DOES DROPPING OUT OF SCHOOL MEAN DROPPING INTO DELINQUENCY?*

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Approximately one third of U.S. high-school freshmen do not earn their high-school diploma on time. For African-American and Hispanic students, this figure nearly reaches one half. The long-term economic consequences of dropping out of school for both the student and the larger community have been well documented. It has also been argued that school dropouts put themselves at a higher risk for delinquent and criminal behavior when they leave school. Although it seems plausible that dropping out might increase the potential for delinquent conduct, another view states that dropping out is simply the final event in a long, gradual process of disenchantment and disengagement from school. Dropouts show evidence of school failure and developmental problems years in advance. It has been argued, therefore, that the actual event of finally leaving school has no causal effect on criminal or delinquent behavior because it has been so long in coming. In this article, we examine the effect of leaving school early, and the reason for dropping

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High-school dropout rates in the United States are disturbingly high. Although it was once thought that dropout rates had been steady over the past few decades at less than 20 percent, more recent evidence suggests that nearly one third of public school students do not achieve their high-school diploma on time (Greene and Winters, 2005). More importantly, dropout rates are particularly high for racial minorities. For example, of those who entered ninth grade in 1998, approximately 78 percent of non-Hispanic white youths graduated from high school with a regular diploma, whereas only 56 percent of African Americans and only 53 percent of Hispanic students did (Greene and Winters, 2005). Lower socioeconomic students in urban schools are at approximately a 20 percent higher risk of dropping out than those in suburban school districts (EPE Research Center, 2006). Balfanz and Legters (2004) have shown that a small proportion of high schools in the United States (about 10 percent) produce about 50 percent of the total number of dropouts, and these high schools are attended by about one half of all African-American high-school students and nearly 40 percent of Hispanic students but only about 11 percent of the nation’s white students. All told, it is estimated that each year about 1.2 million students do not graduate on time; this calculation amounts to approximately 7,000 new dropouts for each school day (EPE Research Center, 2006).

1. The very simple question as to what percent of the high-school population drops out of high school has generated a great deal of recent controversy. Critics have argued that traditional estimates, which are usually provided by the U.S. Department of Education’s National Center for Education Statistics (NCES), substantially underestimate the number of dropouts in the United States. The NCES relies on data provided by the Current Population Survey, which in turn uses self-reported information about school attendance. The Current Population Survey counts a high-school graduate as one who dropped out of high school but eventually earned a General Educational Development (GED) certificate. Several reasons exist as to why GED recipients should not be counted as high-school graduates, which includes the fact that, in terms of later life outcomes, GED holders more closely resemble high-school dropouts than high-school graduates. Information provided by states on the number of dropouts they have is likely to be no more informative. Texas, for example, which reports a high-school graduation rate of over 90 percent, counts a high-school graduate as not only those with GEDs, but also dropouts who state that they one day plan to complete their GED requirements (Schemo, 2003, 2004).
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The consequences for youth who drop out of high school are nontrivial. High-school dropouts are 72 percent more likely to be unemployed than high-school graduates (U.S. Department of Labor, 2004). In 2004, the average annual income for high-school graduates was $26,156, whereas for dropouts, it was only $16,485—a difference of $10,000 repeated every working year (U.S. Bureau of the Census, 2005). High-school dropouts are substantially more likely to receive public assistance than high-school graduates and are more likely to become teenage parents (Garfinkel, Kelly, and Waldfogel, 2005; Haveman, Wolfe, and Spaulding, 1991; U.S. Bureau of the Census, 1998; U.S. Department of Education, 1999). High-school dropouts are also a drain on the nation’s economy. High-school graduates are healthier than dropouts; it has been estimated that if the approximately 1.2 million youth who are likely to drop out of school this year complete their high-school degrees instead, they could save states more than $17 billion over the course of their lives (Muennig, 2005). High-school dropouts are less likely to have health insurance and at the same time are at greater risk for both early death and a variety of poor health outcomes (Davidoff and Kenney, 2005).

Finally, and most importantly for our current concerns, those who drop out of high school are also thought to be at greater risk for participation in delinquent and criminal behavior. Approximately 68 percent of state prison inmates, 50 percent of federal inmates, and 60 percent of jail inmates did not obtain their regular high-school degree (Harlow, 2003). Wolfgang, Thornberry, and Figlio (1987) found that although high-school dropouts comprised one half of the 1945 Philadelphia birth cohort, they committed over 70 percent of the known offenses. Fagan et al. (Fagan and Pabon, 1990; Fagan, Piper, and Moore, 1986) found that, compared with high-school graduates, dropouts were more involved in all forms of delinquency, drug use and drug selling, and had more contacts with the juvenile justice system. In his study of South London working-class boys, Farrington (1989) found that school dropouts had higher self-reported levels of violent crime from ages 16 to 32 and had accumulated more criminal convictions between the ages of 10 and 32 than those who finished school. Other studies have also found a positive relationship between dropping out of school and both delinquency and substance use (Aloise-Young, Cruickshank, and Chavez, 2002; Crum, Bucholz, et al., 1992; Crum, Ensminger, et al., 1998; Crum, Helzer, and Anthony, 1993; Jarjoura, 1993, 1996; Mensch and Kandel, 1988; Schafer and Polk, 1967; Thornberry, Moore, and Christenson, 1985; Voelkl, Welte, and Wieczorek, 1999).

Although the relationship between dropout status and delinquency and other problem behaviors is substantial, little consensus as to what this means is found. Those who drop out of school may be more antisocial because 1) dropping out of school has a causal impact on delinquency and
problem behaviors, 2) committing delinquent acts and other problem behaviors has a causal impact on dropping out of school, 3) the causal relationship is reciprocal rather than unidirectional, or 4) no causal relationship exists, and dropping out of school, committing delinquent acts, and using drugs and alcohol are simply different effects of a common cause, and any observed relationship among them, however large, is spurious rather than causal.

In support of the latter observation, the empirical literature is consistent in demonstrating that those who eventually drop out of school are different in fundamental ways from nondropouts long before they leave school. Compared with those who stay in school and graduate on time, dropouts tend to come from poor families, have poorly educated parents, and are poor readers, generally academic failures, chronic truants, frequently a grade or more behind in school, more likely to be embedded in a network of delinquent peers, and more likely to have behavioral problems that include a history of antisocial conduct (Alexander, Entwisle, and Horsey, 1997; Alexander, Entwisle, and Kabbani, 2001; Bachman, Green, and Wirtanen, 1971; Bachman and O’Malley, 1978; Elliott and Voss, 1974; Fagan and Pabon, 1990; Fagan, Piper, and Moore, 1986; Kaplan, Peck, and Kaplan, 2001; Mensch and Kandel, 1988; Teachman, Paasch, and Carver, 1996). That this collection of liabilities is not simply a consequence of dropping out of school is supported by Alexander, Entwisle, and Horsey (1997) as well as by Alexander, Entwisle, and Kabbani (2001), who found risk factors as early as grades 1 and 2 that successfully differentiated between those who eventually dropped out and those who stayed in school. Their research highlights the importance of social selection in making a clean, causal inference about the relationship between early school departure and delinquency.

The purpose of this article is to investigate the relationship between dropping out of high school and involvement in subsequent delinquent and problem behaviors. We ask whether a relationship exists between dropping out of high school and subsequent behavior and whether this relationship is driven by causation or selection. We make no a priori prediction about the possible effect of dropping out of school, because both existent theory and research is consistent with either a causal relationship (in either or both directions) or a spurious one. We are, however, mindful of the possibility of self-selection. Because of this possibility, any test of this relationship requires a rigorous control for preexisting differences between those who drop out and those who do not.

We also recognize that youth leave school early for a variety of reasons. Sometimes they leave because they find school boring and uninspiring, and sometimes it is because they discover they are academically far behind. At other times, they leave because they do not like school and
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school work, and still others drop out for family reasons, or because of compelling financial demands to get a job (Bridgeland, DiIulio, and Morison, 2006). It seems likely that the reasons for dropping out may condition the impact of leaving school early, because the reason for leaving school for a dropout is an indicator not only of who they are, but also more importantly, it is an indicator of in which developmental direction they are heading. Those who drop out of school because they are having academic difficulties or do not like school may think of themselves and their future in different terms than those who have to leave school to get a job or because of pressing family obligations. Some youths drop out of school and assume new conventional roles and identities like “worker” or “parent,” whereas others leave school but fail to assume another positive role. These different self-assessments or social identities may, in turn, have different implications for their behavior after leaving school. Although previous research has investigated the possible conditional effect that the reason for dropping out of school may have (Jarjoura, 1993, 1996), no articulated theoretical rationale has been found to explain why the reason behind the decision to leave school may matter.

We draw on identity theory to predict that youth who drop out of school to secure employment or to assume family responsibilities are moving in the direction of a positive possible self—the kind of self they want to be (Cast, 2003; Foote, 1950; Kiecolt, 1994; Markus and Nurius, 1986, 1987). By taking on employment or marital/family roles when they leave school, these youth are taking the next step toward adulthood (even if prematurely, and perhaps, rashly). We predict that for these youth who are intentionally moving themselves in a desired direction, dropping out will not be related to an increased involvement in crime. Youth who drop out because they simply do not like school or who are doing poorly are not motivated by a sense of a positive identity in the future. For these youth, dropping out is not a step to the next level but is a step backward in terms of a developmental sequence toward adulthood. We expect that for these youth, without a new identity either motivating them or serving as a guide, dropping out will lead to increased crime.

With the use of waves one through seven of the National Longitudinal Survey of Youth-1997 (NLSY97), we investigate the relationship between dropping out of school and subsequent criminal behavior. Two specific issues will guide our analysis: 1) Does dropping out of school have a causal effect on subsequent involvement in criminal behavior, or is it simply a marker for things that have gone wrong in the past? 2) If there is a causal effect for dropping out, then is this effect different for those who drop out for different reasons? Because we do not write on a clean slate, in the next two sections of this article, we review previous theoretical and empirical
work on the dropout/delinquency relationship. We then discuss our theoretical rationale for expecting that the reasons given for dropping out of school may say something about dropouts’ current and, more importantly, future social identity. We follow this section with a brief description of the NLSY data and the measures and analytic strategy we employed in this research. After presenting our results, we conclude by discussing their implications and offer suggestions for future research.

EXISTING LITERATURE

THEORIES THAT LINK DROPPING OUT AND DELINQUENCY

Several theoretical positions can be appealed to concerning the relationship between dropping out of school and delinquency. The two criminological theories that have received the most attention in the literature are strain theory and social control theory.2 According to strain theory, delinquent conduct is an adaptation to a feeling of dissatisfaction, displeasure, or goal blockage. In traditional strain theory, youth who experience academic and social failure in school have two possible courses of action. One solution is to remain in school and reduce the strain produced by one’s negative school experiences by engaging in delinquent conduct. Because delinquency provides a sense of status and success not obtained in school, involvement in delinquency is predicted by the theory to lead to a reduction in strain (Cloward and Ohlin, 1960; Cohen, 1955). The second possible solution is to remove oneself from the source of strain and leave school (Elliott, 1966, 1978; Elliott and Voss, 1974). Once one has left school and no longer feels strained by school failure, the motivation for delinquent conduct is diminished. Therefore, traditional strain theorists would predict an inverse relationship between dropping out of school and subsequent delinquency because leaving school would reduce strain and, therefore, the primary motivation for delinquent conduct.

