010	1.752^c	.017	1.360 ^c	.010
Negative life events T2	.756	.046	10,805	1.061^b	.079	.604 ^b	.056	1.122^c	.136	.292 ^c	.024
Lifetime prevalence of drinking T2	2.030	.020	9,763	1.957	.045	2.056	.019	2.701^c	.016	1.667 ^c	.020
Binge drinking T2	.573	.017	10,671	.640	.033	.541	.018	1.439^c	.032	.000 ^c	.000
Religious involvement T3	.402	.008	10,800	.436	.015	.385	.009	.287 ^c	.014	.444^c	.010
Religious involvement T4	.321	.008	10,617	.343	.014	.311	.008	.235 ^c	.015	.357^c	.010
ΔReligious involvement T4-T3	-.082	.009	10,590	-.099	.018	-.074	.010	-.052	.022	-.087	.010
Volunteer activities T3	.258	.007	9,353	.158 ^b	.013	.287^b	.008	.233 ^c	.013	.320^c	.010
Volunteer activities T4	.319	.007	10,633	.328	.013	.315	.008	.292	.013	.329	.009
ΔVolunteer activities T4-T3	.039	.009	9,176	.084	.019	.028	.010	.059	.012	.008	.013
Married between T3 and T4	.315	.007	10,827	.299	.012	.323	.008	.287 ^c	.012	.345^c	.010
Binge drinking T4	.495	.017	10,604	.464	.029	.510	.021	.808^c	.044	.330 ^c	.014
No binge drinking T4	.735	.007	10,604	.760	.012	.724	.009	.588 ^c	.017	.806^c	.008
Binge drinking (count) T4	.595	.024	10,604	.573	.043	.606	.028	.972^c	.060	.385 ^c	.018

Note. ^arefers to linearized standard error.

^bindicates significant difference in means between the total sample (n = 7,506) and those excluded from the sample due to listwise deletion of missing data (n = 3,321) at the Bonferroni-adjusted level of .001 (two-tailed test). Larger mean is in boldface.

^cindicates significant difference in means between those who engaged in binge drinking in adolescence (n = 2,758) and those who did not (n = 4,748) at the Bonferroni-adjusted level of .001 (two-tailed test). Larger mean is in boldface.

To cross-validate, regression models were also estimated with multiple imputation (MI) with missing data being imputed 20 times for high efficiency. Results from MI analysis for hypothesis testing were consistent with those from complete-case analysis with listwise deletion. The latter results are reported below because Stata 12 (or any other currently available statistical program, including SAS) does not allow ZINB regression with MI analysis, while it could handle OLS and logistic regression analysis.

The total sample (i.e., $n = 7,506$) is 51.4 percent female and 76.4 percent white (10.2 percent black, 8.8 percent Hispanic, 3.8 percent Asian/Pacific Islander, and .8 percent Native American), and respondents were, on average, about 14 years old at Time 1: 13 (1.0 percent), 14 (66.4 percent), 15 (29.2 percent), and 16 (3.4 percent). Also, the two-week prevalence rate of binge drinking in adolescence (not shown in the table) was found to be a bit lower among both 10th (16 percent vs. 19 percent) and 12th graders (25 percent vs. 28 percent) than what was reported by a national survey conducted in 1992 and 1994 (Johnston et al. 2010), whereas the table shows 28 percent (i.e., 1-.724) of the total sample reported they had engaged in binge drinking at Time 4, when they were, on average, about 26 years old.

Table 1 also shows descriptive statistics separately for those who engaged in binge drinking in adolescence ($n = 2,758$) and those who did not ($n = 4,748$). Another set of t-tests revealed differences between these two groups not only in sociodemographic controls but also key independent and dependent variables in the expected directions. For example, respondents who engaged in binge drinking during adolescence tend to be male, older, and white, whereas those who reported no binge drinking were likely to be female, younger, and black or Asian/Pacific Islander. The former group also reported, on average, higher levels of risk factors for drug use (i.e., deviant attitudes, deviant peer association, and negative life events) and lower levels of protective factors (i.e., attachment to parents and school) than the latter that were more likely to marry and participate in religious and, to a lesser extent, volunteer activities during a transition to adulthood. Finally, as expected, those who engaged in binge drinking while in high school reported higher levels of involvement in binge drinking (.808 vs. .330) and lower levels of non-involvement after high school than their peers who did not (.588 vs. .806).

