

Cutting the Grass: A Reexamination of the Link between Marital Attachment, Delinquent Peers and Desistance from Marijuana Use¹

Michael O. Maume,^{2,5} Graham C. Ousey,³ and Kevin Beaver⁴

Recent work indicates that marriage contributes to desistance from crime. However, two prominent interpretations of this relationship have been offered. The first, rooted in informal control theory, suggests that the “marriage effect” is a direct result of social bonds that tend to accompany matrimony. The second contends that the effect is indirect and due to the impact of marriage on patterns of delinquent peer association. Using data from waves 5 and 6 of the National Youth Survey, this study re-analyzes these interpretations by examining the relationship between marital attachment, delinquent peer association and desistance from marijuana use. Although change in delinquent peer association is a powerful predictor of marijuana desistance, findings are also consistent with the control theory interpretation of the marriage effect. Implications and limitations of the current study are noted.

KEY WORDS: delinquent peers; deviant behavior; life course; desistance; social control theory; social learning theory.

1. INTRODUCTION

In a landmark study of crime, Sampson and Laub (1993) integrate a life-course perspective with classic social control/bonding theory to develop a theory of age-graded informal social control. A central tenet of this theory is that desistance from crime is a result of the development of social bonds

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²Department of Sociology and Criminal Justice, University of North Carolina at Wilmington, Wilmington, NC 28403-5978, USA.

³Department of Sociology and Criminal Justice, University of Delaware, USA.

⁴Division of Criminal Justice, University of Cincinnati, USA.

⁵To whom correspondence should be addressed: E-mail: maume@uncw.edu

that accompany adult status transitions, such as entry into marriage. Consistent with this argument, several empirical studies have reported that higher marital attachment/bonding decreases the likelihood or rate of adult illicit behavior (Horney *et al.*, 1995; Laub *et al.*, 1998; Sampson and Laub, 1990, 1993).

Recent work by Warr (1998), however, challenges the above social control interpretation of the marital attachment–criminal desistance relationship. Noting that Sampson and Laub’s ground-breaking work did not estimate the impact of a rival explanation of desistance, Warr contends that the observed “marriage effect” on desistance is actually due to social processes that are more consistent with Sutherland’s theory of differential association, than with control theory. In accordance with this viewpoint, his analysis reveals that the link between marriage and desistance from marijuana becomes negligible once delinquent peer association is controlled.

By directly challenging prominent thinking and offering an intriguing alternative perspective on the desistance process, Warr’s (1998) work makes a major contribution to the life course criminology literature. Nevertheless, several limitations remain in prior research on desistance. First, although Sampson and Laub’s theoretical model stresses the effects of marital *bonds* on desistance, Warr’s analysis focuses more directly on the transition in marital *status*. Second, although extant literature suggests that an individual’s prior offending is a strong predictor of future offending (e.g., Nagin and Paternoster, 1991), few existing studies have controlled this factor when evaluating prominent explanations of desistance. Finally, several prior studies of desistance use censored or self-selected samples, which may bias parameters and thereby affect substantive conclusions. Given these limitations, it is clear that additional research is needed before any definitive conclusions can be made regarding the impact of marriage (or other adult social bonds) on desistance from illicit behavior. To begin filling this need, the current paper addresses the above shortcomings and reexamines the link between marital attachment, peer associations and desistance from one particular form of illicit behavior, marijuana use.

Before proceeding, however, an important caveat is in order. The theoretical perspectives that frame our analysis (i.e., age-graded social control and differential association theories) are general explanatory models that presumably apply to a myriad of illegal activities; yet, for reasons primarily related to data limitations, the analysis that we describe focuses on desistance from a single illicit behavior: marijuana use. Although the possession and use of marijuana is a violation of criminal law for most people in most places in the United States, many crime scholars (including the authors) would argue that marijuana use differs in nature and seriousness from the majority of illicit behaviors. For example, recent data from the

National Household Survey on Drug Abuse indicate past-month use among 18–25 and 26–34 year-olds as 13% and 6%, respectively; but this rate of involvement is still much higher compared to many other forms of criminal behavior (SAMHSA, 1998). Moreover, evidence indicates that a substantial segment of the U.S. population regards the use of marijuana as acceptable behavior (Cauchon, 2001). To the extent that marijuana use is qualitatively different from other crimes, the empirical findings and substantive conclusions described herein may be relevant only for marijuana use (or to similar illicit behaviors—e.g., other forms of recreational drug use, particularly those without strong addictive properties) and not for a broad range of criminal outcomes.⁶ Thus, we urge caution in making general inferences regarding criminal desistance based *solely* on the analysis that follows.

2. THEORETICAL BACKGROUND

2.1. The Role of Marriage in an Age-Graded Theory of Informal Social Control

The study of the life course in sociology deals with how structures and processes inherent in social life vary across different stages of maturity (e.g., childhood, adolescence, and adulthood). Two concepts central to life course studies are *trajectories* and *transitions* (Elder, 1985). Transitions are key events in the life course (e.g., marriage, having children) that alter an individual's self-concept, social roles, social ties, attitudes and behavior. From a criminological standpoint, the significance of these transitions is that they may become crucial turning points that alter long-term patterns or trajectories of criminal offending. This focus on role transitions and how they impact behavior at different stages in the life course is endemic to one of the most prominent contemporary theories of crime, Sampson and Laub's age graded informal social control theory.

⁶However, it should be pointed out that given the lack of consensus on the illegality of marijuana use, it is quite plausible that the explanatory models presented herein would be less efficacious in explaining this behavior than one that is more universally regarded as deviant or criminal. If this logic holds, our analysis of marijuana use may actually offer a conservative test of the theoretical perspectives outlined below, although this would hold true primarily for the control-based model, since control explanations often rest upon an assumption of value consensus. This would be less true for models based on differential association; however, there have been several studies testing either differential association or social learning theory whose analyses focus either primarily or exclusively on marijuana use (Akers *et al.*, 1979; Akers and Cochran, 1985; Johnson, 1988; Lanza-Kaduce *et al.*, 1984; Tittle and Burke, 1986). Therefore, our decision to solely model marijuana desistance follows a “beaten path” in this particular theoretical tradition.

Given its roots in classic Durkheimian control theory, Sampson and Laub's theory begins with the assumption that humans have a natural inclination to engage in behavior that would be considered antisocial in a civilized society. Consequently, their work suggests that if left unrestrained, a person is more likely to commit acts of crime and deviance. Moreover, consistent with modern social control theory, particularly the version posited by Hirschi (1969), Sampson and Laub's theory suggests that social bonds between the individual and representatives of conventional social institutions (e.g., the family; the school) are predictive of an adolescent's pattern of illicit behavior.