2. Several other theories predict the relationship between dropping out of school and delinquent/problem behavior. Rational choice theory, for example, might predict that because school constitutes an investment in conformity, its possible loss may serve as a cost that inhibits antisocial behavior. Labeling theory might predict that the status of “high-school dropout” is a negative label that would make it more difficult for those with it to do well in life—get good jobs, have conventional friends, and be thought of highly by both others and self. These disabilities would then lead to additional misconduct as one is denied access to normal roles and moved in the direction of deviant ones. Routine activities theory might predict that involvement in school inhibits delinquent conduct because one is under the supervision of conventional handlers, and the day is taken up with nondeviant activities. Once one has left school, however, structured time with conventional handlers like teachers is replaced by unstructured and unsupervised time with peers.
More recently, general strain theory (GST) has broadened the theory by proposing three sources of strain: 1) the failure to achieve positively valued goals, 2) the removal of positive stimuli, and 3) the exposure to negative stimuli (Agnew, 1992). Youth who expect themselves to be successful in school but who are doing poorly are susceptible to the first source of strain. One who is performing well but who must quit school because of family, financial, or other obligations is susceptible to the second source of strain. Youth who experience a wide range of negative events in school (bullying and taunting by classmates) are susceptible to the third source of strain. In the first and third of these situations, one who drops out of school is predicted to be at diminished risk of delinquency because he or she has escaped from the source of the strain. The successful student who is forced to quit school because of financial difficulties or because of a marriage and/or pregnancy may be expected to be at an increased strain and risk of antisocial behavior. This risk, however, may be reduced when the new role of worker or spouse/parent actually reduces their strain. If dropping out of school is part of a movement toward the adoption of a conventional role or new social identity, then strain could successfully lead to favorable outcomes rather than to delinquency and crime. GST does not, therefore, allow for simple predictions about the relationship between dropping out of school and delinquency, but like traditional strain theory, it would posit some causal relationship.

According to social control theory (Hirschi, 1969), the natural inclination to commit delinquent conduct is inhibited to the extent that a strong bond is forged with conventional persons and social institutions. For teenage youth, these important conventional persons include people like teachers and coaches, and an important social institution is the school. Youth who are committed to the values and goals of education, who have favorable emotional attachments to school personnel, and who spend time in school-related activities (attending class, studying, and participating in extracurricular activities) are presumed to have a stronger conventional bond that restrains their antisocial impulses. Social control theorists would predict, therefore, that a youth who drops out of school would be at an increased risk of delinquency because a critical part of their social bond has been attenuated.

This simple prediction becomes a little muddled, however, when the possibility of the formation of conventional post-school bonds is taken into consideration. A youth whose bond with the school and school personnel is severed by dropping out may nevertheless form a strong conventional bond with an employer or with a new family that they are trying to support. Although leaving school early severs some conventional bonds, other controlling bonds can be forged by newly adopted roles and social identities such as “worker” or “parent.” A wider conception of social control
theory, therefore, may lead to the prediction that the relationship between dropping out of school and delinquency depends on what kinds of roles and identities are formed during and after dropping out. Dropping out that is followed by unemployment and more time hanging out with friends does not lead to the adoption of a new positive identity but may instead be thought of as a developmental step backward, one likely to lead to delinquent and criminal conduct. Dropping out that is followed by the establishment of a new positive social identity such as “worker” or “parent,” however, would more likely lead to the formation of new social bonds that provide a restraint on antisocial behavior. Social control theory does not, therefore, allow for an unambiguous prediction about the relationship between dropping out of school and delinquency, but like strain theory, it clearly posits that some causal relationship exists.

In their General Theory of Crime, Gottfredson and Hirschi (1990) argue that crime, as well as many other analogous behaviors, is the product of low self-control. They describe low self-control as the inability to resist short-term, easy-to-obtain pleasures and the ability to resist actions that require long-term dedication, commitment, and toil. Low self-control is formed early in the life course (approximately by age 8–10) and is relatively time stable. Although they argue that socialization continues to occur throughout life, the rate of change in self-control is constant across individuals such that those lower compared with others on any measure of self-control early in life will likely be lower than others later in life. The consequences of low self-control are legion. Those who cannot resist the immediate and easy gratification of their desires are likely to become involved in a host of antisocial and self-destructive behaviors (delinquency, smoking, excessive drinking, drug use, gambling, or sexual promiscuity) and are unlikely to do things like finish school, sustain healthy social relationships, or find and maintain steady legitimate employment. Self-control theorists would, therefore, predict that dropping out of school and delinquency are related, but unlike social control and strain theorists, they would not argue that they are causally related. Proponents of the Gottfredson and Hirschi point of view would argue that the relationship between delinquency and leaving school early is entirely spurious; both are simply different manifestations of the same common cause—low self-control. Their work gives theoretical expression to a selection effect in the dropout/delinquency relationship.3

3. Others too have argued that any relationship between dropping out of school and delinquency is likely spurious rather than causal. Newcomb and Bentler (1988) as well as Jessar and colleagues (Donovan and Jessar, 1985; Donovan, Jessar, and Costa, 1988; Jessar, Donovan, and Costa, 1991; Jessar and Jessar, 1977) have put forth theories that argue that a cluster of problems in adolescence (delinquency,
The picture one would get from examining criminological theory about any expected relationship between dropping out of school and delinquency is decidedly murky. Some theories argue that the relationship between the two is causal, but it is not clear what precise hypotheses could be derived because these theories are compatible with the view that leaving school early can conceivably put one at increased or diminished risk of delinquent conduct. Other theories, such as Gottfredson and Hirschi’s General Theory of Crime, would concur with strain and social control theories that a relationship between dropping out of school and delinquency exists, but it would part company with them and argue that this relationship is because of social selection rather than social causation.

EMPIRICAL STUDIES THAT LINK DROPPING OUT AND DELINQUENCY

If one is a little mystified by the theoretical confusion surrounding the expected relationship between leaving school early and involvement in delinquency, one is not likely to find much clarification in the empirical literature. Results from the earliest research on this topic are best characterized as “mixed.” For example, Elliott and Voss (1974; see also Elliott, 1966, 1978) found that rates of official delinquency for those who would eventually drop out of school were highest just before they quit and then declined sharply (regardless of the age at which leaving school occurred). Other research has also shown that the level of delinquency declines among those who drop out of school (LeBlanc and Frechette, 1989; Mukherjee, 1971; see Phillips and Kelly, 1979 for a review). Contrarily, other early studies that have used a longer follow-up period have reported findings that delinquency increases after dropping out of school. For example, Polk et al. (1981) found that those who left high school early had higher levels of criminal offending in their early twenties than those who finished. Hathaway, Reynolds, and Monachesi (1969) and Bachman and O’Malley (1978), both of whom followed high-school graduates and dropouts into their early and mid-twenties, found that high-school dropouts had substantially higher levels of criminal activity than graduates.

Recent research on the relationship between dropping out of school and criminal offending is decidedly more sophisticated than previous research.
for several reasons. First, recent research has explicitly included a consideration of age. Research that indicates that dropouts commit fewer crimes when they leave school may simply reflect the fact that older adolescents who are more likely to drop out of school are generally on the down side of their offending curve. In other words, the age at which leaving school is likely to occur is approximately the age at which offending naturally begins to decline. Second, recent research has just begun to take seriously the problem presented by selection bias. This research has implicitly recognized that even before they leave school, dropouts are more likely to have committed delinquent acts and other antisocial behaviors and may show the manifestations of a disengagement from school that started years earlier. Third, recent research has considered the possibility that the effect of dropping out may depend on the reasons why one leaves school early. According to this research, dropping out because of academic difficulties in school may have a different impact than leaving to take a job or become a parent. Dropouts, it is argued, are not a homogeneous group in terms of the motivation behind leaving school early.

Despite its greater sophistication, however, more recent research on the dropout/delinquency relationship has not produced a clear set of results. In their study with the 1945 Philadelphia cohort, Thornberry, Moore, and Christenson (1985) found, contrary to Elliott’s (1966, 1978) work, that dropping out of school did not have a short-term crime-inhibiting effect. When they examined the effect of dropping out on post-school arrest histories up to age 25, they found a positive relationship between dropping out and crime, controlling for age, race, and social status. Moreover, this more long-term criminogenic effect persisted even when the post-school employment and marital status of the youths were controlled.

Using the National Longitudinal Survey of Youth (years 1979 and 1980), Jarjoura (1993) examined the relationship between dropping out and subsequent delinquent offending while controlling for a cluster of observed covariates (as selection controls) separately for seven different self-reported reasons for leaving school early and three different offense types. He found that net of selection controls, dropping out of school to get married, because of pregnancy, because of a dislike for school, and for “other” reasons increased subsequent involvement in violent delinquency. Only those dropping out because they disliked school, because they were

4. For example, Ensminger and Slusarick (1992) found that the risk factors for eventual dropouts could be identified as early as first grade. Similarly, Alexander, Entwisle, and Kabbani (2001) found that measures of student engagement in school and school absences measured in the first grade were as predictive of dropout status as those measured in the ninth grade. These findings indicated that important preexisting differences exist between students who stay in school and those who eventually drop out.
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expelled, or because of “other” reasons were more likely to subsequently commit theft and sell drugs. Only leaving early because of a dislike for school or for “other” reasons was consistently related to all three offenses, and in no instance was an inverse relationship reported. Following up on this study, Jarjoura (1996) investigated whether the relationship between dropping out and delinquency varied by the youth’s social class, again controlling for a set of observed covariates for selection controls. There is no clear pattern to the reported findings. Dropping out of school for school or personal reasons was positively related to violent offending (for upper status but not lower status youth); however, dropping out of school for economic reasons had a crime-inhibiting effect on theft (for lower status but not upper status youth). Jarjoura (1996: 249) concluded that: “[d]epending on the reason for leaving, delinquency propensity may or may not be enhanced . . . [w]hether dropping out is associated with increased level of delinquent involvement is also conditional on social class.” We are left with the complicated and somewhat theoretically unsatisfying situation that dropping out of school for some reasons is criminogenic but not for other reasons, and for those in one social class position but not another.

DROPPING OUT OF SCHOOL AND SOCIAL IDENTITY

It is conceptually straightforward to claim that the effect of dropout varies. Each of the theories that predicts a relationship, whether it be social strain or social control, has dropout changing a key independent variable—strain or social control—which then affects crime. The relationship between dropout and the operant variable clearly can vary across people, such that the effect of dropout will vary in meaningful ways. The task for the researcher is to generate meaningful a priori theoretical predictions. One possible direction is to focus on the social structure of life situations before and after dropout. Research on the effect of work on youth crime has taken this road, focusing on the quality and characteristics of the work environment (Wright, Cullen, and Williams, 2002). We take our cue from the desistance literature, however, in being skeptical of reasons for behavior change that are entirely social. The desistance literature has reached a consensus of sorts that current descriptions of change ignore the role of individual choice and/or agency in life changes that is then correlated with meaningful changes in behavior (Giordano, Cernkovich, and Rudolph, 2002; Laub and Sampson, 2003; LeBel et al., 2008; Maruna, 2001).