Next, as reported above, the prevalence rate of binge drinking was found to increase between adolescence and emerging adulthood, from 16 percent to 25 percent, and 28 percent, but average frequency of binge drinking was observed to decrease between Times 2 and 4. This was the case not only with the total sample (from .541 to .510) but also those who engaged in heavy drinking in adolescence (from 1.439 to .808). Perhaps the decrease indicates that they were mostly adolescence-limited binge drinkers who experimented with heavy drinking, and thus their binge drinking was likely to decline after high school. In fact, 72 percent of them (1,987 of 2,758) reported a decrease in binge drinking between Times 2 and 4. More importantly, the opposite patterns of increasing prevalence and decreasing frequency of binge drinking necessitate analysis of both prevalence (i.e., logistic regression and the binary model of ZINB regression) and frequency measure of the dependent variable (i.e., OLS regression and the count model of ZINB regression). On the other hand, an increase in the frequency of binge drinking observed among those who reported no binge drinking in adolescence (.330) is not surprising given the developmental pattern of binge drinking during the transition to adulthood (Johnston et al. 2010; Substance Abuse and Mental Health Services Administration 2010) particularly as those who refrained from binge drinking in high school to prepare for college tend to be at higher risk of excessive drinking once they go to college (Bingham et al. 2005; Johnston et al. 2010).

Table 2 shows results from estimating OLS, logistic, and ZINB regression models for those who engaged in binge drinking during adolescence. Each regression model was estimated twice, first, using difference-score measures of prosocial involvement (Model 1) and then replacing the measures with their constituent terms (Model 2). For statistical significance ($\alpha = .05$), this study conducted a one-tailed test for the hypothesized relationships or those expected based on theory or prior research; and two-tailed tests for other relationships, neither hypothesized nor expected, or any relationship whose direction is contrary to expectation.

Estimated OLS regression Models 1 and 2 both show expected sex differences, that is, females being less likely than males to increase binge drinking during a transition to adulthood ($-.588$ and $-.591$), while controlling for potential explanations of the difference (i.e., prosocial involvement as well as protective and risk factors of alcohol use). Intact family background, however, was found to increase binge drinking during the transition, although it was expected to decrease, since it is an indicator of family control. According to a supplemental analysis, the variable's coefficient was not significant in a baseline model that includes only sociodemographic controls and binge drinking at Time 2 ($.069$, $p > .05$; not shown in table), but became significant in a positive direction when deviant attitudes, lifetime prevalence of drinking at Time 2, religious involvement at Time 3, and entering marriage between Times 3 and 4 were held constant. This might indicate that living with both biological parents during adolescence does not necessarily have social control effect or even has reverse effect on binge drinking in emerging adulthood to the extent that the parents fail to instill conventional values in their children and to keep them from initiating alcohol use before graduating from high school.

On the other hand, both models show that respondents who had deviant attitudes ($.328$ and $.324$) and initiated alcohol use during adolescence ($.124$ and $.121$) were more likely to binge-drink in emerging adulthood than those who did not. More importantly, the results provide empirical support for the desistance hypothesis about entering marriage as a turning point, whereas one of two measures of prosocial involvement was found to have the hypothesized effect. Specifically, getting married ($-.438$ and $-.416$) and religious involvement during a transition to adulthood ($-.190$; see Model 2) were found to decrease frequency of binge drinking between adolescence and emerging adulthood, but volunteer activities had no significant effect on desistance in both models.