Building upon these common control theory foundations, one of Sampson and Laub's key innovations involves the recognition that a person's exposure to, and interaction with, various conventional social institutions varies across the life span. Thus, unlike Hirschi's static formulation of control theory, they contend that the character of social bonds as well as their impact upon behavior differs as a person moves through different stages of the life course. For instance, in childhood and early adolescence, social bonds to parents and school are believed to be especially important factors in constraining illicit or deviant behavior. However, as one moves into the later teens and early twenties, the influence of these social bonds wanes and social bonds peculiar to adulthood (e.g., attachment to one's spouse, labor force attachment, commitment to one's employer) ascend in importance. The importance of this extension is that it allows control theory to account for the possibility of persistent stability and change in criminal offending behavior across the life course.

Utilizing a classic data set originally compiled by Sheldon and Eleanor Glueck, Sampson and Laub (1990; 1993) report that adult transitions such as marriage, employment, education and the military are more likely to send individuals on a conforming, rather than criminal, trajectory. However, true to the social process roots of control theories, they contend that it is not simply the change in status associated with getting married or landing a job that is a key in preventing criminality. Rather, it is the fact that marriage and employment commonly lead to the enhancement of social bonds, which are stakes in conformity that pull individuals away from illicit behavior.

Several subsequent studies yield evidence that is generally supportive of the age-graded theory of informal social control (Esbensen and Elliott, 1994; Horney *et al.*, 1995; Laub *et al.*, 1998; Shover, 1996). In general these studies report that development and strengthening of adult social bonds, particularly those associated with marriage, are crucial to a reduction or stoppage of illicit behavior. For instance, Shover's (1996) study of persistent thieves suggests that becoming involved with or marrying a "good woman" often is the turning point that leads men away from criminal activity.

In fact, Shover (1996, p. 129) characterizes the creation of bonds to conventional others and conventional activities as “the most important contingency that causes men to alter or terminate their criminal careers.”

2.2. An Alternative Interpretation of the Marriage Effect

Despite the empirical support noted above, Sampson and Laub’s argument regarding the impact of adult social bonds on criminal behavior has been questioned in a recent study by Warr (1998). Specifically, Warr contends that the observed relationship between marriage and desistance is not a direct result of the development of marriage-linked social bonds. Rather, he posits that the marriage–desistance relationship is the result of a drastic reduction in peer association that tends to accompany marriage. Given that offending often occurs in groups (Warr, 1996), and has been strongly linked to associating with deviant peers (Akers *et al.*, 1979; Warr and Stafford, 1991), it seems logical that a reduction in peer association brought on by marriage would dramatically reduce opportunities and motivations for criminal activity. And Warr (1998, p. 185) notes, “if delinquency stems from an association with delinquent friends, and if marriage disrupts or dissolves relations with those friends and accomplices, marriage ought to encourage desistance from crime.” In sum, Warr suggests that the marriage effect on desistance is indirect. More important, he argues that the process that underlies this relationship has more in common with the tenets of Sutherland’s differential association theory than with Sampson and Laub’s control perspective.

Using data on young adults (ages 15–21) from wave 5 of the National Youth Survey, Warr (1998) reports several findings that are concordant with his argument. First, his analysis indicates that those who are married spend about half as much time with their friends as those who are not married (an average difference of about 10 hr per week). Second, he finds that marriage is associated with having significantly fewer delinquent friends. Third, he reports that the negative relationship between marital status and several indicators of minor delinquency becomes non-significant when controls for peer association variables are included in the analysis.

Although these findings support his thesis, Warr points out that this evidence is cross-sectional and therefore somewhat limited as a test of the predictors of change in behavior. Further, he suggests that a longitudinal analysis that tracks a cohort of offenders over time would yield a more compelling test of the marriage–delinquent peers–desistance argument that is posited. Toward that end, he defines a sub-sample of unmarried marijuana users in wave 5 data and tracks them into wave 6 to see if entry into

marriage has an effect on the probability of desistance from marijuana use once changes in delinquent peer association has been controlled.⁷ Consistent with his interpretation of the “marriage effect,” he finds that once the change in the number of delinquent peers is controlled, the significant relationship between marriage and marijuana desistance becomes negligible and not statistically significant. On the basis of this evidence (as well as his cross-sectional findings), Warr concludes that the relationship between marriage and criminal desistance reported by Sampson and Laub (1993) is largely due to the effect of the former on the extent to which individuals associate with delinquent peers.

Warr’s (1998) work is important because it questions the extent to which marital bonds directly impact desistance, and it implies that a differential association model may offer a better explanation of the process by which adult transitions lead people away from crime. However, we believe there are several reasons why additional research is needed before definitive conclusions can be made about the exact nature of the link between marriage, peer association, and desistance. First, our review of the life-course literature clearly reveals a general paucity of research on the issue of desistance, at least relative to the other stages of the criminal career (Bushway *et al.*, 2003). Moreover, the studies that do exist vary substantially in terms of their sample, design, and types of illicit behavior examined (cf., Sampson and Laub, 1993; Shover, 1985; Warr, 1998). Thus, while Warr’s findings are quite compelling, there simply is not yet a preponderance of evidence from which to make strong conclusions. Second, although Sampson and Laub are quite clear in their claim that marriage impacts offending because of the social bonds or attachments that it engenders, Warr’s longitudinal analysis of marijuana desistance focuses on a change in marital *status*, not marital *attachment*.⁸ Yet, more recent work suggests that for some demographic groups, relationship quality may affect offending

⁷As noted by Warr (1998), marijuana use is one of the few offenses in the NYS whose prevalence is sufficiently common to provide a subsample that would support this type of analysis.

⁸It is important to point out that the substantive foci and empirical analyses in Warr’s (1998) paper are broader than our own. As noted above, he provides compelling *cross-sectional* evidence suggesting that getting married affects a variety of delinquent behaviors (one of which is marijuana use) by reducing associations with peers. Moreover, he clearly shows that married respondents who have more delinquent friends or who spend more time per week with their friends tend to report lower satisfaction and greater stress in their marriages. However, the question that his analysis does not directly answer (and, therefore, what we take as the jumping-off point in our work) is whether the expected association between marital *attachment* and desistance that is derived from Sampson and Laub’s Age-Graded Social Control Theory is due primarily to a reduction in delinquent peer association.

behavior net of delinquent peer association (see Simons *et al.*, 2002).⁹ However, because this latter work focuses on a variety of romantic relationships (e.g., non-cohabiting boyfriend–girlfriend, cohabiting but unmarried romantic partners, and married couples) it remains somewhat unclear whether the impact of marital attachment on marijuana desistance is direct or if it works indirectly through delinquent peer associations. Third, despite prior work suggesting the importance of past offending on future offending (Nagin and Paternoster, 1991), prior marijuana use is not controlled in Warr’s longitudinal analysis of marijuana desistance. Finally, prior studies of desistance often have used non-random or self-selected samples (e.g., unmarried marijuana users), which may bias parameter estimates and thereby affect substantive conclusions (e.g., see Berk, 1983; Winship and Mare, 1992).

