A TEST OF MOFFITT’S HYPOTHESES OF DELINQUENCY ABSTENTION

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Criminologists have long noted that a small subset of the population will abstain from delinquent activity, even during adolescence, when such behavior is normative. Moffitt’s developmental taxonomy in particular hypothesizes that abstainers “skip” the maturity gap and are likely social isolates who do not associate with peers. The current study assesses this hypothesis by examining whether the maturity gap and peer associations are associated with abstention from delinquency. Findings are consistent with Moffitt’s hypotheses. Specifically, the maturity gap, the amount of time spent with peers, and the amount of contact with drug-using peers were significant predictors of abstention for males and females.

Keywords: delinquency; abstention; maturity gap; peers

Criminology has witnessed a shift in its theoretical focus in the past 25 years. Since the publication of the National Academy of Sciences (NAS) criminal careers report (Blumstein, Cohen, Roth, & Visher, 1986), scholars have theorized about the various factors that affect entry into, the persistence of, and the desistance from a criminal career (Farrington, 2003). An extensive body of empirical research on these issues has since developed (Laub & Sampson, 2003; Piquero, Farrington, & Blumstein, 2003), the results of which have generated identification of a number of factors associated with crime across the life course (Laub & Sampson, 2003; Le Blanc & Loeber, 1998; Loeber & Le Blanc, 1990; Moffitt, 1993; Piquero et al., 2003; Sampson & Laub, 1993). One very consistent finding is that, much like the finding that a small proportion of the population (~5% to 10%) is responsible for much of the crime, a comparably small proportion of the population abstains from delinquent and criminal behavior (Moffitt, 1993; Wolfgang, Figlio, & Sellin, 1972).

Noticeably, the factors that predict delinquency abstention have received far less attention from criminological research than have the factors that predict offending (Piquero et al., 2003). This oversight is understandable when one considers the fact that abstaining from delinquency poses no direct threat to society and that abstainers tend to fare better than offenders in regard to adulthood outcomes (Farrington, Ttofi, & Coid, 2009; Pulkkinen, 2011).
Lyyra, & Kokko, 2009). Scholars have noted, however, that involvement in delinquency is normative, especially during the adolescent years (Elliott, Ageton, Huizinga, Knowles, & Canter, 1983; Moffitt, 1993; Wolfgang et al., 1972). Thus, abstaining from delinquency is a non-normative developmental pattern that requires an explanation and deserves further attention from criminologists (Moffitt, 1993).

To be sure, a small body of research has begun to examine the factors that underlie delinquency abstention (Boutwell & Beaver, 2008; Brezina & Piquero, 2007; Farrington et al., 2009; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996; Piquero, Brezina, & Turner, 2005; Pulkkinen et al., 2009; Shedler & Block, 1990; White, Bates, & Buyske, 2001). The current study extends this line of research by examining Moffitt’s (1993) hypotheses linking the maturity gap and association with peers to delinquency abstention. To date, no research has examined the association between the maturity gap and abstaining from delinquent activity, nor has previous research studied these associations across gender in a large, national sample.

MOFFITT’S DEVELOPMENTAL TAXONOMY

One of the most prominent contemporary theories of crime and delinquency is Moffitt’s (1993) developmental taxonomy. Moffitt argued that the age–crime curve masked different offending patterns. Specifically, two types of offenders are identifiable in the population: life-course-persistent (LCP) and adolescence-limited (AL) offenders. LCP offenders, according to Moffitt, have an early onset into their criminal career; they exhibit a greater frequency of offending; they commit more serious acts of delinquency; and they are less likely to desist from antisocial behavior than AL offenders. In contrast, AL offenders do not display antisocial behavior in childhood—their offending is limited to the adolescent years. Furthermore, their involvement in crime is less frequent and is less likely to be serious compared to LCP offenders’ involvement in crime. Perhaps the most important difference between LCP and AL offenders is that the latter curtail their delinquency in late adolescence and early adulthood (Moffitt, 1993), with only a small segment becoming ensnared into crime (Hussong, Curran, Moffitt, Caspi, & Carrig, 2004).