In the current context, kids report a variety of reasons for leaving school early: They dislike academic work, they feel already too far behind academically and will never catch up, they have conflicts with school personnel, they are or will soon become parents, they have to take care of another family member, and/or they have pressing financial obligations
and have to find a job (Bridgeland, DiIulio, and Morison, 2006). It is possible that these different reasons for dropping out largely reflect a variation in current and future social identities. Social psychologists have long recognized that the thoughts that people have about who they are play an important role in directing and motivating their behavior (Burke, 1980; Burke and Reitzes, 1981; Foote, 1950; Stryker, 1968, 1980). More recently, they have argued that identities have a temporal component. We are motivated by both our current self-concept (our “working self”) and what we want to be, aspire to be, and fear being in the future (our “possible self”; Markus and Nurius, 1986, 1987). The possible self provides both a goal to achieve and a guide or roadmap as to what to do to achieve that goal. Behavior inconsistent with that identity is discarded in favor of behavior that is more consistent with the intentional act of self-change that one has undertaken in striving toward a possible self (Kiecolt, 1994). Both the current and possible selves evolve over time in a dynamic process, adjusting to new experiences and goals (Markus and Nurius, 1986; Markus and Wurf, 1987). Thus, a new experience, such as moving from being a high-school student to a high-school dropout, will have an ephemeral effect on the possible self as years pass and new experiences become more relevant to the working and possible selves than the status of high-school dropout.

The social setting of the school consists in part of an interrelated set of social categories or identities, such as “jock,” “nerd,” “geek,” “burnout,” and “stoner” (Coleman, 1961; Eckert, 1989; Everhart, 1983). It is reasonable to assume that given the high expectations that most youth have about their future college attendance (Reynolds and Pemberton, 2001), that whatever their current working identity many have possible selves as college (4-year or community college) students. Some students, however, do not aspire to attend college and may not even have expectations that they will finish high school. These students are likely the ones who have for years struggled with their academic work, are reading below their grade level, and are 1 or more years behind in school. They likely fit into the social categories described in the literature as “burnouts” or “stoners.” Part of the current working identity of these students may be that of a school failure and high-school dropout, whereas their future identity or possible self may not include a positive image of what they want the self to become.

We argue that youth who drop out of school with no reason other than the fact that they do not like school are behind a grade or more, are doing poorly, and have no positive possible self. They are leaving one identity (student) without clearly working toward the adoption of another positive identity. These dropouts lack a positive identity, and in lacking both educational and vocational direction, they are drifting away from informal controls and are more susceptible to what Hagan (1991) has referred to as
“less reputable subcultural pursuits.” Dropouts motivated only by a dislike for school or some other personal reason are also more likely to gravitate toward unstructured socializing with peers. Such unstructured peer socializing frees youth from controls and is the source of new criminal opportunities (Haynie and Osgood, 2005; Osgood and Anderson, 2004). We predict that for youth who are not intentionally moving toward the next developmental level (employment or marriage) and have no positive possible self, the act of dropping out of school is likely to put them at greater risk of involvement in future criminal acts and substance use.

We would not expect youth who are dropping out to secure a job or to become a spouse/parent to be at a greater risk of involvement in illegal behavior, however, because they have the expectation of adopting a positive identity. As they leave one conventional role and positive identity (“student”), these youth are moving toward another positive identity (“worker” or “parent”). If you are moving toward a new identity, an identity at the next developmental level such as entering the labor force or becoming a parent after leaving high school (even if you are leaving by dropping out), then dropping out of school would not be criminogenic. These youth have a positive possible self, and deviant behavior would be inconsistent with this anticipated social identity. In concert with this newly adopted identity as well as the daily requirements of taking on employment or becoming a parent, we would expect the routine activities of these youth to involve less of the unstructured socializing with peers that would characterize those who drop out of school but do not “drop into” another positive role.

It is impossible to ignore the gendered nature of these identities and roles. For example, the roles of parent, student, and worker have different meanings for men and women (Lips, 2004; Simon, 1995; Thompson and Walker, 1989). Therefore, we believe that we need to explore the impact of these dropout reasons by gender. Giving substance to our concerns, empirical evidence suggests that although males and females may leave school at the same rate, females are the “relatively bigger losers” (Ekstrom et al., 1986: 370) in terms of the more negative effect of dropping out on their level of academic achievement and future employment opportunities. Kaplan, Damphouse, and Kaplan (1996) also found that dropping out had a more negative effect on the psychological functioning of females compared with males. In explaining this “female disadvantage,” Josephs, Markus, and Tafarodi (1992) provided a theoretical rationale as to why dropping out of school may more negatively affect females than males. They suggest (1992: 391) that because of early socialization differences, the self schema of females emphasizes social connections where “relations with other people, especially valued and important others, are crucial elements.” They argue that in contrast, males are more likely to
develop an individualist or independent self schema in which others are viewed as not part of the self but distinct from it. The selves of females, then, value social connections and interdependence with others, whereas those of males should more highly prize independence and autonomy. From this reasoning, Kaplan, Damphouse, and Kaplan (1996) have argued that because dropping out of school is, among other things, an act of independence and autonomy while at the same time an act that breaks previously established social relations, it should be more harmful to both the self-esteem and general psychological functioning of females compared with males. However, it would seem reasonable to presume that what males and females do after they drop out of school would matter for their self-esteem and therefore the consequences of dropping out for each gender. Because males seek independence, males who drop out of school for economic reasons and enter jobs would find themselves at least economically more independent than nonworking male dropouts. Because females seek affiliation, females who drop out because of marriage, pregnancy, or other family-related reasons would find themselves more socially connected than other females who drop out. We would expect, therefore, that males who drop out for economic reasons and females who drop out for family reasons would fare better than other dropouts of their gender.

We acknowledge that we are speculating about the existence of gender differences in the causal processes by which dropout affects delinquency. However, it is a fact that males and females drop out of school for different reasons and that these reasons may impact the consequences of dropping out for each gender. Moreover, it is reasonable that both these reasons and the nature of the self may moderate the effect of leaving school. Inspired by previous empirical work that suggests that dropping out of school may create more negative consequences for females, and because of the gendered nature of self schemas, we think that it is worthwhile to assess dropout effects both as a whole, and for males and females separately.

METHODS

ANALYTIC STRATEGY

This research will model the dropout/delinquency relationship using two different statistical models. The first is a negative binomial random-effects strategy to model the relationship between dropping out and the number of different delinquent acts that are committed (what is commonly referred to in the literature as a “variety” index of delinquent offending).5

5. A negative binomial model was estimated because the variety scale of delinquency is a discrete count measure of the number of different delinquent acts committed during each time period.
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The second model is a random-effects logistic regression strategy to model the relationship between dropping out and the prevalence of offending.

Concern about identifying selection effects has led many researchers to adopt random- or fixed-effects statistical approaches that use panel data to control for the effect of unobserved time-stable characteristics. Random-effects models assume that individual-specific effects are drawn from a defined probability distribution. Fixed-effects models, however, estimate a specific intercept for each individual (Greene, 2007). The random-effects model is used in this study because of its increased efficiency relative to the fixed-effects model. Rather than estimate individual effects for each person, one only must estimate the parameters of the distribution of individual effects. The simplest version of the random-effects model in this study is represented as follows:

\[ y_{it} = \beta_0 + \beta_1 q_i + \delta_1 x_{it} + \delta_2 D_{it} + \tau_i + \epsilon_{it} \]  

where \( q_i \) represents time-invariant individual characteristics (e.g., gender and race), \( x_{it} \) represents time-varying individual characteristics (e.g., age and number of years sexually active), \( D \) represents dropout status, and \( \tau_i + \epsilon_{it} \) represents the standard error term decomposed into individual-specific, time-stable individual differences (\( \tau_i \)) and random error (\( \epsilon_{it} \)), which varies over time and individuals (Brame, Bushway, and Paternoster, 1999). The time-invariant error term, \( \tau_i \), is assumed to follow a normal distribution. The random error term, \( \epsilon_{it} \), is assumed to be uncorrelated with \( q_i, x_{it}, \) and \( \tau_i \).

This last assumption is problematic as it implies that any unobserved variable must be uncorrelated with both observed static and time-varying predictors. Therefore, random-effects analysis is also vulnerable to omitted-variable bias. It is possible, however, to derive unbiased estimates of the effects of within-individual changes in independent variables in a random-effects model using a technique introduced by Bryk and Raudenbush (1992), which separates within-individual changes from between-individual differences. This technique in essence turns the random-effect estimator into a quasi-fixed-effect estimator for within-individual estimates, and it involves three steps: 1) Calculate the mean level of each time-varying independent variable over all waves for each individual:

\[ \bar{X}_i = \frac{1}{T} \sum_{t=1}^{T} x_{it} \]

2) For each individual, at each wave, calculate the deviation from the individual mean level:

\[ \Delta x_{it} = x_{it} - \bar{x}_i \]
3) Introduce these terms into equation 1 as follows:

$$y_{it+1} = \beta_0 + \beta_1 q_i + \delta_{i0} \bar{X}_i + \delta_{i1} \Delta X_i + \delta_{i2} \bar{D}_i + \delta_{i3} \Delta D_i + \tau_i + \epsilon_{it}$$

Thus, the effect of dropout and other time-varying independent variables is decomposed into between-individual and within-individual effects. This technique removes time-stable bias from the within-individual terms of the equation, which guarantees zero correlation between the within-individual scores and the time-stable error term. This last point is critical because the key to capturing the dropout “effect” (or the effect of any time-varying variable) is to examine the relationship between a change in dropout status and subsequent involvement in delinquent/problem behavior, after removing the possible effects of pre-dropout differences. Both dropout status and time since dropout are decomposed in this manner in all the statistical models. To establish time ordering for causal inference, in all analyses, the relationship we examined was between dropout status at one point in time and a measure of delinquency in the next time period, which ensures that our results do not reflect contemporaneous processes or the effect of delinquency on dropout.