Given these limitations, the current paper extends the literature on desistance in three ways. First, unlike the vast majority of life-course studies, we examine the extent to which adult life transitions affect the likelihood of desistance from one particular illicit behavior, marijuana use. Second, we extend Warr’s (1998) important work by reexamining whether the “marriage effect,” which has become a point of debate in the literature (Laub *et al.*, 1998; Laub and Sampson 2001; Simons *et al.*, 2002; Sampson and Laub, 1993; c.f., Warr 1998), is due to the impact of a reduction in delinquent peer associations, the constraints imposed by a strong marital attachment, or both. Third, we examine the impact of marital attachment and peer association after accounting for potential biases introduced by not controlling for prior marijuana use and using self-selected, non-random samples.

2.3. Marijuana Use and Desistance

Although guided primarily by data limitations, as noted above, our focus on marijuana use and desistance is also tied to some substantive concerns. First, it is clear that by their early twenties most individuals have ceased involvement in serious criminal behavior; however, marijuana use is one type of criminal behavior that persists into young adulthood (SAM-HSA, 1998). Although one could digress at this point into a discussion of the history and appropriateness of criminalizing marijuana use, from a

⁹Specifically, Simons *et al.* (2002) find that the quality of romantic relationships has a direct negative effect on criminal behavior for females. However, a similar effect is not evident for males. Thus, findings from that study are somewhat mixed with regard to the effect of relationship quality on offending. It should be noted, however, that less than one-fourth of the relationships observed in this study are marriages.

criminological standpoint we find it interesting that the rate of marijuana use retains some variation across individuals in young adulthood. It is this variation in marijuana use that allows us to test multivariate models of the desistance process at this particular stage in the life course (see also Warr, 1998).

Second, we think it is important to build on previous research finding differences by offense type in the discontinuity of criminal offending. There is a great deal of evidence supporting the idea that various criminal and drug offenses have common causes (Brook and Cohen, 1992; Osgood *et al.*, 1988; cf. White *et al.*, 1987; Zhang *et al.*, 2002), and, in an exhaustive review of the current literature on desistance, Laub and Sampson (2001, p. 38) conclude that the desistance processes for drug use and predatory crime are similar in nature. Nevertheless, researchers have uncovered salient differences between the developmental trajectories of criminals and drug users. Previous research specifically designed to explain marijuana desistance, similar to Warr's (1998), has found the impact of drug-using associates to be a significant predictor of an individual's likelihood to stop using marijuana (Esbensen and Elliott, 1994; Kandel and Raveis, 1989; Lanza-Kaduce *et al.*, 1994). The influence of drug-using peers has also proved to be a significant factor in the etiology of marijuana use (Akers and Cochran, 1985; Elliott *et al.*, 1989; Hawkins *et al.*, 1992; Jessor *et al.*, 1980; Marcos *et al.*, 1986; Ousey and Maume, 1997). Other significant factors found in previous studies to lead individuals to marijuana desistance include measures of both current marital status (Esbensen and Elliott, 1994) and the transition from single to married (Chen and Kandel, 1998; Kandel and Raveis, 1989), reaching the later twenties in age (Chen and Kandel, 1998), and a low rate of prior marijuana use (Chen and Kandel, 1998; DeWit *et al.*, 2000; Goodstadt *et al.*, 1986; Kandel and Raveis, 1989).

3. RESEARCH QUESTIONS

Based upon the above discussion, we have formulated three research questions that serve as a guide for our analyses. First, following the logic of Sampson and Laub's age graded theory of informal social control, we ask: *Are higher levels of marital attachment associated with greater odds of desistance from marijuana use?* Second, given Warr's counter argument, a relevant question becomes: *Is the relationship between marital attachment and desistance explained by the impact that the former has on delinquent peer association?* Finally, given the use of non-random sample selection in prior studies: *Are the answers to the above questions affected when non-random sample selection is taken into account?*

4. RESEARCH DESIGN

4.1. Data

To address the above questions, data from waves 5 and 6 of the National Youth Survey, or NYS (Elliott, 1994a, b) are utilized. The NYS is a multi-year panel study of a national probability sample of youths conducted under the direction of Delbert Elliott and the Behavioral Research Institute in Boulder, Colorado. The NYS project began with a sample of 1725 males and females who were between the ages of 11 and 17 at the time of the first interviews in early 1977. Elliott and his colleagues collected wave 5 data in 1980 when remaining respondents were ages 15 to 21 and wave 6 data in 1983, when the panel of respondents ranged between 18 and 24 years old.¹⁰ Our initial multivariate analyses are based on a sub-sample of respondents who we identified as both single and marijuana users in wave 5 ($n = 593$).

4.2. Measures

Following Warr (1998), *desistance* from marijuana use is coded as 1 if the respondent reported smoking marijuana in wave 5, but not in wave 6. If

¹⁰Despite an attrition rate of roughly 20% between waves 1 and 7 of the NYS, MacMillan (2000) notes that there appears to be no systematic selection bias based on those remaining in the panel. Our study employs data up to wave 6, representing a 13% rate of attrition from wave 1. Upon examining these data, Elliott *et al.* (1989, p. 3) conclude that “the representativeness of the sample with respect to [age, sex, ethnicity, class, place of residence, and reported delinquency] was not affected in any serious way by the losses over the six surveys”. Given the focus of the current paper, we extended this analysis by comparing the average rates of marijuana use in wave 1 between the attriters (or leavers) and those who still remained in the study by wave 5 (the first wave of data used in the current study). A *t*-test determined the difference in marijuana use to be statistically significant ($t = 2.28$; $p = 0.023$), with the attriters on average self-reporting a higher level of marijuana use at wave 1 than the stayers.

The attrition issue is an important one for life course criminology, as is evident in the recent paper by Brame and Piquero (2003). In general, researchers encounter a problem when trying to analyze time-varying variables, such as the key variables in our study, between those who stayed and those who dropped out of the panel. Although the imputation of missing data and the construction of weights to account for the loss of observations—options mentioned by Brame and Piquero (2003)—seem to be reasonable approaches, we are of the opinion that correction for sample attrition requires solid knowledge of the factors that predict attrition. For example, Sampson and Laub (1993) had sufficient information on the Gluecks’ original sample to know that incarceration and military service were likely heavy contributors to the 12% rate of attrition in the adult waves of their data. They in turn (p. 153) cite Berk and Ray’s (1982, p. 394) argument that “the selection problem and all of its solutions rest fundamentally on one’s ability to properly model both the substantive process and the selection process”. Because a search for correlates of attrition would take us substantially beyond our intended objectives, we leave it for future studies to consider the extent to which the findings of our study, and of others that use the NYS, are biased by sample attrition.

the respondent reported smoking marijuana at both interviews, desistance was coded as zero. If the respondent did not smoke marijuana in wave 5, the observation is treated as censored on the desistance outcome.