When logistic regression analysis was conducted for the dependent variable of non-involvement in binge drinking, results for hypothesis testing generally remained consistent with OLS regression results. That is, Models 1 and 2 show entering marriage increased the odds of terminating binge drinking by 133 percent ($[e^{.848} - 1] \times 100$) and 121 percent ($[e^{.795} - 1] \times 100$), respectively, holding all other variables constant. Alternatively, for those who got married, the odds of terminating binge drinking were found to be about two times ($e^{.848} = 2.335$ and $e^{.795} = 2.214$) larger than for those who did not enter marriage. Model 2 also shows participating in religious activities, at least, once a week at Time 4 ($.574$) increased the odds of not engaging in binge drinking by a factor of 1.775 ($= e^{.574}$), holding all other variables constant.

An exception was a change in volunteer activities between Times 3 and 4, which was found to have a negative, instead of a positive, effect on non-involvement in binge drinking ($-.188$). That is, it shows that the odds of abstaining from binge drinking are $.829$ ($= e^{-.188}$) times smaller among emerging adults who increased volunteering compared to those who did not, which is counterintuitive (see below for discussion). However, all other significant logistic regression coefficients are in the expected direction. For example, those who held deviant attitudes ($-.406$ and

TABLE 2
 Estimated Regression Models of Binge Drinking during Emerging Adulthood: Binge Drinking in Adolescence ($n = 2,758$)

Predictors	OLS regression			Logistic regression			Zero-inflated negative binomial regression													
	Model 1 (Binge T4) ^a		Model 2 (Binge T4)	Model 1 (No binge T4)		Model 2 (No binge T4)	Model 1 (Binge-count T4)		Model 2 (Binge-count T4)		Binary		Count	SE	SE	SE	SE	SE	SE	
	b_1 ^b	SE ^c	b_1	SE	b_2	SE	b_2	SE	b_3	SE	b_3	SE	b_4	SE	b_4	SE	b_4	SE	b_4	SE
Female	-.588*	.058	-.591*	.057	1.245*	.115	1.261*	.114	-.414*	.157	1.610*	.308	-.414*	.161	1.842*	.355	-.414*	.161	1.842*	.355
Age T1	-.084	.064	-.083	.064	.224	.116	.222	.116	-.165	.128	.071	.352	-.183	.122	-.001	.380	-.183	.122	-.001	.380
Black	-.295	.167	-.288	.167	.807*	.363	.794*	.363	.392	.276	1.468*	.467	.472	.286	1.711*	.552	.472	.286	1.711*	.552
Hispanic	-.065	.093	-.059	.094	-.084	.215	-.097	.218	-.282	.172	-.818	.736	-.207	.177	-.555	.602	-.207	.177	-.555	.602
Asian or Pacific Islander	-.100	.129	-.097	.133	.320	.255	.316	.259	.032	.200	.677	.433	.015	.191	.697	.487	.677	.433	.015	.191
Native American	-.326	.286	-.350	.291	.856	.658	.913	.684	.442	.645	1.535	.924	.450	.861	1.767	1.296	.450	.861	1.767	1.296
Intact family T1	.128 ⁺	.065	.128 ⁺	.065	-.228	.135	-.235	.139	-.010	.109	-.463	.296	.003	.108	-.475	.335	-.463	.296	.003	.108
Family SES T2	-.052	.059	-.055	.062	-.033	.103	-.025	.108	-.076	.082	-.111	.188	-.074	.089	-.131	.219	-.074	.089	-.131	.219
Attachment to parent T2	-.031	.094	-.015	.098	.003	.161	-.035	.170	-.298	.187	-.588	.625	-.319*	.169	-.843	.681	-.588	.625	-.319*	.169
Attachment to school T2	.140	.110	.139	.111	-.336	.179	-.346	.184	.018	.221	-.494	.431	.070	.219	-.394	.530	-.494	.431	.070	.219
Deviant attitudes T2	.328*	.152	.324*	.160	-.406*	.209	-.402*	.226	.169	.115	-.655*	.347	.152	.114	-.846*	.457	.152	.114	-.846*	.457
Negative life events T2	-.058	.057	-.061	.056	.228	.119	.235	.120	.123	.108	.580	.299	.135	.104	.710 ⁺	.312	.135	.104	.710 ⁺	.312
Religious involvement T2	-.030	.017	-.031	.017	.032	.034	.036	.034	-.002	.027	.053	.059	.003	.028	.082	.064	-.002	.027	.053	.059
Lifetime prevalence of drinking T2	.124*	.060	.121*	.060	-.375*	.133	-.369*	.134	.087	.107	-.447*	.248	.125	.109	-.346	.262	.125	.109	-.346	.262
Binge drinking T2	.053	.052	.048	.052	-.074	.076	-.061	.078	.125*	.052	.071	.143	.129*	.052	.132	.155	.129*	.052	.071	.143
Religious involvement T3	—	—	-.092	.060	—	—	.097	.134	—	—	—	—	-.050	.096	.335	.314	—	—	—	—
Religious involvement T4	—	—	-.190*	.112	—	—	.574*	.194	—	—	—	—	.021	.181	1.151*	.382	—	—	—	—
ΔReligious involvement T4-T3	-.038	.070	—	—	.202	.129	—	—	.045	.108	.397	.328	—	—	—	—	.045	.108	.397	.328
Volunteer activities T3	—	—	-.082	.060	—	—	.185	.127	—	—	—	—	-.028	.138	.441	.372	—	—	—	—
Volunteer activities T4	—	—	.098	.068	—	—	-.198	.129	—	—	—	—	.057	.133	-.229	.335	—	—	—	—
ΔVolunteer activities T4-T3	.089	.052	—	—	-.188 ⁺	.095	—	—	.017	.126	-.399	.337	—	—	—	—	.017	.126	-.399	.337
Married between T3 and T4	-.438*	.059	-.416*	.063	.848*	.122	.795*	.128	-.472*	.168	.800*	.317	-.462*	.155	.822*	.315	-.462*	.155	.822*	.315