Because we decompose both dropout status and time since dropout into time-stable and time-varying components, the overall effect of each kind of dropout is modeled with four separate coefficients: time-stable dropout status, time-varying dropout status, time-stable years since dropout, and time-varying years since dropout. It is important to understand what each of these coefficients represents to assess the theoretical import of our results. Together, the time-stable, or between-individual, components of dropout status and time since dropout reflect time-invariant differences between dropouts and nondropouts. If the coefficients on these variables differ from zero, it suggests that dropouts are different from nondropouts, but it does not speak to a causal effect of dropout. We expect the coefficients on these time-stable variables will confirm the large body of research that notes the striking differences between dropouts and nondropouts both before and after the dropout event. Our primary focus, however, is to determine whether this change in status causes a subsequent change in delinquency. For this reason, we first turn to the coefficient on the time-varying, within-individual component of dropout status, which reflects the effect of a change in dropout status on subsequent delinquency. We must also consider the coefficient on the within-individual component of the years since dropout variable, which reflects the causal effect of changes in the amount of time since dropout occurred. If an individual drops out of high school just before an interview date, the value of the within-individual dropout status variable will be one full unit higher than in the previous period (e.g., .5 instead of −.5, or .2 instead of −.8, depending the individual’s mean dropout status over all observed waves),
and the value of the dependent variable will be determined on the following interview date when we discover the individual’s participation in delinquency in the year after the change in dropout status. The time since dropout variable would exhibit little or no change relative to pre-dropout values if a person drops out just before an interview date. However, if a person remains dropped out until the following interview date, the within-individual time since dropout variable will increase by the number of years between interviews (typically, one), and thus, it will capture the enduring (if indistinguishable from zero), increasing (if distinguishable from zero and the same sign as the time-varying dropout coefficient), or decaying (if distinguishable from zero and opposite sign of the time-varying dropout coefficient) effect of dropout. Effectively, inclusion of this within-individual time since dropout variable changes the interpretation of the within-individual dropout status variable to the immediate effect of dropout.

DATA

The data to be analyzed come from NLSY97. The NLSY97 is a multi-stage cluster sample with an oversampling of minority youth. Each participant is assigned a sampling weight that is used in all analyses to ensure that inferences to the national population are not biased. In addition, it is necessary to control for clustering in the sample design of the survey. In the first wave, 8,984 youths aged 12 to 17 were interviewed, and they have been reinterviewed in every subsequent year. The longitudinal studies of the Bureau of Labor Statistics are known for their low attrition rates, and this is true of the NLSY97. In the sixth wave of the study, 7,897 youths were interviewed, which is 87.9 percent of the original sample. Because we need at least three adjacent interviews between waves 1 and 7 for each person to be observed, those who did not have this were eliminated from the sample. Our working sample size was 8,112 with 4,129 males and 3,983 females.

6. Because all youths of eligible age within the household were interviewed, many siblings were included, and independence does not occur across observations. It is possible to retrieve estimates of the magnitude of the design effect associated with this nonindependence using the suite of survey estimation commands in the STATA application (“svyset”), which specifies the household id as the clustering variable, followed by the postestimation command “estat eff, deft”. For each model, the design effects were calculated for each wave separately and then averaged across the six waves before adjusting standard errors. We were forced to average design effects across the six waves rather than to estimate them in a pooled model because if pooled data were used, repeated observations on the same subject would be interpreted as clustering and would result in incorrectly inflated design effect estimates. Typically, this adjustment increased standard errors for the dropout coefficients by 5 to 12 percent, which makes it slightly more difficult to reject the null hypotheses.
females, who contributed 45,546 person waves. Based on our working sample, table 1 reports the sample size for each wave of the NLSY97 by age, and the proportion of the sample that was enrolled in school at the time.

Table 1. Sample Size and Proportion Enrolled in School (Primary or Secondary) by Age and Wave

<table>
<thead>
<tr>
<th>Age</th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
<th>Wave 5</th>
<th>Wave 6</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>1021 .996</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1021 .996</td>
</tr>
<tr>
<td>13</td>
<td>1592 .992</td>
<td>55 .964</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1647 .991</td>
</tr>
<tr>
<td>14</td>
<td>1651 .993</td>
<td>1506 .953</td>
<td>65 1.000</td>
<td></td>
<td></td>
<td></td>
<td>3222 .974</td>
</tr>
<tr>
<td>15</td>
<td>1631 .982</td>
<td>1603 .954</td>
<td>1576 .965</td>
<td>26 .962</td>
<td></td>
<td></td>
<td>4836 .967</td>
</tr>
<tr>
<td>16</td>
<td>1458 .952</td>
<td>1601 .923</td>
<td>1582 .944</td>
<td>1455 .930</td>
<td>27 .926</td>
<td></td>
<td>6123 .937</td>
</tr>
<tr>
<td>17</td>
<td>534 .891</td>
<td>1553 .860</td>
<td>1626 .856</td>
<td>1599 .883</td>
<td>1474 .889</td>
<td></td>
<td>6786 .873</td>
</tr>
<tr>
<td>18</td>
<td>14 .929</td>
<td>1287 .443</td>
<td>1484 .369</td>
<td>1519 .414</td>
<td>1546 .390</td>
<td>1459 .370</td>
<td>7309 .397</td>
</tr>
<tr>
<td>19</td>
<td>112 .205</td>
<td>1285 .086</td>
<td>1474 .072</td>
<td>1495 .074</td>
<td>1515 .057</td>
<td>5881 .074</td>
<td>10482 .074</td>
</tr>
<tr>
<td>20</td>
<td>76 .039</td>
<td>1281 .019</td>
<td>1481 .020</td>
<td>1504 .020</td>
<td>4342 .020</td>
<td></td>
<td>5001 .020</td>
</tr>
<tr>
<td>21</td>
<td>152 .007</td>
<td>1259 .013</td>
<td>1476 .009</td>
<td>2887 .011</td>
<td></td>
<td></td>
<td>5223 .011</td>
</tr>
<tr>
<td>22</td>
<td>130 .015</td>
<td>1236 .006</td>
<td>1366 .007</td>
<td></td>
<td></td>
<td></td>
<td>2762 .007</td>
</tr>
<tr>
<td>23</td>
<td>126 .000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>126 .000</td>
</tr>
<tr>
<td>Total</td>
<td>7901 .976</td>
<td>7717 .832</td>
<td>7694 .667</td>
<td>7506 .473</td>
<td>7412 .283</td>
<td>7316 .093</td>
<td>45546 .562</td>
</tr>
</tbody>
</table>

Descriptive statistics for the key independent and dependent variables, as well as for those control variables that most clearly distinguish between dropouts and nondropouts, are included in table 2; a full list is included in the appendix, including an indication of which control variables were decomposed into time-varying and time-constant components. In all analyses, the time-varying independent variables are lagged one time period behind the delinquency measure, whereas the time-constant variables are taken from wave 1. This lag means that the reasons for dropout occur before the behavior in question, so although the reasons are retrospective with respect to the dropout decision, they are prospective with respect to the measured outcomes.

MEASURES

In each wave of the NLSY97, youths are asked about school status, work status, delinquent involvement, and a host of other topics. They are also asked about participation in six kinds of delinquent offending: intentional destruction of property, theft of items under $50, theft of items greater than $50 (including autos), other property crimes, attacking someone with intent to hurt them seriously, and selling illegal drugs. From these six items, we formed two measures of delinquent offending, a “variety”

7. Everyone in the sample had at least three waves of observed data even if they are not included in the first wave.
# Table 2. Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th>Males</th>
<th>Females</th>
<th>Ever Dropout</th>
<th>Never Dropout</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crime variety</td>
<td>.35 (.85)</td>
<td>.45</td>
<td>.25</td>
<td>.54 (1.09)</td>
<td>.29 (.75)</td>
</tr>
<tr>
<td>Crime prevalence</td>
<td>.20</td>
<td>.25</td>
<td>.16</td>
<td>.28</td>
<td>.18</td>
</tr>
<tr>
<td>Dropout</td>
<td>.11</td>
<td>.12</td>
<td>.10</td>
<td>.46</td>
<td>0</td>
</tr>
<tr>
<td>Years since dropout*</td>
<td>1.72 (1.55)</td>
<td>1.69</td>
<td>1.76</td>
<td>1.72 (1.55)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.51</td>
<td>1</td>
<td>0</td>
<td>.55</td>
<td>.49</td>
</tr>
<tr>
<td>Age</td>
<td>17.77 (2.38)</td>
<td>17.76</td>
<td>17.78</td>
<td>17.77 (2.37)</td>
<td>17.77 (2.39)</td>
</tr>
<tr>
<td>White</td>
<td>.72</td>
<td>.72</td>
<td>.72</td>
<td>.65</td>
<td>.74</td>
</tr>
<tr>
<td>Black</td>
<td>.16</td>
<td>.16</td>
<td>.16</td>
<td>.22</td>
<td>.14</td>
</tr>
<tr>
<td>Hispanic</td>
<td>.13</td>
<td>.13</td>
<td>.12</td>
<td>.17</td>
<td>.11</td>
</tr>
<tr>
<td>Lives with biological parents</td>
<td>.54</td>
<td>.55</td>
<td>.52</td>
<td>.33</td>
<td>.60</td>
</tr>
<tr>
<td>Arrests</td>
<td>.11 (.56)</td>
<td>.16</td>
<td>.06</td>
<td>.28 (.95)</td>
<td>.05 (.33)</td>
</tr>
<tr>
<td>Smoking prevalence</td>
<td>.42</td>
<td>.42</td>
<td>.42</td>
<td>.58</td>
<td>.37</td>
</tr>
<tr>
<td>Years sexually active</td>
<td>2.42 (2.75)</td>
<td>2.58</td>
<td>2.24</td>
<td>3.50 (2.98)</td>
<td>2.07 (2.58)</td>
</tr>
<tr>
<td>Antisocial peer scale</td>
<td>1.76 (1.66)</td>
<td>1.58</td>
<td>1.95</td>
<td>2.18 (1.74)</td>
<td>1.63 (1.61)</td>
</tr>
<tr>
<td>Middle-school GPA</td>
<td>2.87 (.86)</td>
<td>2.72</td>
<td>.87</td>
<td>3.02 (.82)</td>
<td>2.31 (.86)</td>
</tr>
<tr>
<td>Ever suspended</td>
<td>.32</td>
<td>.41</td>
<td>.23</td>
<td>.60</td>
<td>.23</td>
</tr>
<tr>
<td>Ever retained</td>
<td>.17</td>
<td>.20</td>
<td>.14</td>
<td>.38</td>
<td>.11</td>
</tr>
<tr>
<td>ASVAB: arithmetic reasoning</td>
<td>.03 (.90)</td>
<td>.04</td>
<td>.95</td>
<td>.42 (.91)</td>
<td>.17 (.85)</td>
</tr>
<tr>
<td>ASVAB: word knowledge</td>
<td>.02 (.91)</td>
<td>.02</td>
<td>.94</td>
<td>.40 (.90)</td>
<td>.16 (.87)</td>
</tr>
<tr>
<td>ASVAB: paragraph comprehension</td>
<td>.03 (.91)</td>
<td>-.07</td>
<td>.94</td>
<td>.45 (.87)</td>
<td>.18 (.86)</td>
</tr>
<tr>
<td>ASVAB: math knowledge</td>
<td>.03 (.90)</td>
<td>-.03</td>
<td>.92</td>
<td>.52 (.86)</td>
<td>.20 (.85)</td>
</tr>
<tr>
<td>Mother dropout</td>
<td>.16</td>
<td>.16</td>
<td>.16</td>
<td>.32</td>
<td>.11</td>
</tr>
<tr>
<td>Father dropout</td>
<td>.15</td>
<td>.16</td>
<td>.15</td>
<td>.26</td>
<td>.12</td>
</tr>
<tr>
<td>Received federal aid</td>
<td>.35</td>
<td>.35</td>
<td>.36</td>
<td>.53</td>
<td>.30</td>
</tr>
<tr>
<td>Outside: nice</td>
<td>.65</td>
<td>.64</td>
<td>.65</td>
<td>.45</td>
<td>.71</td>
</tr>
<tr>
<td>Outside: fair</td>
<td>.27</td>
<td>.28</td>
<td>.27</td>
<td>.38</td>
<td>.24</td>
</tr>
<tr>
<td>Outside: poor</td>
<td>.07</td>
<td>.06</td>
<td>.07</td>
<td>.15</td>
<td>.04</td>
</tr>
<tr>
<td>N (person waves)</td>
<td>45,546</td>
<td>22,990</td>
<td>22,556</td>
<td>12,380</td>
<td>33,170</td>
</tr>
<tr>
<td>N (individuals)</td>
<td>8,112</td>
<td>4,129</td>
<td>3,983</td>
<td>2,258</td>
<td>5,855</td>
</tr>
</tbody>
</table>