Although Sampson and Laub (1993) contend that the marriage effect on desistance is a result of marital attachment (i.e., a positive or good marital relationship) rather than marriage per se, Warr's longitudinal analysis of marijuana desistance focuses on the latter.¹¹ Thus, to extend his work, and more directly assess Sampson and Laub's thesis, we develop a summary measure of marital attachment based upon four items from the NYS. These items ask about the degree of marital satisfaction, extent of support and encouragement received from spouse/partner, amount of warmth received from spouse/partner, and the level of stress that exists in the marital union.¹² Three of the four variables (support, warmth, and stress) are Likert-scaled items with a metric of 1 "very little" to 5 "a great deal". Satisfaction is a similarly scaled item ranging from 1 to 5 on level of marital satisfaction.

Based upon these four items, we create "high" and "low" marital attachment dummy variables as follows: respondents with high scores on satisfaction, support, warmth and stress items (we reverse-coded the latter item so high scores indicate low marital stress) were coded as 1 on the high marital attachment dummy variable; those with high scores on less than four items were coded as 1 on the low marital attachment dummy variable.¹³ These attachment variables are measured using data from both waves 5 and 6. For example, high attachment indicates not only that a respondent got married between waves 5 and 6, but also that the description of that union in wave 6 rated highly on attachment according to the criteria described above. Unmarried respondents in wave 5 who remained single in wave 6 were coded

¹¹Sampson and Laub (1993) employ two indices of marital attachment in their re-analyses of the Gluecks' data. For data on men ages 17 to 25 (their wave 2 data), the measure of spousal attachment consists of (1) an indicator of the status of the relationship (i.e., separated, divorced), and (2) the interviewee's degree of, or attitude toward, marital responsibility. The index used for data collected when the subjects were 25 to 32 years old consists of the first measure of status described above and the degree of cohesiveness in the family (as reported by the interviewee). Thus, their measures of marital attachment actually combine both marital status and bonding.

¹²We also estimated supplementary models that alternatively use each of these single items, rather than the combined measure, as our proxy for marital attachment. The pattern of results from those analyses closely resembles those reported below. This is not surprising, since a principal components analysis of these items in their original metrics revealed loadings ranging from 0.61 for stress to 0.87 for warmth.

¹³"High" scores on these four items were defined on the basis of the response category labels as well as a preliminary examination of their distributions. Codings are as follows: high "satisfaction" = scores 4-5; high "warmth" = 4-5; high "support" = 4-5; high (low) "stress" = 3-5 (recall that this item is reverse coded so that high scores equate to low stress).

as zero on both of the above marital attachment dummy variables. Thus, the reference category for marital attachment in our multivariate models is “stayed single”.

To control for potentially important adult (status) transitions other than marriage, two additional indicator variables are included in our analyses. *Entered full-time employment* is coded 1 for respondents who acquire a 30-plus hour per week job between waves 5 and 6 and zero otherwise. *Entered college* is coded as 1 for those respondents who enter into college or other adult educational program between waves 5 and 6 and zero otherwise.

In order to examine the extent to which the effect of the marital bond on desistance is attributable to *changes* in patterns of delinquent peer association, we include *change in delinquent peer exposure*. This variable is measured as the numerical difference between waves 5 and 6 on the question: “During the last year, how many of [your close friends] have used marijuana or hashish?” (Possible responses on the original questions ranged from 1 = “None of them” to 5 = “All of them”). Positive scores reflect an increase in delinquent peers, while negative scores reflect a decrease in delinquent peers.¹⁴ We also include a control for *time spent with friends*, measured as the difference between waves in the number of hours the respondent spent with close friends in an average week. Like delinquent peer exposure, positive scores indicate an increase in time spent with peers. Some caution must be exercised with this measure, given that time with friends was measured by different questions in the wave 5 and 6 interviews. In wave 6, interviewers were instructed to tell respondents not to include spouses, boyfriends, or girlfriends among their close friends. No such instructions were given in wave 5; however, the item in wave 5 is among a set of questions that includes an item asking married and cohabiting respondents about their activities with their partners.

A number of control variables were included to account for possible demographic differences in desistance. First, prior research indicates that

¹⁴Two alternative codings of this variable, including the dummy variable approach used by Warr, were used in supplemental data analyses reported in models 1, 2, 4 and 5 of the Appendix. Consistent with Warr’s description, the largest effect was found when the variable was scored 1 for those who lost all delinquent friends between waves 5 and 6, and 0 otherwise (see Model 2 in the Appendix). With this coding, the probit coefficient of entering a marriage characterized by high marital attachment is reduced by 23%, which suggests that some mediation is occurring. However, this extreme change in peer association is relatively rare, occurring for only about 7% of the marijuana user sub-sample. Most importantly, regardless of how this variable was coded, substantive conclusions remain essentially unchanged. That is, in all but one of the models that we estimate—model 5—the impact of high marital attachment retains statistical significance. This exception occurs in a model that omits an important control, the rate of prior marijuana use; the *p*-value (0.12) for the high marital attachment coefficient in this case is just beyond the 0.10 level of significance.

marijuana use reported in the NYS varies by geographic location (e.g., Ousey and Maume, 1997). To control for the impact of residential context (i.e., degree of urbanization) on marijuana desistance, we use a dummy variable coded 1 for *rural* location and 0 for non-rural location (based on residence in wave 6). In the NYS, “rural” communities are defined as those with a population less than 25,000 located outside of a Standard Metropolitan Statistical Area (SMSA) or Urbanized Area (UA). Non-rural communities include those with a minimum of 25,000 persons, parts of an SMSA not classified as urban, and central cities of SMSA’s. Although the NYS allows the distinction of suburban and urban locations, our preliminary analyses suggested the primary differences in marijuana use and desistance were between rural and non-rural (i.e., suburban and urban) areas. Second, prior research suggests the existence of gender differences in desistance (Uggen and Kruttschnitt, 1998); thus, we include an indicator variable, *male*, coded as 1 if the respondent is male and 0 if the respondent is female. Moreover, because drug use patterns tend to vary by race, we include the dummy variable, *non-white*, scored as 0 if the respondent describes herself as Anglo or White and 1 otherwise. To account for any age trends in marijuana use behavior that are not explained by variables in the equation, we include a measure of chronological *age*.¹⁵ Finally, due to the fact that high-rate marijuana users in Wave 5 are likely to have a lower probability of desistance in Wave 6 than low rate marijuana users in Wave 5 (and may be less likely to marry during that interval), we include *prior marijuana use rate*, which reflects how frequently (ranging from 1 = “never” to 9 = “2–3 times per day”) a respondent used marijuana in wave 5.¹⁶

4.3. Method of Analysis

As noted above, our primary interest centers on whether levels of social bonding associated with an entry into marriage directly impact desistance from marijuana use or whether the “marriage effect” is indirect, due to the changes that marriage has on delinquent peer association.