Note.^aTerm in parentheses refers to the dependent variable of each regression model (i.e., binge drinking during the last two weeks prior to survey): (1) Binge T4 = Frequency of binge drinking at T4 (0 = none, 1 = once, 2 = twice, 3 = 3–5 times, 4 = 6–9 times, 5 = 10 or more); (2) No binge T4 = No binge drinking at T4 (1 = Yes, 0 = No); (3) Binge-count T4 = Frequency of binge drinking at T4 (0 = none, 1 = once, 2 = twice, . . . 9 = 9 times, 10 = ten or more times).

^b b_1 is unstandardized coefficient.

^cSE refers to linearized standard error.

* $p < .05$ (one-tailed test), ⁺ $p < .05$ (two-tailed test).

-.402) and had ever used alcohol by 12th grade (-.375 and -.369) were less likely to terminate the behavior of excessive drinking after high school.

Next, the "Count" model of ZINB regression shows coefficients for the factor change in the expected count for those in the Not Always Zero group, whereas the "Binary" model contains coefficients for the factor change in the odds of being in the Always Zero group compared with the Not Always Zero group. Results from estimating ZINB regression models tend to be consistent with those from the OLS and logistic regression models, especially findings related to hypothesis testing. First, getting married during emerging adulthood was found not only to decrease the 30-day frequency of binge drinking (-.472 and -.462) but also to increase termination of the behavior (.800 and .822). That is, entering marriage decreased the expected count of binge drinking by a factor of .624 ($= e^{-.472}$) and .631 ($= e^{-.462}$) among those who have some, that is, nonzero probability of binge drinking (i.e., Not Always Zero group), whereas the turning point of marriage increased the odds of terminating binge drinking by a factor of 2.226 ($= e^{.800}$) and 2.349 ($= e^{.822}$), holding all other factors constant. Also, as found in the logistic regression model (Model 2), an emerging adult's participation in religious activities, at least, once a week was found to increase the odds of no binge drinking by a factor of 3.161 ($= e^{1.151}$).