**NOTES:** Numbers in parentheses are standard deviations. All figures are weighted.
*Descriptive statistics for this variable are reported for dropouts only.

measure and a prevalence measure. At each wave, for each offense, a respondent who admitted committing the offense was assigned a code of one. The variety score is simply the sum of the number of different delinquent acts that were committed during a given time period. For example, if a person admitted one of the six delinquent acts, they were assigned a score of “1”; if they self-reported four types of delinquent acts during that time period, then their variety score is a “4.”
Such a variety measure of delinquent offending makes intuitive sense, has valuable measurement properties, is common practice in delinquency research (Hindelang, Hirschi, and Weis, 1981), and correlates highly with more complicated delinquency measures based on item response theory (Osgood, McMorris, and Potenza, 2002). At any time period, the variety score can vary from a low of “0” for nonoffenders to a high of “6” for those who committed each delinquent offense at least one time. In addition to this variety score, we constructed a binary measure of the prevalence of offending for each time period. At any time period, a respondent was coded as 1 if they committed any of the six delinquent offenses at least one time and 0 if they were nonoffenders. The prevalence of offending, therefore, measures the proportion of the respondents who admitted participating in any of the six delinquent acts over a given time period. The prevalence measure distinguishes those who are nonoffenders from those who participated in delinquent behavior.

The primary independent variable of interest in this study is dropping out of school. No question that directly pertains to dropout is asked in the NLSY97. Instead, enrollment status is reported. For our purposes, respondents who were not enrolled in school and had not graduated with a regular high-school diploma are considered dropouts. Those persons who left high school without a diploma but who subsequently obtained a GED are also considered dropouts (Alexander, Entwisle, and Kabbani, 2001; Rumberger and Larson, 1998; and see Entwisle, Alexander, and Olson, 2004 for treatment of differences among GED holders, graduates, and non-GED dropouts). If students are identified as dropouts, then questions regarding their school attendance are examined to determine the
DROPOUT AND DELINQUENCY

most recent school the student had attended. The date of interview minus the last date of enrollment in the most recent school is taken as the time since dropout variable, which is coded in years. The time since dropout is included in the models to gauge whether, as predicted by identity theory, the effect of dropping out of school on delinquent offending decays over time.\footnote{10}

Subjects were also asked why they left each school they had previously attended. They were provided with 25 possible reasons to choose from but were allowed to choose only one reason for each school. From these response options, four categories of reasons for dropping out of school were constructed: 1) school reasons, 2) personal reasons, 3) economic reasons, and 4) other reasons. The school reasons were those related to expulsion, suspension, poor grades, dislike of school, not getting along with other students, their friends had dropped out, and they did not have enough credits to graduate. Personal reasons included getting married, being pregnant, having child-care or home responsibilities, and becoming a parent. Economic reasons included being offered a job, entering the military, and financial difficulties. Finally, several of the 25 responses provided in the NLSY97 were not easily classified into any of these three categories and were categorized as “other” reasons. This category includes youths who dropped out because of perceived dangerousness of the school, they moved away from the school, drugs or alcohol, incarceration, a health problem, the school closed, transportation problems, they moved to home school, their response to the question was either not able to be coded or was coded as “other,” or they left their most recent school because of a transfer but no other school was on record. Table 3 reports the number of dropouts per wave for each reported reason for leaving school. Because of the “stopout” phenomenon, in which former dropouts return to school, and then sometimes drop out again, youths may be coded offending. The research also suggests, however, that those with a GED are also different from what might be considered “permanent” dropouts (Cameron and Heckman, 1993; Cao, Stromsdorfer, and Weeks, 1996; Chuang, 1997; Finn and Rock, 1997; Murnane, Willett, and Boudett, 1995, 1997). Because those with a GED are in an ambiguous position relative to those with a high-school diploma and those without any degree, we ran identical models with GED earners considered as high-school graduates instead of dropouts. The pattern of results from these analyses is substantively the same as the results reported in this article. This suggests that the within individual effect of dropout with a GED is no different from the within-individual effect of dropout without a GED.

\footnote{When the time since dropout is not included in our regression models, the average effect of dropout is small and not statistically different from zero. Omitting the time since dropout assumes that the effect of dropping out of school is constant over time. To the contrary, we found that any statistically discernable drop-out effects were transitory and decayed within 2 years at the most.}
as a school dropout in one period, a high-school student in the next period, and another kind of dropout in a subsequent period. Table 4 reports the proportion of youth who are ever counted as each type of dropout.

Table 3. Reasons for Dropout by Wave

<table>
<thead>
<tr>
<th></th>
<th>Wave 1</th>
<th>Wave 2</th>
<th>Wave 3</th>
<th>Wave 4</th>
<th>Wave 5</th>
<th>Wave 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>92</td>
<td>233</td>
<td>331</td>
<td>439</td>
<td>472</td>
<td>493</td>
</tr>
<tr>
<td>Personal</td>
<td>16</td>
<td>68</td>
<td>99</td>
<td>148</td>
<td>152</td>
<td>169</td>
</tr>
<tr>
<td>Economic</td>
<td>7</td>
<td>39</td>
<td>65</td>
<td>87</td>
<td>101</td>
<td>115</td>
</tr>
<tr>
<td>Other</td>
<td>61</td>
<td>398</td>
<td>414</td>
<td>502</td>
<td>601</td>
<td>612</td>
</tr>
<tr>
<td>Total</td>
<td>176</td>
<td>738</td>
<td>909</td>
<td>1,176</td>
<td>1,326</td>
<td>1,389</td>
</tr>
</tbody>
</table>

NOTES: 
N (individuals) = 8,112. 
N (person-waves) = 45,546.

Table 4. Cumulative Prevalence of Reasons for Dropout

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>School</td>
<td>758 (.093)</td>
<td>495 (.120)</td>
<td>263 (.066)</td>
</tr>
<tr>
<td>Personal</td>
<td>234 (.029)</td>
<td>50 (.012)</td>
<td>184 (.046)</td>
</tr>
<tr>
<td>Economic</td>
<td>174 (.021)</td>
<td>121 (.029)</td>
<td>53 (.013)</td>
</tr>
<tr>
<td>Other</td>
<td>1,375 (.170)</td>
<td>764 (.185)</td>
<td>611 (.153)</td>
</tr>
<tr>
<td>Total</td>
<td>2,257 (.278)</td>
<td>1,278 (.310)</td>
<td>979 (.246)</td>
</tr>
</tbody>
</table>

NOTES: Cumulative prevalence reflects the number of individuals who ever reported each type of dropout, or dropout in general. Columns do not sum because individuals with multiple dropout spells may report a different dropout reason for each dropout spell.

Comparing tables 3 and 4 yields several important observations. First, it is clear that there is a considerable amount of dropping out of and back into school. By wave 6, there are 1,389 dropouts in the sample. However, 2,257 individuals (27.8 percent) are counted as dropouts sometime during the first six waves. Also, males and females differed significantly in reasons why they dropped out of school. For example, females were nearly four times more likely than males to drop out for personal reasons, and males were over twice as likely as females to drop out for economic reasons. Males were also 1.8 times as likely as females to drop out for school reasons. This finding gives us another reason to conduct separate analyses for males and females.

Besides demographic indicators such as sex, age, age squared, race, ethnicity, and region of the country, we include extensive time-stable and time-varying control variables to address the challenge of selection bias. We include several variables as a proxy for population heterogeneity in propensity to commit delinquent acts: number of arrests since the previous interview (maximum recorded by the NLSY was nine), number of years
youth has been sexually active, smoking, and alcohol use. Those variables that vary over time were transformed into time-stable and time-varying elements. To account for the influence of delinquent peers, we included an antisocial peer scale composed of five items: peer smoking, drinking, drug use, gang involvement, and truancy (alpha = .91). All of these measures are based on yearly self-reports. It is expected that these variables will strongly predict offending and will account for a good deal of the heterogeneity in propensity to offend.

Because school-related variables are the best predictors of high-school dropout, several are included in the models: middle-school grade point average (GPA) (self-reported and entered as a continuous measure), problematic school behaviors reported in wave 1 such as fighting and truancy, victimization in school in wave 1, school suspension, and retention (being held back a grade). Retention, or repeating a grade, is one of the best predictors of dropout (Jimerson, Anderson, and Whipple, 2002), and it is coded as a dummy variable that indicates whether the youth has ever been retained. The retention measure was based on wave 1 parent interviews and subsequent youth interviews. The age-normed scores on the four subtests of the Armed Services Vocational Aptitude Battery test that make up the Armed Forces Qualification Tests are included as well. For the 17 percent of the sample that is missing these tests, we include a dummy variable and replace the missing values with zero. We also included an indicator of whether the youth was in high school to avoid the assumption that high-school graduation has no effect on crime.

Several variables were included to account for the influence of parental background and socioeconomic status on high-school dropout. Parental educational attainment, drawn from the wave 1 parent interview, was coded as two dichotomous indicators of parental high-school dropout, one for the father and one for the mother. A dummy variable for whether the mother had her first child as a teen was also included. We also controlled for receiving any kind of governmental assistance, type of dwelling (house, apartment, or other), and interviewer ratings of the upkeep of the exterior of the dwelling (poor, fair, or nice).

RESULTS

Table 5 reports the results for the negative binomial random-effects model where the outcome is the variety measure of delinquent be-

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11. In less than 1 percent of cases, middle-school GPA is not reported. In these cases, we imputed the sample average of 2.87 and added a dummy variable to indicate that middle-school GPA is missing.
Within the full sample, when observed and unobserved sources of population heterogeneity are controlled, the within-variation coefficient that measures the effect of dropout status on the variety measure of subsequent delinquency is substantively small and not significantly different from zero ($b = .044$, $p > .1$). In addition, no evidence exists to suggest that dropout affects delinquency differently for males or females. Disregarding for the moment the reason for dropping out, therefore, there is no net impact on subsequent delinquent offending for those who change from being in school to dropping out.