¹⁵We examined non-linear effects of age by using a set of indicator variables; findings did not suggest any serious non-linearity in the age–desistance relationship. Thus, for the sake of simplicity, we include age as a continuous variable in all of our models.

¹⁶Although there are theoretical and empirical reasons to control for prior marijuana use rate, many prior studies of desistance have not done so. Thus, to explore whether our substantive findings and conclusions hinge upon this control, we re-estimated our models (including the various operationalizations of the delinquent peers concept) after omitting this variable. Findings from these models (presented in models 3–5 of the Appendix) are generally consistent with the findings and conclusions based upon Tables II and III, except in model 5, where the coefficient for high marital attachment is somewhat attenuated and just beyond statistical significance ($p = 0.12$).

To address this question, we follow a two-step strategy. First, we follow Warr (1998) and estimate logistic regression models on a sub-sample of the NYS that consists only of respondents who were not married *and* reported being marijuana users in the Wave 5 interview ($N = 593$; after deletion of observations with missing data on key variables, $N = 552$). Results from this analysis are reported in Table II in the next section.

However, because data on desistance in Wave 6 only are observable for part of the sample (i.e., those who were marijuana users in Wave 5), and not all of the NYS respondents were unmarried at the time of the Wave 5 interview, the possibility exists that the observations in the subsample described above make up a non-random selection of the full set of NYS respondents. To the extent that this is the case, these selection effects may produce biased parameter estimates (Berk, 1983; Winship and Mare, 1992). Therefore, in the second set of analyses, we account for the possibility of selectivity bias by explicitly modeling the selection process via a bivariate probit model (for details, see Greene, 2000; see also Uggen, 1999 for an application). In this model, maximum likelihood methods are used to simultaneously estimate two linked equations, one for sample selection (i.e., marijuana use in wave 5) and the other for marijuana desistance (in wave 6). Variables in the desistance equation (the equation of primary interest) are those described in the measures section above as well as two additional dummy variables, *stayed married*, coded as 1 for those who were classified as married in waves 5 and 6, and *got divorced* coded as those who reported being married in wave 5, but were not married, separated, or widowed in wave 6.

In the selection equation, the outcome is a binary indicator, *marijuana user wave 5*, coded 1 if the respondent reported using marijuana in the year leading up to the wave 5 interview and 0 if marijuana was not used in this period. Predictors include measures indicating residential context in wave 5 (i.e., rural/non-rural), the gender and race dummy variables described previously, respondent age in wave 5, wave 5 marital status, time spent with friends in wave 5, dummy variables indicating if the respondent was enrolled in college or was holding a full-time job in wave 5 and the number of delinquent friends that the respondent had in wave 5.

5. RESULTS

5.1. Primary Results

Table I presents descriptive data on two samples: the total sample of individuals surveyed in waves 5 and 6 of the NYS, and the filtered sample of

Table I. Descriptive Data for Total NYS Sample and Regular Marijuana Users

	Full sample ^a (<i>N</i> = 1494) (%)	Estimation sample ^b (<i>N</i> = 552) (%)
Respondent		
... used marijuana in wave 5	43.8	—
... desisted from marijuana in past year (wave 6)	—	28.4
... lives in a rural area (wave 6)	27.6	20.8
... is male	51.5	56.5
... is non-white	21.3	19.0
... is under age 21 (wave 6)	46.7	41.3
... entered college	21.8	17.9
... entered full-time employment	30.0	27.0
... reported an <i>increase</i> in time spent with peers	47.1	42.8
... got married	14.4	13.2
... and reported low marital attachment	3.9	4.4
... and reported high marital attachment	10.5	8.9
... reported an <i>increase</i> in delinquent peers	26.3	21.7

^aThe full sample refers to the number of respondents in wave 5 of the National Youth Survey (NYS). Percentages reported in this column are based on the relevant sample sizes in waves 5 or 6.

^bThe estimation sample consists of respondents who were unmarried and marijuana users in Wave 5 of the NYS (*N* = 593); after elimination of cases with missing data, *N* = 552.

marijuana users who were single at the time of the wave 5 data collection. Among the single marijuana users, almost one-third had terminated their marijuana use by wave 6. About one-eighth of both the total and filtered samples reported getting married between the two waves. Of those who got married, about two-thirds of them reported high levels of marital attachment. Our other predictor of interest, change in exposure to deviant peers, reveals that a higher percentage of the total sample compared to the filtered sample reported an increase in drug-using peers between waves. The prevalence for an increase in time spent with peers is also greater in the total sample.

Table II presents the raw logistic (and, to facilitate comparisons with Table III, probit) regression coefficients for two models. The first model includes our indicators of marital attachment and control variables, but omits the measure of delinquent peer association. Therefore, model one provides a baseline estimate of the effects on desistance from marijuana use of entering marriages that vary on the marital attachment scale. In the second model, we elaborate this baseline equation by adding the delinquent peer association variable. This enables us to determine if the marital attachment effect observed in model one is mediated in part or whole by this variable.

Table II. Probit and Logit Coefficients from Models Predicting Desistance from Marijuana Use (in Wave 6)^a

	Model 1		Model 2	
	Probit	Logit	Probit	Logit
Rural residence (wave 6)	0.19	0.33	0.14	0.24
Male	-0.09	-0.13	-0.02	-0.04
Non-white	0.40*	0.61*	0.51*	0.81*
Age	0.06**	0.11**	0.04	0.07
Prior marijuana use rate	-0.19*	-0.35*	-0.23*	-0.40*
Entered college	0.18	0.31	0.26	0.44
Entered full-time employment	-0.00	0.00	0.00	0.03
Change in time spent with friends	-0.00	0.00	0.00	0.00
Got married ^b				
Low marital attachment	-0.03	0.05	-0.07	-0.02
High marital attachment	0.52*	1.00*	0.55*	0.98*
Change in delinquent peer exposure	-	-	-0.38*	-0.64*
Likelihood ratio model chi-square	68.68*		124.53*	
Max-rescaled pseudo-R ²	0.168		0.290	
N	552		552	

Note: Chi-square and pseudo-*r*-squared statistics are from Probit models. Model chi-square statistics compare the model presented to a baseline intercept-only model.

^aSample includes only those who were unmarried and used marijuana in wave 5 of the NYS.

^bThe reference category includes those who stayed single between waves 5 and 6.

* $p < 0.05$; ** $p < 0.10$.