In sum, for those who engaged in binge drinking while attending high school, getting married was found to be a significant turning point that resulted in desistance from and termination of the drinking behavior between adolescence and emerging adulthood. This was observed consistently across different, alternative regression models, providing full support for the hypothesis of marriage as a turning point. Also, an emerging adult's at-least-once-a-week participation in religious activities was found to decrease the frequency of binge drinking and increase the odds of abstaining from excessive drinking.

On the other hand, while the hypothesis about volunteering failed to receive empirical support, an additional analysis indicated that prosocial involvement should not be quickly dismissed. Specifically, it was found that volunteer activities at Time 3 became a significant turning point once religious involvement was removed from the models of OLS (-.106), logistic (.233), and ZINB regression (.704 in the binary model; complete results are available upon request). This implies an overlap between the two measures of prosocial involvement: that is, those who are religiously involved are more likely to participate in volunteer activities than those who are not, volunteering more in religious than non-religious organizations (Lam 2002; Park and Smith 2000; Wilson and Janoski 1995). Put differently, emerging adults who volunteer are more likely to desist from or terminate binge drinking than their peers who do not, and the prosocial effect is attributable largely to their involvement in religion, which motivates them to volunteer for religious and, to a lesser extent, secular causes.

In addition, when models were estimated separately for gender and race groups, volunteering at Time 3 was found to have turning-point effects among females who engaged in binge drinking in adolescence: -.140 (desistance) in the Model 2 of OLS regression and .537 (termination) in the Model 2 of logistic regression (complete results are available upon request). This indicates potential interactions involving gender and prosocial effect of volunteering.

When volunteering was found to be significant, however, the direction of effect was the opposite to what was hypothesized: -.188 (Δ Volunteer activities T4-T3 in the logistic regression Model 1 of Table 2) and -.599 (Volunteer activities T3 in the ZINB regression's binary Model 2 of Table 3). While the unexpected effects were observed in just two out of 12 models, results from the gender- and race-specific analyses revealed that the opposite effect was found only with the

TABLE 3
 Estimated Regression Models of Binge Drinking during Emerging Adulthood: No Binge Drinking in Adolescence ($n = 4,748$)