We find a positive and statistically significant coefficient for the between-individual effect for dropout status ($b = .569$, $p < .01$). This implies that those who drop out of high school at any time in the first six time periods are more delinquent over all time periods (both before and after dropout) compared with those who never drop out. However, to assess the average effect of dropout over all time periods, we must also consider the mean time since dropout coefficient ($b = -.231$, $p < .01$). By construction, the mean dropout status and the mean time since dropout variables are highly correlated ($r = .85$ entire sample, $r = .81$ among dropouts). The average time since dropout across all dropouts is 1.72 years, and the average dropout status for dropouts is .46 (they are dropped out for almost half of the waves). Combining these figures with the estimated coefficients suggests that once we control for background characteristics, little difference in delinquency variety is observed between the average dropouts and the nondropouts (.46 × .569 + (−.231) × 1.72 = −.14), although of course this expected effect varies across dropouts according to individual averages of dropout status and time since dropout. Together, these two between-individual variables capture the stable component of individual differences in dropout, which allows us to focus on within-individual dropout effects.

Our first major result is that those who leave school early are at no greater risk of subsequent delinquent involvement after dropping out, at least with respect to the variety of delinquent behavior. Interestingly, for females, both the within-individual dropout and the time since dropout effects are negative. Although neither coefficient is significantly different from zero, after 2 years, the sum of the dropout coefficient and twice the

12. Although all previously mentioned control variables are included in our regression models, because of space concerns, we only report coefficients for the dropout variables. For illustrative purposes, the full results for the first model in table 5 are reported in appendix A. The full results for the remaining models are available from the lead author upon request.

13. Although identity theory tells us to expect a positive sign for school dropout and a negative sign for personal and economic dropout reasons, for the sake of consistency, statistical tests of all dropout coefficients are two-tailed.
DROPOUT AND DELINQUENCY

years since dropout coefficient is statistically different from zero [using a Wald test: \( \chi^2(1) = 4.10, p < .05 \)], which shows that female dropouts tend to be less involved in delinquency 2 or more years after dropping out.

Table 6 reports the random-effects logistic estimates where the outcome variable is now the prevalence of involvement in delinquent behavior. We find the same pattern of results with this alternative delinquency outcome. None of the within-individual coefficients for dropout are significantly different from zero; no evidence indicates that dropping out is related to an increased or decreased likelihood of subsequent delinquent offending. The only within-individual coefficients that are significantly different from zero are the years since dropout coefficients for the whole sample (\( b = -.108, p < .05 \)) and for females (\( b = -.176, p < .05 \)). However, the test for gender differences is nonsignificant, which indicates no statistical evidence of a difference between males and females. As was shown in the delinquency variety results, among females in particular, there is less involvement in crime and delinquency as years pass after dropping out of high school. These findings are at odds with any interpretation that infers a strong causal relationship between leaving school early and delinquent conduct.

In table 7, we consider the relationship between different reasons for dropping out of school and the variety of involvement in delinquency. In the full sample, as predicted by identity theory, dropout for economic reasons has a noncriminogenic within-individual effect on delinquency (\( b = -.329, p < .10 \)). The time since dropout for the economic reasons coefficient is not statistically significant, but its magnitude suggests that the within-individual effect of dropout for economic reasons decays over the course of 2 to 3 years. None of the other within-individual coefficients for the full sample is statistically different from zero. Despite the apparent difference in dropout effects, we fail to reject the hypothesis that the four within-individual dropout reasons coefficients are equivalent. Turning to the between-individual coefficients, those who drop out for school reasons (\( b = .441, p < .10 \)) and unclassifiable reasons (\( b = .614, p < .01 \)) are more crime prone throughout the survey, although we remind the reader that these between-individual effects are smaller when one considers the mean years since dropout coefficients. For the full sample, no evidence suggests that dropping out of school for any reason leads to delinquent behavior. To the contrary, dropout results in somewhat less crime for those who leave school for economic reasons.

When we conduct the analysis by gender, we find that the crime-reducing effect of dropout for economic reasons holds only for males (\( b = -.472, p < .01 \)). Males who stated that they had to leave school without their degree for economic reasons subsequently reduced the variety of delinquent acts they committed by 38 percent. However, this effect is short term, and the effect for males is not significantly different than the effect
### Table 5. Random-Effects Negative Binomial Estimates for the Variety of Involvement in Delinquent Behavior

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Between</td>
<td>Within</td>
<td>Between</td>
<td>Within</td>
<td>Between</td>
<td>Within</td>
</tr>
<tr>
<td>Dropout</td>
<td>.569 (.137)**</td>
<td>.044 (.057)</td>
<td>.386 (.164)*</td>
<td>.064 (.070)</td>
<td>.818 (.237)**</td>
<td>-0.023 (.099)</td>
</tr>
<tr>
<td>Years since dropout</td>
<td>-2.31 (.057)**</td>
<td>-0.037 (.026)</td>
<td>-1.36 (.068)*</td>
<td>-0.020 (.032)</td>
<td>-3.83 (.102)**</td>
<td>-0.070 (.045)</td>
</tr>
<tr>
<td>N (person-waves)</td>
<td>45,546</td>
<td>22,990</td>
<td>22,556</td>
<td>4,129</td>
<td>22,556</td>
<td>3,983</td>
</tr>
<tr>
<td>N (individuals)</td>
<td>8,112</td>
<td>4,129</td>
<td>3,983</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES: Adjusted standard errors are reported in parentheses.
*This column presents z-tests for gender differences in within-individual coefficients.
†p < .10, ‡p < .05, **p < .01 (two-tailed tests).

### Table 6. Random-Effects Logistic Estimates for the Prevalence of Involvement in Delinquent Behavior

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Between</td>
<td>Within</td>
<td>Between</td>
<td>Within</td>
<td>Gender</td>
</tr>
<tr>
<td>Dropout</td>
<td>.661 (.199)**</td>
<td>.132 (.095)</td>
<td>.444 (.233)**</td>
<td>.176 (.111)</td>
<td>.76</td>
</tr>
<tr>
<td>Years since dropout</td>
<td>-2.96 (.080)**</td>
<td>-1.08 (.042)**</td>
<td>-2.07 (.099)**</td>
<td>-0.059 (.053)</td>
<td>1.32</td>
</tr>
<tr>
<td>N (person-waves)</td>
<td>45,546</td>
<td>22,990</td>
<td>22,556</td>
<td>3,983</td>
<td></td>
</tr>
<tr>
<td>N (individuals)</td>
<td>8,112</td>
<td>4,129</td>
<td>3,983</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES: Adjusted standard errors are reported in parentheses.
*This column presents z-tests for gender differences in within-individual coefficients.
†p < .10, ‡p < .05, **p < .01 (two-tailed tests).
Table 7. Random Effects Negative Binomial Estimates for the Variety of Involvement in Delinquent Behavior, Multiple Reasons for Dropout

<table>
<thead>
<tr>
<th>Reason</th>
<th>Total Sample</th>
<th>Males</th>
<th>Females</th>
<th>Gender Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Between</td>
<td>Within</td>
<td>Between</td>
<td>Within</td>
</tr>
<tr>
<td>Dropout, school reasons</td>
<td>.441 (.236)†</td>
<td>.024 (.085)</td>
<td>.205 (.267)</td>
<td>.029 (.099)</td>
</tr>
<tr>
<td>Years since dropout</td>
<td>−.193 (.091)†</td>
<td>−.040 (.037)</td>
<td>−.061 (.101)</td>
<td>−.011 (.043)</td>
</tr>
<tr>
<td>Dropout, personal reasons</td>
<td>.324 (.467)</td>
<td>.173 (.177)</td>
<td>−.171 (.757)</td>
<td>.152 (.244)</td>
</tr>
<tr>
<td>Years since dropout</td>
<td>−.279 (.222)</td>
<td>.091 (.901)</td>
<td>.024 (.359)</td>
<td>.002 (.121)</td>
</tr>
<tr>
<td>Dropout, economic reasons</td>
<td>.229 (.502)</td>
<td>−.329 (.185)†</td>
<td>.491 (.581)</td>
<td>−.472 (.214)</td>
</tr>
<tr>
<td>Years since dropout</td>
<td>−.097 (.250)</td>
<td>.141 (.090)</td>
<td>−.271 (.300)</td>
<td>.281 (.104)</td>
</tr>
<tr>
<td>Dropout, other reasons</td>
<td>.614 (.174)†</td>
<td>.082 (.067)</td>
<td>.466 (.205)†</td>
<td>.147 (.082)†</td>
</tr>
<tr>
<td>Years since dropout</td>
<td>−.174 (.088)†</td>
<td>−.058 (.039)</td>
<td>−.164 (.105)</td>
<td>−.098 (.049)</td>
</tr>
<tr>
<td>Equality test</td>
<td>5.26</td>
<td>7.95*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES: Adjusted standard errors are reported in parentheses.

†This column presents z-tests for gender differences in within-individual coefficients.

This row presents Wald tests for the equality of the four within-individual dropout reasons coefficients. These tests are chi-square (3) distributions.

*p < .10, **p < .05, ***p < .01 (two-tailed tests).
for females. However, only 119 males and 53 females reported any variation in economic dropout across the first six waves of the survey. Thus, the test of differences in these effects has little statistical power to uncover smaller differences. The coefficient for the number of years since dropout for economic reasons among males is positive and statistically significant ($b = .281, p < .01$). These two coefficients argue that the inhibitory effect of dropping out of school for economic reasons lasts for 1.7 years. In other words, 2 years after leaving school for economic reasons, there is no discernable effect, positive or negative, of dropout. Turning to dropout for unclassifiable reasons, for males only, the within-individual dropout estimate is marginally statistically different from zero ($b = .147, p < .10$), which suggests a modest increase in crime (about 16 percent). The within-individual years since unclassifiable dropout coefficient is nearly as large and in the opposite direction ($b = -.098, p < .05$), which shows that this modest criminogenic effect is ephemeral, and it disappears within a year and half. Echoing a pattern we saw in the earlier analyses, for females only, the time since dropout for school reasons is negative and statistically significant ($b = -.154, p < .10$). This finding again suggests that as time progresses after dropout for school reasons among females, delinquency declines.

Contrary to our theoretical expectations, little evidence indicates that dropout for personal reasons results in a decrease in crime variety. This issue could be a measurement problem, given that our measure of personal reasons does not tie directly to family roles. However, consistent with our expectations about the power of positive roles, dropping out of school for economic reasons seems to inhibit the subsequent behavior in the short term for males, although we could not reject the null hypothesis of no difference between the effects for males and females. Of the eight gender- and reason-specific coefficients for high-school dropout, only one coefficient suggested a criminogenic effect: dropout for unclassifiable reasons among males. This marginally statistically significant criminogenic effect proved to be short lived when combined with the years since dropout coefficient. It is important to point out that although the magnitude of the noncriminogenic economic dropout effect is three times larger than the criminogenic unclassifiable dropout effect, the latter applies to over six times as many individuals. In fact, 18.5 percent of males report dropout for unclassifiable reasons at some point, whereas only 2.9 percent report dropout for economic reasons. For males only, we reject the hypothesis that the

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14. The careful reader will notice an apparent discrepancy: Table 4 reports 121 male economic dropouts, not 119. Two of these 121 do not contribute to the within-individual coefficient on economic dropout because they exhibit no within-individual variation in economic dropout. They remain dropped out throughout the survey.
four within-individual dropout effects are equivalent, which partially confirms our theoretical expectations.