With regard to our first research question, we find that after controlling for various background factors, there is an association between marital attachment and marijuana desistance. Although there is no significant effect on desistance of entering a marriage with low levels of attachment, those who enter into marriages characterized by high levels of marital attachment are significantly more likely to desist from marijuana than those who stay single. In terms of the logit estimates, the results suggest that the odds of desistance for those entering a high attachment marital union are 2.7 times (i.e., $\exp[1.0]$) the odds of those who stay single. Thus, consistent with Sampson and Laub's (1993) theory and Warr's (1998) initial findings, our analysis suggests the presence of a "marriage effect".¹⁷

In the second model of Table II, we introduce the change in delinquent peer exposure variable in order to address our second research question. Consistent with expectations derived from differential association theory, the results from this model suggest that those with a net gain in delinquent friends between waves 5 and 6 are less likely to desist from marijuana than

¹⁷The effect of marital attachment remains when attachment is measured as a log-transformed ordinal scale ranging from single to high attachment.

Table III. Bivariate Probit Results Predicting Desistance from Marijuana Use

	Model 1	Model 2
<i>Desistance equation</i>		
Rural residence (wave 6)	0.22	0.13
Male	-0.12	-0.05
Non-White	0.32*	0.30*
Age	0.05	0.03
Prior marijuana use rate	-0.16*	-0.13*
Entered college	0.12	0.14
Entered full-time employment	-0.01	-0.04
Stayed married	-0.01	0.07
Got divorced	-0.07	0.05
Change in time spent with peers	-0.001	-0.001
Got married ^a		
Low marital attachment	-0.05	-0.08
High marital attachment	0.49*	0.38*
Change in delinquent peer exposure	-	-0.48*
Constant term	-1.19	-1.25**
<i>Selection equation (MJ use)</i>		
Rural residence (wave 5)	-0.21*	-0.24*
Male	0.05	0.04
Non-white	0.03	0.05
Age	-0.01	-0.01
College—wave 5	-0.19	-0.17
Employed—wave 5	0.25*	0.24*
Time spent with friends—wave 5	0.01*	0.01*
Married—wave 5	-0.11	-0.12
Number of delinquent friends	0.90*	0.89*
Constant term	-2.41*	-2.36*
Wald model chi-square	43.8*	129.4*
Rho (disturbance correlation)	0.24**	0.84*
Total observations	1357	1357
Censored observations	753	753
Uncensored observations	604	604

^aThe reference category includes those who stayed single between waves 5 and 6.

* $p < 0.05$; ** $p < 0.10$.

those who lost delinquent friends. However, quite unlike the findings reported by Warr (1998), the results in model 2 indicate that the “marriage effect” on marijuana desistance remains statistically significant after controlling for changes in delinquent peer exposure. In fact, the difference between the high marital attachment group and the group that remained unmarried is relatively stable across the models, suggesting that the impact of high marital attachment is not explained away by changes in the number of delinquent peer associates. Rather it appears that entering into a marriage characterized by high levels of satisfaction, warmth, and support, and low levels of stress has a direct constraining impact on illicit behavior. Thus, despite controls for peer influence that are not evident in some earlier studies

of the marriage–desistance relationship (e.g., Laub *et al.*, 1998), our findings are generally consonant with prior research that implies that a good marriage involves an investment in conformity that inhibits crime (Farrington and West, 1995; Laub *et al.*, 1998; Nagin and Paternoster, 1994; Sampson and Laub, 1993).¹⁸

Neither of the two other adult transitions in the model, entering college and employment, have a significant impact on desistance. The lack of an employment effect is interesting, given the significant findings related to employment in Sampson and Laub (1990); however, there are important differences between our study and theirs. First, Sampson and Laub’s dataset differs substantially from the NYS, most notably based on the facts that their data were collected on men only, and collected several decades before the data collected in the NYS. In Warr’s (1998) analysis using the NYS data, entering a full-time job had no significant impact on desistance, although entering college had a positive and statistically significant effect. Second, Sampson and Laub (1990) measured job stability, an index including indicators of employment status, the stability of the respondent’s most recent employment (job tenure), and work habits. When we replaced change in employment status with a measure of the change in job stability (number of weeks employed) between waves 5 and 6, this made little difference in the findings in Table II. The only change is that entering college becomes positive and significant at the 0.05 level. Unlike the sample of respondents in Sampson and Laub (1990), college was a much more common life course transition for the NYS cohort, potentially delaying the positive benefit of transition to stable employment on desistance beyond the age range of our participants. Interestingly, when we further filtered the sample to select only those unmarried, marijuana-using respondents who were not in college in either wave 5 or wave 6, the effect of employment status on desistance was negative and significant at the 0.10 level.

To examine whether the substantive findings from Table II are sensitive to possible selectivity biases in the delineation of the utilized subsample (i.e., unmarried marijuana users), we turn our attention to Table III. Here we present models that resemble closely those described above, with a few notable exceptions. First, the models in this table employ the full sample of respondents (rather than simply the wave 5 cohort of unmarried marijuana users) from wave 5. As such, we include two additional dummy variables that cover other possible marital status/transition categories: “stayed married” and “got divorced,” which were described above. Second, these

¹⁸Prior studies (e.g., Laub *et al.*, 1998) have found that the marital attachment effect grows with time; given the short duration of our longitudinal design, it is highly conceivable that the marital attachment differences that we report are muted to some degree.

models are estimated via bivariate probit, a binary regression procedure that incorporates sample selection by estimating two linked equations (see Greene, 2000 and description above).

Of particular interest in Table III is whether the findings change appreciably once selection effects are considered (i.e., whether the probit coefficients and substantive findings change from Table II to Table III). Overall, the findings from the bivariate probit analysis replicate the results reported above. With regard to the relationships of primary interest, the first model indicates that respondents entering marriages with high levels of attachment are significantly more likely to desist from marijuana use in wave 6 than are those who stay married. And given the similarity in the probit coefficients in Tables II and III it appears that non-random sample selection has little meaningful impact on this estimated effect. The second model suggests that this marital attachment effect remains statistically significant even upon controlling for change in delinquent peer exposure. One noteworthy difference between the filtered-sample (single-equation probit) and full-sample (bivariate probit) analyses, however, is that the latter indicates that a portion of the high marital attachment effect on marijuana desistance is mediated by delinquent peers. Specifically, after controlling for the change in delinquent peer exposure, the high marital attachment coefficient is reduced by 22% (from 0.49 to 0.38). Thus, it appears that the selection effects may suppress some of the evidence in support of Warr's thesis regarding the indirect effect of marriage on desistance. However, the weight of the evidence still indicates that control and differential association processes both have a direct impact on marijuana desistance.¹⁹

We note that the residual correlation (ρ) between the two linked probit equations in Table III jumps fairly substantially from model 1 to model 2. Given that the equations differ only in that the former does not include the change in marijuana using peers while the latter does, we investigated further the source of this fluctuation. Our exploration of this correlation reveals that the weaker correlation in Model 1 is due to a suppressor effect of the change in marijuana using peers variable. Respondents with higher residuals in the selection equation are those who used marijuana in wave 5, but have a relatively low predicted probability of use (i.e., their profile on the predictor variables suggested that they would not be users). These residuals correlate positively with the desistance outcome in the second of the linked equations. In other words,

¹⁹In a supplemental analysis, we also replicated as closely as possible the model specification reported in Warr (1998, Table 7), with the single exception of replacing the "married" dummy variable from his analysis with the "marital attachment" dummy variables we used in the analyses above. Our substantive findings from this model are entirely consistent with those reported above (table available upon request).