Predictors	OLS regression			Logistic regression												
	Model 1 (Binge T4) ^a			Model 2 (No binge T4)			Model 1 (Binge-count T4)			Model 2 (Binge-count T4)						
	b_1 ^b	SE	b_1	SE	b_2	SE	b_3	SE	b_2	SE	b_3	SE	b_2	SE		
Female	-.310*	.030	-.298*	.030	1.236*	.119	1.205*	.119	-.296	.167	1.796*	.332	-.299	.153	1.708*	.324
Age T1	-.002	.024	.004	.024	.107	.094	.077	.093	.128	.128	.415	.272	.129	.131	.374	.278
Black	-.147*	.048	-.128*	.049	.785*	.336	.720*	.339	.178	.289	1.534*	.457	.264	.266	1.494*	.456
Hispanic	-.026	.041	-.023	.041	.104	.181	.086	.184	-.131	.210	-.043	.494	-.129	.206	-.066	.467
Asian or Pacific Islander	-.209*	.041	-.217*	.042	1.016*	.214	1.006*	.215	-.398*	.196	1.114*	.429	-.352	.184	1.133*	.398
Native American	.241	.179	.236	.176	-.771	.442	-.739	.413	-.308	.378	-2.106	1.472	-.159	.456	-1.528	1.526
Intact family T1	.055	.032	.068 ⁺	.032	-.212	.141	-.259	.139	.144	.140	-.210	.259	.210	.152	-.219	.286
Family SES T2	.059 ⁺	.018	.062 ⁺	.019	-.280 ⁺	.070	-.260 ⁺	.073	.015	.112	-.371	.224	.030	.111	-.336	.221
Attachment to parent T2	-.061*	.035	-.043	.035	.084	.152	.054	.156	-.414*	.160	-.424	.298	-.358*	.158	-.493	.299
Attachment to school T2	.017	.041	.020	.041	.003	.171	-.001	.168	.000	.201	-.058	.365	.056	.194	.026	.367
Deviant attitudes T2	.088	.060	.077	.060	.024	.186	.063	.188	.290	.208	.346	.388	.244	.207	.379	.386
Deviant peer association T2	.044	.038	.035	.039	-.231*	.130	-.208	.132	.021	.150	-.260	.329	.001	.145	-.248	.314
Negative life events T2	-.001	.013	-.003	.013	.038	.039	.039	.040	.058	.059	.127 ⁺	.060	.050	.058	.114	.061
Lifetime prevalence of drinking T2	.098*	.014	.090*	.014	-.443*	.057	-.425*	.057	.087	.076	-.658*	.122	.094	.072	-.610*	.126
Binge drinking T2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Religious involvement T3	—	—	-.012	.030	—	—	-.064	.120	—	—	—	—	-.032	.131	-.048	.261
Religious involvement T4	—	—	-.151*	.026	—	—	.671*	.146	—	—	—	—	-.276*	.157	.814*	.300
ΔReligious involvement T4-T3	-.075*	.024	—	—	.319*	.109	—	—	-.023	.106	.540*	.227	—	—	—	—
Volunteer activities T3	—	—	.015	.029	—	—	-.209	.122	—	—	—	—	-.144	.136	-.599 ⁺	.280
Volunteer activities T4	—	—	-.026	.025	—	—	-.013	.115	—	—	—	—	-.204	.125	-.109	.279
ΔVolunteer activities T4-T3	-.023	.020	—	—	.100	.082	—	—	-.024	.106	.245	.216	—	—	—	—
Married between T3 and T4	-.199*	.025	-.186*	.025	.858*	.122	.804*	.122	-.074	.166	1.475*	.278	-.063	.174	1.376*	.290

Note. ^aTerm in parentheses refers to the dependent variable of each regression model (i.e., binge drinking during the last two weeks prior to survey); (1) Binge T4 = Frequency of binge drinking at T4 (0 = none, 1 = once, 2 = twice, 3 = 3–5 times, 4 = 6–9 times, 5 = 10 or more); (2) No binge T4 = No binge drinking at T4 (1 = Yes, 0 = No); (3) Binge-count T4 = Frequency of binge drinking at T4 (0 = none, 1 = once, 2 = twice, . . . 9 = 9 times, 10 = ten or more times).

^b b_1 is unstandardized coefficient.

^cSE refers to linearized standard error.

* $p < .05$ (one-tailed test), ⁺ $p < .05$ (two-tailed test).

difference-score measure (i.e., Δ Volunteer activities T4-T3) for whites ($-.220$) and females who had engaged in binge drinking while in high school ($-.353$), both in Model 1 of logistic regression. The negative effect is peculiar, especially for females, given that the effect of volunteering at Time 3 was found to be positive ($.537$) in Model 2 (see above).

It is difficult to fully explain why the two measures of volunteer activities had opposite effects on binge drinking among females ($-.353$ vs. $.537$). At least, it appears that a difference-score measure had less construct validity than its constituent variables, perhaps because there was a long time lag between the two observations (i.e., six years between Times 3 and 4), which were unlikely to properly capture actual patterns of in-between change in volunteer activities.

Table 3 presents results from estimating the same OLS, logistic, and ZINB regression models for those who did not engage in binge drinking when they were adolescents. While OLS regression results (which explain initiation of binge drinking after high school) are not to test the hypothesis about protection from engaging in binge drinking during the transition to adulthood, they show participation in religious activities at Time 4 ($-.151$) as well as increase in religious involvement ($-.075$) and getting married between Times 3 and 4 ($-.199$) decreased the probability of initiating binge drinking during emerging adulthood.