Table 8 reports the random-effects logistic regression estimates for the prevalence of involvement in delinquency. Focusing on the causal effect of dropout, these results are consistent with our earlier analyses: Leaving school early for economic reasons in one time period leads to less delinquency in subsequent periods for males only ($b = -0.767, p < .05$). This substantial immediate reduction in the odds of offending after dropout for economic reasons among males decays over time. Coupled with the within-individual years since dropout estimate, it seems that this inhibitory effect of dropout for economic reasons lasts about 2 years. Males who drop out for unclassifiable reasons, however, commit more crime in subsequent periods ($b = 0.278, p < .05$). But this result is transitory, and it decays within 3 years. For females, once again, there is no evidence of a causal effect of any kind of dropout on delinquency. The pattern of results for the time since dropout is substantively the same as before. As time passes after dropout for school reasons, females commit less crime. Once again, none of the within-individual dropout effects vary by gender.

We have argued that the reason for leaving school is important because it supplies some clue as to what identity a youth may currently possess or aspire to, which, in turn, has behavioral implications. Although we do not have ideal measures of identity, we have argued that those who drop out for economic reasons possess the identity of “worker” or “provider” and after leaving school would be more likely than others to move toward the next developmental level (albeit early) and enter the labor force. Youths who leave school without a degree for other reasons have no such guidance and direction and are more likely to be in a state of drift. In fact, our results suggest that dropout for economic reasons decreases criminal activity for males only and that with one exception all other types of dropout have no discernable effect on subsequent offending. Dropout for unclassifiable reasons for males seems to have a modest criminogenic effect. For females, there is no evidence of an immediate causal effect of any kind of dropout on offending, but over time, after a school dropout, females tend to commit less crime. Testing the equality of within-individual dropout reasons coefficients with Wald tests reveals that for males only, there is evidence that the effect of high-school dropout differs by dropout reasons. For females, and for the sample as a whole, there was no discernable difference in dropout reasons estimates.

**DISCUSSION**

Our main result is the absence of evidence of a statistically significant causal effect of dropout on either the prevalence or variety of delinquency.
Table 8. Random Effects Logistic Regression Estimates for the Prevalence of Involvement in Delinquent Behavior, Multiple Reasons for Dropout

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th></th>
<th>Males</th>
<th></th>
<th>Females</th>
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<tbody>
<tr>
<td></td>
<td>Between</td>
<td>Within</td>
<td>Between</td>
<td>Within</td>
<td>Between</td>
<td>Within</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dropout, school reasons</td>
<td>.487 (.342)</td>
<td>.092 (.150)</td>
<td>.218 (.376)</td>
<td>.158 (.167)</td>
<td>1.093 (.643)†</td>
<td>−.093 (.279)</td>
<td>.77</td>
<td></td>
</tr>
<tr>
<td>Years since dropout</td>
<td>−.264 (.130)†</td>
<td>−.163 (.062)†</td>
<td>−.135 (.149)</td>
<td>−.103 (.073)</td>
<td>−.598 (.260)†</td>
<td>−.309 (.126)†</td>
<td>1.41</td>
<td></td>
</tr>
<tr>
<td>Dropout, personal reasons</td>
<td>.141 (.700)</td>
<td>.362 (.280)</td>
<td>−.116 (1.257)</td>
<td>.320 (.452)</td>
<td>.069 (.929)</td>
<td>.394 (.363)</td>
<td>.13</td>
<td></td>
</tr>
<tr>
<td>Years since dropout</td>
<td>−.230 (.314)</td>
<td>−.006 (.122)</td>
<td>−.072 (.566)</td>
<td>.106 (.202)</td>
<td>−.213 (.365)</td>
<td>−.042 (.149)</td>
<td>.59</td>
<td></td>
</tr>
<tr>
<td>Dropout, economic reasons</td>
<td>.458 (.751)</td>
<td>−.482 (.299)</td>
<td>.798 (.826)</td>
<td>−.767 (.355)†</td>
<td>.400 (1.882)</td>
<td>.057 (.522)</td>
<td>1.33</td>
<td></td>
</tr>
<tr>
<td>Years since dropout</td>
<td>−.139 (.362)</td>
<td>.144 (.145)</td>
<td>.411 (1.433)</td>
<td>.378 (.166)†</td>
<td>.043 (.569)</td>
<td>−.285 (.224)</td>
<td>2.38†</td>
<td></td>
</tr>
<tr>
<td>Dropout, other reasons</td>
<td>.715 (.246)†</td>
<td>.182 (.114)</td>
<td>.503 (.288)†</td>
<td>.278 (.134)†</td>
<td>1.044 (.404)†</td>
<td>−.011 (.185)</td>
<td>1.27</td>
<td></td>
</tr>
<tr>
<td>Years since dropout</td>
<td>−.219 (.122)</td>
<td>−.114 (.065)†</td>
<td>−.198 (.155)</td>
<td>−.090 (.084)</td>
<td>−.303 (.193)</td>
<td>−.129 (.102)</td>
<td>.71</td>
<td></td>
</tr>
<tr>
<td>Equality testb</td>
<td>5.47</td>
<td>8.14*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N (person-waves)</td>
<td>45,546</td>
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<tr>
<td>N (individuals)</td>
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<td>4,129</td>
<td>3,983</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NOTES: Adjusted standard errors are reported in parentheses.

aThis column presents z-tests for gender differences in within-individual coefficients.
bThis row presents Wald tests for the equality of the four within-individual dropout reasons coefficients. These tests are chi-square (3) distributions.

†p < .10. *p < .05. **p < .01 (two-tailed tests).
DROPOUT AND DELINQUENCY

using a nationally representative sample of youth. Instead, we found substantial evidence that the large first-order correlation between delinquency and dropout is driven almost entirely by time-stable differences between individuals who drop out and those who do not. The descriptive statistics in table 2 indicate that those who drop out have on average poorer school records, have mothers who had children at an early age, are more likely to have been arrested, and have been more sexually active in the past. They have long histories of difficulties with school and a history of antisocial behavior. This long period of trouble and disengagement from school largely accounts for the observed differences in offending between dropouts and nondropouts. This finding suggests that concern about the event of dropout may be misplaced. Instead, attention must be focused on the process that leads to dropout and criminal involvement; this process seems to begin to take place at an early age.

Our analytical approach allowed us to distinguish between-individual differences from within-individual effects of dropout. We focused primarily on the within-individual effects to determine whether dropout has a causal effect on subsequent offending. This within-individual effect is essentially a fixed-effects estimate, which is not without its shortcomings. The counterfactual in a fixed-effects estimate is offending during periods of nondropout among the population who experiences dropout, controlling for other observable time-varying covariates. A major advantage of a fixed effects estimate is that selection bias caused by time-stable components is avoided. We included several time-varying covariates in our models, but selection bias related to unobserved time-varying factors may still compromise a causal interpretation of our results. Other strategies to infer causal effects from observational data, such as propensity score matching or instrumental variables estimation, may prove fruitful in future work on this topic. These other approaches may also shed some light on the causal impact of time-stable forces on both dropout and delinquency, something that fixed effect panel models cannot do.

The second major finding in this article deals with our extension of existing work (Jarjoura, 1993, 1996) on the importance of reasons for dropout. We developed a theoretical explanation for how the effect of dropout may depend on the reasons for dropout that is rooted in identity theory. We posited that gender-specific identities will shape individual choices after dropout. We considered the reasons for dropout to rough approximations of identity. We found very limited support for our hypothesis that identity, as captured by these dropout reasons, matters. We predicted that those youth who leave school for personal reasons, particularly females, such as becoming a parent or getting married, because they are likely to possess a more conventional future identity or possible self (“mother,” “father,” or “spouse”), would subsequently commit less crime.
Our results did not confirm this prediction. This hypothesis is not without precedent. In fact, Jarjoura (1993) found that dropout for reasons of marriage or pregnancy resulted in increased levels of violence. Our articulation of identity theory for “parent” and its conditioning effect on delinquency is not supported, and we can only offer speculation at this moment as to why. It may be that “teenage” parents are less personally invested in their new role and identity, perhaps because other family members (parents and grandparents) assume a large share of the child-rearing burden. It may be that being a “teenage” parent provides more obstacles and stressors than even a conventional parental identity can easily overcome. It may also be that unlike being a “worker,” being a parent comes with fewer social network or institutional supports. That is, unlike workers who bond with employers and coworkers and have a more restricted and more routine set of activities, the identity and role of parent provides little of these conventional supports. This failure to provide greater social connections and support may be particularly detrimental to females. Finally, we cannot discount the fact that perhaps our measure of “family” reasons for dropping out of school was too crude to capture the more specific effect of becoming a parent or becoming a mother. One problem of secondary analysis of existing data is that we do not always get the kind of conceptual measures we may want.

Our conjecture with respect to the identity of worker showed greater promise. Males who drop out of school for economic reasons exhibit a 38 percent decrease in the variety of their delinquency, although this effect decreases rapidly. This kind of dropout is particularly rare. Only a small proportion of male dropouts enjoy these immediate crime-reducing drop-out effects. Just 121 of the 1,278 boys (9.5 percent) who ever dropped out during the first six waves of the NLSY97 reported economic reasons for leaving school early. The short-term effect that we saw for economic reasons may stem from the fact that although males dropped out with the expectation of getting a job (and securing greater independence), they found that as a high-school dropout, it was difficult for them to secure meaningful employment. An interesting follow-up to this research would be to examine the specific post-dropout employment success/failure of these youths and those who left school for other reasons.

These results have the potential to shed light on important research on the impact of adolescent work and crime. In this literature, researchers have suggested that adolescent work might lead to increased crime by pulling people away from school (Steinberg and Cauffman, 1995). Our results and those of others would predict that increased attachment to work may indeed lead to increased dropout, but that this increase in dropout will not be correlated with an increase in crime. To the contrary, for males, we find that dropping out of high school in order to work leads to a
DROP OUT AND DELINQUENCY

decrease in crime rather than to an increase. This finding is consistent with recent work by Apel et al. (2008) that shows that lenient state work rules for adolescents are simultaneously correlated with increased dropout and decreased delinquency.

Clearly, an important line of future research is the post-dropout experiences of youth. What they do when they leave school may matter a great deal. Leaving school and attaching yourself to another conventional institution (work) may have an entirely different set of consequences than dropping out with no direction. Research along this line would be enhanced with better measures of the reasons youth drop out of school, as well as identity measures and some sense as to where youths think they are headed once they leave school and the extent to which they get there.

Related to this is the need to study the educational futures of youths who drop out of school. Some high-school students drop out of school only to return later and finish their degree (“stopouts”), whereas others pursue a GED. Given the numbers of youths who obtain a nontraditional GED or who obtain their high-school degree but over a longer time period, it would be important to study how their life outcomes differ from both dropouts and those who receive their high-school diploma within the traditional time frame. We could not explore the different young adult outcomes of dropouts versus GED holders versus stopouts in this article. We hope, however, that we have in this research provided both some incentive and some direction for that work.