“underpredicted” users in wave 5 have a tendency to desist from marijuana use in wave 6. However, because prior use affects future use, these individuals are predicted to continue using in wave 6 and the low predicted probability of desistance yields a relatively large, positive residual for the desistance equation (as we would expect given the positive correlation between the residuals from the two equations). Yet, in model 1, the positive correlation between the residuals is offset or suppressed because the residuals from the wave 5 marijuana use equation have a fairly strong positive correlation with the change in marijuana using friends between waves 5 and 6 (recall that the latter is free to vary in model 1). In other words, those respondents tend to gain marijuana using friends between the two waves and this makes them less likely to desist in wave 6 (resulting in smaller residuals as the actual desistance outcome is pulled down towards the low predicted probability). Consequently, the uncontrolled correlation between the selection equation residuals and the change in marijuana using peers attenuates the positive correlation between the residuals. As we move to model 2, however, the influence of the change in marijuana using peers is partialled out, and a much stronger positive association between the residuals from the selection and desistance equations is revealed. Because change in delinquent peers is such a strong predictor of desistance and is so influential on the estimated residual correlation, it is reasonable to believe that its omission results in a misspecification that biases to some degree the parameter estimates of model 1.

5.2. Analyses to Detect Spuriousness

As an additional check on the robustness of our findings, we undertook additional analyses incorporating measures that might reveal the relationship between marital attachment and desistance to be spurious in nature. One of the reviewers of an earlier version of this paper suggested that spuriousness might be possible if an underlying factor, or factors, made both entry into “good” marriages and desistance more likely. Therefore, these additional analyses are intended to identify and implement such possible factors, and are grounded in existing developmental theories of crime and delinquency.

In a recent paper, Wright and colleagues (2001) employed Coleman’s social capital approach to explain the contemporaneous and cumulative effects of family social capital on delinquent involvement. Social capital is acquired by individuals over time, in the form of “strong interpersonal attachments, quality employment, or prosocial friendship networks”. (Wright *et al.*, 2001, p. 3). As Wright *et al.* (2001) point out, Coleman’s

approach is inherently longitudinal, emphasizing the cumulative impact of social capital on attainment and behavioral outcomes over the life course. Of particular relevance to our paper is Wright and colleagues' linking of the social capital approach with both social learning and social control theories, the latter tied specifically to Sampson and Laub's approach. Among their findings, which are based on analyses of NYS data, are that family social capital, consisting of an index of items measured in the second wave of the survey, has significant negative effects on a general delinquency index measured in waves 2, 3, 4, 5 and 6 of the NYS, as well as changes in delinquent involvement between waves 3 and 4, 4 and 5, and 5 and 6. Wright and colleagues find the effect of family social capital on changes in delinquent involvement to be significant in the presence of controls for age, race, gender and prior delinquency. Using these same control variables, these researchers also find that family social capital seems to result in a reduction in both criminal peers and drug using in adulthood.

Following the theoretical logic and methods described by Wright *et al.* (2001), we sought to determine whether family social capital reduced the magnitude of the effect of marital attachment on desistance, possibly due to a spurious relationship not detected in the preceding multivariate analyses. Our index of family capital is based on 24 items taken from the second wave of the NYS. The index includes items measuring the amount of time spent by the respondent with his/her family, the degree to which the respondent rates family activities and attachments as important, and the respondents' perceptions of the degree to which their parents would disapprove of various deviant and criminal activities.²⁰ Similar to the reliability coefficient reported Wright *et al.* (2001), we find that the index $\alpha = 0.84$ for our filtered sample of non-married marijuana users.

Model 6 in the Appendix extends the results of model 2 in Table II by adding the family social capital index as a predictor of desistance. We draw the reader's attention to two results in particular: (1) the significant coefficient found for high marital attachment in Table II remains significant with the addition of family social capital, and (2) the partial relationship between family social capital and desistance is negative and significant beyond the 0.05 level ($p = 0.004$). The latter finding is both counter-intuitive and surprising, given Wright *et al.*'s (2001) findings

²⁰The index includes three items in which respondents were asked to report how much time they spent "talking, working or playing with your family" on weekends, during the afternoons, and evenings on weekdays, seven items indicating the importance of family involvement to respondents, and items soliciting respondents to indicate the degree to which they think their parents would disapprove of 14 deviant behaviors, ranging in severity from (not) keeping promises to selling hard drugs.

noted above. But we find in looking only at bivariate correlations between this predictor and the other key variables in the study that the measure of family social capital is weakly correlated with high marital attachment ($r = 0.07$), changes in delinquent peers ($r = -0.03$), and desistance ($r = -0.02$). The significant log odds coefficient appears to be due largely to the presence of prior marijuana use rate, which is moderately correlated with family social capital in the expected direction ($r = -0.22$). We suspect therefore that any positive benefit of family social capital on individuals' marijuana careers may have already been experienced, through either a reduction in use or desistance at any earlier time point. Given the possibility that still other factors not accounted for may suggest spuriousness, our conclusion that spuriousness does not appear to be a concern is only tentative.

6. SUMMARY AND DISCUSSION

After occupying a central place in the criminological literature for many years (see Akers and Cochran, 1985; Matsueda, 1982; Matsueda and Heimer, 1987), empirical interest in the debate about the relative importance of social bonding and differential association theories of crime has waned during much of the last decade as integrated theories have become more prevalent (Elliott *et al.*, 1985; Thornberry, 1987). However, with the publication of Sampson and Laub's *Crime in the Making* (1993) and Warr's (1998) recent critique and reinterpretation of the mechanism by which adult social bonds affect criminal desistance, the seeds for a contemporary regeneration of this classic debate have been planted.

In this paper, we reexamined the merit of Sampson and Laub's thesis regarding the impact of marriage on desistance as well as Warr's recent reinterpretation of the marriage–desistance relationship. Specifically, using data from waves 5 and 6 of the National Youth Survey, we extend one aspect of Warr's recent study by focusing more squarely on the effect of marital *attachment* on desistance from marijuana use. In addition, we also control for the possibility of selectivity bias in the estimation of the marital attachment–peers–desistance relationship.

Our initial findings are very much in line with those of earlier studies. In particular, we find that entry into marriage is important for marijuana desistance. And consistent with the informal social control theory of Sampson and Laub (1993), it appears that the impact is greatest for those who enter into unions that are characterized by high levels of attachment. However, contrary to Warr's (1998) results, the “marriage effect” that is evident in our analysis is not explained away by delinquent peer association.