Both logistic and ZINB regression models provide support for the protection hypothesis. First, logistic regression analysis shows entering marriage in emerging adulthood ($.858$ and $.804$) was a significant insulator that protected those respondents from initiating binge drinking during a transition to adulthood, increasing the odds of continuing to abstain from excessive drinking by a factor of 2.358 ($= e^{.858}$) and 2.234 ($= e^{.804}$). Also, religious involvement was found to insulate those who did not engage in binge drinking during adolescence from initiating it afterwards. Specifically, the odds of being protected from binge drinking for those who increased levels of participation in religious activities from less-than-once-a-week to at-least-once-a-week are 1.376 ($= e^{.319}$) times greater than their peers who decreased or did not change the levels of religious involvement (Model 1). When the measure of change in religious involvement between Times 3 and 4 was replaced by variables of religious involvement at each time (Model 2), participating in religious activities, at least, once a week at Time 4 was found to increase the odds of being protected from binge drinking by 96 percent ($[e^{.671} - 1] \times 100$), holding all other variables constant.

ZINB regression models confirm this finding (see Binary Models 1 and 2). That is, while not decreasing the expected count of binge drinking ($-.074$ and $-.063$; see Count Models 1 and 2) among those who have nonzero probability of heavy drinking (i.e., Not Always Zero group), getting married during emerging adulthood increased the odds of being protected from binge drinking by a factor of 4.371 ($= e^{1.475}$) and 3.959 ($= e^{1.376}$), holding all other factors constant (see Binary Models 1 and 2). Also, replicating the logistic regression results, increase in religious involvement between Times 3 and 4 and at-least-once-a-week participation in religious activities at Time 4 were both found to increase the odds of not drinking heavily by a factor of 1.716 ($= e^{.540}$) and 2.257 ($= e^{.814}$), whereas religious involvement at Time 4 also decreased the expected count of binge drinking by a factor of $.759$ ($= e^{-.276}$). On the other hand, participation in volunteer work as insulator was not found to be significant; when it was, its effect on the odds of being in no binge drinking group was opposite to what was hypothesized in direction (i.e., $-.599$).

In sum, for those who abstained from binge drinking in adolescence, getting married was found to be a significant insulator that protected them from initiating heavy drinking between adolescence and emerging adulthood, providing support for the hypothesis. So was religious

involvement during emerging adulthood. However, no support was found for participation in volunteer activities as an insulator protecting from engaging in excessive drinking after high school.

DISCUSSION AND CONCLUSION

The present study intended to test whether entering marriage and being prosocially involved during a transition to adulthood function as turning point that has emerging adults, who engaged in binge drinking when they were in high school, decrease or terminate excessive drinking afterwards. I also tested whether marriage and prosocial involvement function as insulators that protect those who did not engage in binge drinking when they were adolescents from initiating it during emerging adulthood. Results from OLS, logistic, and ZINB regression analyses supported the hypothesis of marriage and religious involvement as turning points and insulators. On the other hand, the hypothesis about volunteering as prosocial involvement failed to receive empirical support.

First, the present findings confirm the importance of marriage as a part of an individual's successful transition to adulthood, which Sampson and Laub's (1993; Laub and Sampson 2003) life-course theory emphasizes as a turning point that changes the individual's behavioral trajectory in a prosocial direction. Based on logistic regression analyses, marriage's protection from binge drinking tends to be similar in magnitude to its termination, given that the odds were found to be about two times larger for those who got married than those who did not. On the other hand, ZINB regression analyses showed entering marriage increased the odds of protection twice as much as the odds of termination. ZINB regression was used above as an alternative to logistic regression, but is a better modeling approach to explain binge drinking at Time 4 in that it analyzed the count outcome rather than dichotomizing it.

Second, religious involvement was also found to be significant as a turning point as well as insulator. As hypothesized, religious involvement was found to protect against the initiation of excessive use of alcohol. That is, religiously involved emerging adults (who did not engage in binge drinking in adolescence) were more likely to abstain from drinking heavily than initiating such use of alcohol. In addition, although empirical support for the religion factor as turning point was confined to the measure of whether an individual participates in religious activities at least once a week during emerging adulthood, the present finding about religious involvement as a turning point makes a contribution to the existing literature, which tend to provide mixed evidence of religious involvement as a source of desistance and termination from deviance and crime (Chu 2007; Giordano et al. 2008; Schroeder and Frana 2009; Ulmer et al. 2010).