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DROPOUT AND DELINQUENCY


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Raymond Paternoster is a professor in the Department of Criminology and Criminal Justice at the University of Maryland and a faculty associate at the Maryland Population Research Center. His research interests include criminological theory, offending over the life course, violence research, and quantitative methods. His current research explores the relationship between intensive employment during adolescence and subsequent problem behaviors, such as committing delinquent acts and substance abuse.
 Appendix A. Descriptive Statistics for All Variables and Full Regression Results for First Model of Table 5

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Mean (SD)</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Regression results&lt;br&gt;Between</th>
<th>Within</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crime variety</td>
<td>Count of six offenses committed.</td>
<td>.35 (.85)</td>
<td>0</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crime prevalence</td>
<td>Indicator of whether any offense was committed.</td>
<td>.20</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dropout$^a$</td>
<td>High-school dropout, including GED, missing replaced with last year.</td>
<td>.11 (.75)</td>
<td>0</td>
<td>12.6</td>
<td>−.23 (.06)</td>
<td>−.04 (.03)</td>
</tr>
<tr>
<td>Years since dropout</td>
<td>Years since youth last attended any school.</td>
<td>.19 (.75)</td>
<td>0</td>
<td>12.6</td>
<td>−.23 (.06)</td>
<td>−.04 (.03)</td>
</tr>
<tr>
<td>Missing dropout status</td>
<td>Indicator for missing education status.</td>
<td>.002</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In high school</td>
<td>Indicator for whether youth is in high school.</td>
<td>.56</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td>.51</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>Age at time of interview. Age squared also included.</td>
<td>17.8 (2.4)</td>
<td>12.2</td>
<td>23.5</td>
<td>.14 (.07)</td>
<td>−.01 (.07)</td>
</tr>
<tr>
<td>Black</td>
<td>Race (white omitted).</td>
<td>.16</td>
<td>0</td>
<td>1</td>
<td></td>
<td>.29 (.05)</td>
</tr>
<tr>
<td>Other race</td>
<td></td>
<td>.12</td>
<td>0</td>
<td>1</td>
<td></td>
<td>.07 (.06)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Indicator of Hispanic ethnicity.</td>
<td>.13</td>
<td>0</td>
<td>1</td>
<td></td>
<td>.05 (.06)</td>
</tr>
<tr>
<td>North-central region</td>
<td>Region of country (south omitted).</td>
<td>.26</td>
<td>0</td>
<td>1</td>
<td>−.02 (.05)</td>
<td></td>
</tr>
<tr>
<td>Northeast region</td>
<td></td>
<td>.18</td>
<td>0</td>
<td>1</td>
<td></td>
<td>.11 (.05)</td>
</tr>
<tr>
<td>West region</td>
<td></td>
<td>.21</td>
<td>0</td>
<td>1</td>
<td></td>
<td>.11 (.05)</td>
</tr>
<tr>
<td>Arrests$^a$</td>
<td>Self-reported arrests since last interview.</td>
<td>.11 (.56)</td>
<td>0</td>
<td>9</td>
<td>.74 (.06)</td>
<td>−.03 (.01)</td>
</tr>
<tr>
<td>Smoked$^a$</td>
<td>Indicator for whether youth smoked since last interview.</td>
<td>.42</td>
<td>0</td>
<td>1</td>
<td>.80 (.06)</td>
<td>.15 (.03)</td>
</tr>
<tr>
<td>Variable</td>
<td>Description</td>
<td>Mean (SD)</td>
<td>Minimum</td>
<td>Maximum</td>
<td>Regression results&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------</td>
<td>---------</td>
<td>---------</td>
<td>------------------------------</td>
<td></td>
</tr>
<tr>
<td>Drank alcohol&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Indicator for whether youth drank alcohol since last interview.</td>
<td>.59 (.07)</td>
<td>0</td>
<td>1</td>
<td>1.37 (.07)</td>
<td></td>
</tr>
<tr>
<td>Years sexually active</td>
<td>Number of years sexually active. Before age 14, this variable is constructed from later reports.</td>
<td>2.4 (2.8)</td>
<td>0</td>
<td>18.7</td>
<td>.01 (.01)</td>
<td></td>
</tr>
<tr>
<td>Ever suspended</td>
<td>Indicator of ever having been suspended from school.</td>
<td>.32 (.04)</td>
<td>0</td>
<td>1</td>
<td>.18 (.04)</td>
<td></td>
</tr>
<tr>
<td>Ever retained</td>
<td>Indicator of ever being retained a grade in school.</td>
<td>.17 (.04)</td>
<td>0</td>
<td>1</td>
<td>-.08 (.04)</td>
<td></td>
</tr>
<tr>
<td>Middle-school GPA</td>
<td>Self-reported grade point average in middle school.</td>
<td>2.87 (.86)</td>
<td>0.5</td>
<td>4</td>
<td>-.10 (.03)</td>
<td></td>
</tr>
<tr>
<td>Missing middle-school GPA</td>
<td>Indicator for missing middle school GPA.</td>
<td>.009 (.17)</td>
<td>0</td>
<td>1</td>
<td>-.15 (.17)</td>
<td></td>
</tr>
<tr>
<td>Threatened at school</td>
<td>Youth reported being threatened at school (wave 1).</td>
<td>.21 (.04)</td>
<td>0</td>
<td>1</td>
<td>.25 (.04)</td>
<td></td>
</tr>
<tr>
<td>Fought at school</td>
<td>Youth reported getting into a fight at school (wave 1).</td>
<td>.23 (.05)</td>
<td>0</td>
<td>1</td>
<td>.19 (.05)</td>
<td></td>
</tr>
<tr>
<td>Tardy</td>
<td>Youth reported 2 or more unexcused late arrivals to school (wave 1).</td>
<td>.15 (.04)</td>
<td>0</td>
<td>1</td>
<td>.14 (.04)</td>
<td></td>
</tr>
<tr>
<td>Theft at school</td>
<td>Youth reported being stolen from at school (wave 1).</td>
<td>.28 (.04)</td>
<td>0</td>
<td>1</td>
<td>.10 (.04)</td>
<td></td>
</tr>
<tr>
<td>ASVAB: arithmetic reasoning</td>
<td>Armed services vocational aptitude battery tests results. Normed residuals</td>
<td>.03 (.04)</td>
<td>-3.25</td>
<td>2.72</td>
<td>.01 (.04)</td>
<td></td>
</tr>
<tr>
<td>ASVAB: word knowledge</td>
<td>battery tests results. Normed residuals from a regression of aptitude scores on age and age squared.</td>
<td>.02 (.03)</td>
<td>-3.33</td>
<td>3.28</td>
<td>.15 (.03)</td>
<td></td>
</tr>
<tr>
<td>ASVAB: paragraph comprehension</td>
<td>Missing = 0.</td>
<td>.03 (.03)</td>
<td>-2.65</td>
<td>2.54</td>
<td>-.03 (.03)</td>
<td></td>
</tr>
<tr>
<td>ASVAB: math knowledge</td>
<td>Missing = 0.</td>
<td>.03 (.03)</td>
<td>-3.24</td>
<td>2.96</td>
<td>.00 (.03)</td>
<td></td>
</tr>
<tr>
<td>Missing ASVAB scores</td>
<td>Missing indicator.</td>
<td>.17 (.05)</td>
<td>0</td>
<td>-2.20</td>
<td>.17 (.05)</td>
<td></td>
</tr>
<tr>
<td>Mother was teen parent</td>
<td>From parent self-report of age at first birth.</td>
<td>.14 (.05)</td>
<td>0</td>
<td>1</td>
<td>-.04 (.05)</td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td>Description</td>
<td>Mean (SD)</td>
<td>Minimum</td>
<td>Maximum</td>
<td>Regression results&lt;sup&gt;b&lt;/sup&gt; Between</td>
<td>Within</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------</td>
<td>---------</td>
<td>---------</td>
<td>---------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>Lives with both biological</td>
<td>Indicator of living with both biological parents age wave 1.</td>
<td>.54 (.04)</td>
<td>0</td>
<td>1</td>
<td>-.08 (.04)</td>
<td></td>
</tr>
<tr>
<td>parents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother is high-school dropout</td>
<td>Indicator of dropout status from parent-reported educational attainment.</td>
<td>.16 (.05)</td>
<td>0</td>
<td>1</td>
<td>-.07 (.05)</td>
<td></td>
</tr>
<tr>
<td>Father is high-school dropout</td>
<td></td>
<td>.15 (.05)</td>
<td>0</td>
<td>1</td>
<td>-.01 (.05)</td>
<td></td>
</tr>
<tr>
<td>Received federal food aid</td>
<td>Indicator of whether parent received any food aid since age 18.</td>
<td>.35 (.04)</td>
<td>0</td>
<td>1</td>
<td>.02 (.04)</td>
<td></td>
</tr>
<tr>
<td>Antisocial peer scale</td>
<td>Number of antisocial behaviors youth reports at least half of peers participate in (smoking, drinking, using drugs, involved in gangs, and/or cutting class).</td>
<td>1.76 (1.66)</td>
<td>0</td>
<td>5</td>
<td>.04 (.01)</td>
<td></td>
</tr>
<tr>
<td>Lives in apartment</td>
<td>Living situation (wave 1, house omitted).</td>
<td>.15 (.05)</td>
<td>0</td>
<td>1</td>
<td>.04 (.05)</td>
<td></td>
</tr>
<tr>
<td>Lives in other dwelling</td>
<td></td>
<td>.08 (.07)</td>
<td>0</td>
<td>1</td>
<td>-.03 (.07)</td>
<td></td>
</tr>
<tr>
<td>Outside: fair</td>
<td>Interviewer’s remarks about exterior of home (“nice” omitted).</td>
<td>.27 (.04)</td>
<td>0</td>
<td>1</td>
<td>.04 (.04)</td>
<td></td>
</tr>
<tr>
<td>Outside: poor</td>
<td></td>
<td>.07 (.07)</td>
<td>0</td>
<td>1</td>
<td>.01 (.07)</td>
<td></td>
</tr>
<tr>
<td>Outside: unknown</td>
<td></td>
<td>.01 (.13)</td>
<td>0</td>
<td>1</td>
<td>.36 (.13)</td>
<td></td>
</tr>
<tr>
<td>Exposure</td>
<td>Years between waves (corresponds to wave of delinquency measure, not controls).</td>
<td>1.11 (.29)</td>
<td>.08</td>
<td>2.25</td>
<td>.05 (.04)</td>
<td></td>
</tr>
<tr>
<td>Wave</td>
<td>Wave from which observation was taken.</td>
<td>3.46 (1.71)</td>
<td>1</td>
<td>6</td>
<td>.04 (.02)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.56 (.59)</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>ABBREVIATION: SD = standard deviation.

<sup>b</sup>This variable was transformed into time-stable and time-varying components.

<sup>c</sup>For the purpose of illustration, the last two columns contain regression estimates from the first model in table 5 (negative binomial estimates for entire sample). Notice that the decomposed variables have two coefficients: between and within. Full results for the rest of the models are withheld because of space concerns, but they can be provided on request.