After controlling for changes in the number of delinquent associates, the relationship between high marital attachment and marijuana desistance remains statistically significant. Thus, it appears that the majority of the social control effect of marriage is direct, with only a small portion (findings vary by model specification—see results in Tables I, II and the Appendix) being due to the reduction in delinquent peers that marriage often entails. Based on our supplemental analyses, it also does not appear that the marital attachment–desistance relationship is spurious.

From a theory standpoint, our findings suggest the utility of *both* the age-graded informal social control theory and differential association theory in explaining criminal desistance. However, because our findings essentially sit on the fence between the evidence derived from work by Sampson and Laub and others (Horney *et al.*, 1995; Laub *et al.*, 1998; Nagin and Paternoster, 1994; Sampson and Laub, 1993) and Warr (1998), this study cannot fully reconcile earlier discrepancies or resolve the debate about the mechanism by which marital bonds impact desistance. Although proponents of control theory are likely to interpret our findings as evidence that adult social bonds directly constrain illicit behavior, a key factor in this process is the conventionality/deviance of the spouse (see Simons *et al.*, 2002). Individuals that enter into high attachment marriages with partners that use marijuana or hold definitions that favor marijuana usage may actually decrease their likelihood of desistance, while those who enter close-knit marital unions with anti-marijuana thinking and acting partners are likely to experience an increase in the probability of quitting marijuana use. Unfortunately, the NYS does not contain a measure of the conventionality/deviance of one's spouse. Thus, the data used for this study do not allow us to control for the orientation towards marijuana use of a respondent's marital partner. However, because the NYS data do contain a measure of the respondents' perception of how wrong it is for someone of their age group to use marijuana, we explored whether the marital attachment effect is explained away by this measure of definitions/attitudes towards marijuana use (1 = not wrong to 4 = very wrong). To do this, we computed the change in this item between waves 5 and 6 and added it to the regression equation specified in model 2 of Table I. Results from this analysis, shown in model 7 of the Appendix, suggest that increasing one's disapproval of marijuana use increases the likelihood of stopping use. However, the effect of high marital attachment remains significant after this variable is entered into the equation. Thus, although our findings clearly suggest the importance of variables derived from differential association theory in explaining marijuana desistance, they also indicate that marital attachment remains directly relevant as well.

Taken as a whole, our findings highlight the need for additional longitudinal studies of desistance that examine variables derived from *both* control and differential association theories. While recent life-course criminology studies have effectively addressed the debate between persistent heterogeneity and age-graded control perspectives, our study and the recent work of Warr (1998) are reminders that in order to advance the understanding of the criminal desistance process, other important theoretical explanations must be considered. The article by Ayers and colleagues (1999) is a good example of an integrated theoretical approach to understanding desistance, and criminal careers in general.

Although this study extends prior work, it contains shortcomings that should be addressed in future studies. For example, the current analysis was limited by an inability to determine if in fact the termination of marijuana use by sample members in this study was episodic or permanent. Despite the longitudinal design of our inquiry, we only observe a small portion of the life course. It is likely the case that some of the “desisters” in our study are on what Laub and Sampson (2001, p. 54) call the “zigzag path”, in which offending stops for a short period of time before resuming. Indeed, our own supplemental analysis of wave 7 data from the NYS indicates that of our group of desisters, roughly one-quarter (23%) used marijuana three or more times 2 years later (in 1984), 20% used at this rate 3 years later, and about 12% used marijuana three or more times one year after that (Elliott, 1996).

Another limitation of our longitudinal design is that most of the marriages we observe are likely still in the “honeymoon stage”. This is evidenced by the fact that the frequency distributions of the marital attachment items are skewed to the left (i.e., the majority of cases fall in the categories indicative of relatively good marital relations). As such, our analysis may have underestimated (or been unable to adequately detect) the full impact of moderate levels of marital attachment, which, according to informal social control theory, ought to inhibit crime to some degree. Likewise, the short duration may not fully allow the mediation processes suggested by Warr (1998) to reveal themselves in our analysis. For instance, it may be that the number of delinquent peer associates will not only vary across individuals, but that some men and women will “hang out” with deviant peers for a longer period than others. Just as marital attachment and criminal offending may decline gradually, so might the decline in criminal associates. It is therefore possible that as the life course marches on, the portion of the “marriage effect” on desistance that is indirect may grow.

APPENDIX. Supplemental Probit Regression Models Predicting Desistance from Marijuana Use (in Wave 6) ($N = 552$ unmarried marijuana users)

	Model 1 ^a β	Model 2 ^b β	Model 3 ^c β	Model 4 ^d β	Model 5 ^e β	Model 6 ^f β	Model 7 ^g β
Rural residence (wave 6)	0.14	0.17	0.22	0.21	0.21	0.15	0.12
Male	-0.07	-0.12	-0.19	-0.22**	-0.24*	-0.08	0.01
Non white	0.41*	0.37*	0.47*	0.40*	0.35*	0.43*	0.50*
Age	0.06	0.05	0.05	0.06	0.05	0.03	0.04
Prior marijuana use rate	-0.22*	-0.17*	-	-	-	-0.25*	-0.25*
Entered college	0.25	0.18	0.30**	0.30**	0.24	0.23	0.33**
Entered full-time employment	0.01	0.04	0.12	0.11	0.13	0.05	0.04
Change in time spent with friends	-0.00	-0.00	-0.00	-0.00	-0.00	0.00	0.00
Got married							
Low marital attachment	-0.16	-0.08	-0.19	-0.23	-0.19	-0.02	-0.10
High marital attachment	0.49*	0.40**	0.42*	0.37**	0.31	0.58*	0.60*
Change in delinquent peer exposure	0.89*	1.43*	-0.32*	0.71*	1.56*	-0.39*	-0.29*
Family social capital (wave 2)	-	-	-	-	-	-0.03*	-
Change in definitions favorable	-	-	-	-	-	-	0.35*
LR Model Chi-Square	100.0*	107.2*	65.96*	44.6*	70.5*	130.0*	147.4*
Max-Rescaled Pseudo-R ²	0.24	0.25	0.16	0.11	0.17	0.30	0.34
N	552	552	552	552	552	546	552

^aDelinquent peers coded identical to Warr (1998); a score of 1 assigned to respondents that drop at least two categories on the original metric of delinquent peers variable between waves 5 and 6, 0 otherwise.

^bDelinquent peers variable coded as 1 = lost all delinquent friends; 0 = did not lose all delinquent friends.

^cPrior marijuana use rate omitted, delinquent peers variable coded identical to Tables II and III.

^dPrior MJ use rate omitted and delinquent peers variable coded identical to Warr (1998).

^ePrior MJ use rate omitted and delinquent peers variable coded as 1 = lost all delinquent friends; 0 = did not lose all delinquent friends.

^fDelinquent peers coded as in Tables I and II; family social capital included.

^gDelinquent peers coded as in Tables I and II, change in definitions favorable to MJ use included.

* $p < 0.05$; ** $p < 0.10$.

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