For example, Ulmer and his associates (2010) found that religious youths were more likely never to use marijuana than to initiate it or to become persistent marijuana users. They interpreted this finding as suggesting that the major role of religious involvement is in preventing people from using marijuana in the first place rather than turning marijuana users around from drug use. This might be, to some extent, the case with the present study in that both measures of religious involvement were found to have significant insulating effects, whereas only one of them had a significant turning-point effect. However, this study, unlike previous ones, found religious involvement to have significant effects of desistance and termination as well as protection. This finding is especially noteworthy given that nationally representative data like the NELS tend to

consist of a relatively small number of individuals who engaged in binge drinking in adolescence but later were turned around by religion, making it difficult to detect the turning-point effect of religion.

Third, participation in volunteer activities was found to have neither a turning point nor a protective effect. This might have been due to the limited measurement of volunteering. While the measure of religious involvement was limited as well in that dichotomous variable was used for measurement consistency across surveys, it was constructed based on a key threshold (i.e., less-than- versus at-least-once-a-week participation in religious activities) to distinguish between two groups of individuals in terms of religious involvement. The volunteering variable, though, was rather crude due to data constraints, simply measuring “no” versus “any” participation, regardless of number of hours volunteered. However, if the observed difference between religious and volunteer involvement could not be fully attributed to such methodological limitations, it might indicate that religion is advantaged over volunteering in functioning as a turning point, because it is a well-established social institution that has a structured influence on an individual’s capacity for behavioral change compared to volunteering.

Alternatively, it is possible that emerging adults—college students, for example—join volunteer organizations or service fraternities/sororities that offer ritualistic celebrations involving alcoholic beverages. So, while those organizations tend to be prosocial in nature, they may also regularly hold social events and functions, where their members are invited and encouraged to consume alcohol and, in some cases, to drink heavily as a part of a group ritual. Even if binge drinking is not a part of ritualistic celebration, such celebratory events are likely to set the stage for excessive drinking. Based on nationally representative data from college students, Weitzman and Kawachi (2000) found both campus-level and individual volunteerism to increase the risk for “light drinking” (1 or 2 drinks per drinking occasion), though not for binge drinking. This is a potentially fruitful topic for future research.

Finally, it needs to be acknowledged that this study’s operationalization of desistance, termination, and protection from binge drinking is less than ideal due to the data constraint that binge drinking was measured only once for emerging adulthood (Time 4) after the years of high school (Time 2). So we had to rely on two data points to measure “change” in binge drinking during a transition to adulthood, while at least two observations of the behavior during emerging adulthood would have enabled us to analyze multiple patterns of binge drinking over time (e.g., Ulmer et al. 2010) instead of a difference in binge drinking between two surveys. The present findings need to be interpreted with this limitation in mind.

Also, while this study did not examine some of key explanatory variables of binge drinking, future research should focus on them by testing, for example, how work or employment helps explain desistance from heavy drinking. According to prior research, not all types of employment are expected to have a turning-point effect (e.g., Sampson and Laub 1990), while the effect might be contingent upon other factors, such as age (Uggen 2000). Another potentially important but understudied topic concerns reciprocity between binge drinking and its negative consequences. For example, would binge-related problems, academic and/or legal, lead college students to desist from the drinking behavior?

Despite these limitations, the present study contributes to the literature on life-course perspectives as well as binge drinking by providing empirical evidence of entering marriage and religious involvement in emerging adulthood as a turning point and insulator against the deviant behavior of binge drinking. Future research needs to examine whether the present study can be

replicated for other types of deviant behaviors, including crime, but also whether involvement in volunteer activities might increase rather than decrease binge drinking and, if so, by identifying the circumstances where this is the case.

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