Moffitt put forth hypotheses regarding the etiological background of LCP and AL offenders. LCP offenders are subject to a series of risk factors for delinquency that surface in early childhood. First, they suffer from neuropsychological deficits that make offending more likely (Moffitt, 1990). Second, LCPs are born into adverse rearing environments. For example, LCP offenders are more likely to be born to neglectful or harsh parents—known risk factors for delinquency (Loeber & Stouthamer-Loeber, 1986)—which exacerbates the effect of their neuropsychological deficits on offending risk.

An extensive body of research has examined Moffitt’s predictions regarding the etiological background of LCP offenders (Moffitt, 2006; Piquero & Moffitt, 2005). This line of work has found some support for the theory (Bergman & Andershed, 2009; Farrington et al., 2009; Gibson & Tibbetts, 2000; Liaw & Brooks-Gunn, 1993; McGloin, Pratt, & Piquero, 2006; Morgan & Lilienfeld, 2000; Nomura, Rajendran, Brooks-Gunn, & Newcorn, 2008; Pallone & Hennessey, 1998; Raine, 2002; Raine et al., 2005; Rosen, Seng, Tolman, & Mallinger, 2007; Tibbetts & Piquero, 1999). Scholars have also examined the impact of
LCP offending on a range of life outcomes. Recent evidence suggests that LCP offenders are more susceptible to health-related problems than are AL offenders (Odgers et al., 2007; Piquero, Daigle, Gibson, Piquero, & Tibbetts, 2007). Additionally, LCP offenders experience more “life failures” than do AL offenders (Bergman & Andershed, 2009; Farrington et al., 2009; Piquero, Farrington, Nagin, & Moffitt, 2010; Pulkkinen et al., 2009). In short, the bulk of the evidence supports Moffitt’s hypotheses regarding the etiology and the life outcomes of LCP offenders.

A key difference between LCP and AL offenders is that the processes driving AL offending are restricted to the adolescent years and do not involve neuropsychological damage. Moffitt argued that AL offenders are motivated to delinquency because of their frustration with the “maturity gap,” which refers to the distance between an adolescent’s biological maturity and his or her social maturity. To illustrate, imagine an adolescent male who has reached puberty. This individual physically resembles an adult, but the level of social maturity afforded to him is not synonymous with that of an adult. In other words, although adolescents resemble adults in their physical maturity (e.g., they are biologically capable of reproduction), society prevents them from acting like adults (e.g., they are unable to drink and they are often not permitted to make decisions of any real import). This difference between biological maturity and social maturity creates a strain referred to as the maturity gap. One way to release this strain is to act out or to engage in adultlike activities that are considered delinquent. AL offenders witness their LCP counterparts partaking in adultlike behaviors and often mimic them as a way to ease their frustration with the maturity gap.

Moffitt argued that social mimicry was most important for AL offenders’ learning of delinquent behaviors. Unlike more traditional, criminologically based social learning theories (Akers, 1998; Sutherland, 1947), social mimicry hypotheses do not require the adolescent to have an intimate relationship with his or her peers for learning to take place. Research has supported this notion by showing that peer behavior is a stronger predictor of respondent behavior than are peer attitudes (Warr & Stafford, 1991). Agnew (1991) found that time spent with peers was an important predictor of delinquency, above and beyond controls for attachment to peers. Haynie and Osgood (2005) reported that contact with delinquent peers was an important predictor of delinquency. This effect was consistent across different levels of attachment to peers such that peers are influential regardless of the level of attachment that binds them. Moffitt’s hypothesis regarding social mimicry, therefore, is not synonymous with social learning theories. Rather than placing importance on the level of attachment between peers, Moffitt argued that an AL offender need only be aware of an LCP offender’s delinquent behavior to learn and engage in that behavior. Thus, Moffitt argued that an individual’s time spent with peers and their contact with delinquent peer groups is most influential to AL offending.

Much less research has examined Moffitt’s hypotheses regarding the etiology of AL offending (Piquero & Brezina, 2001). Indeed, only two studies have directly analyzed the association between the maturity gap and AL offending (Barnes & Beaver, 2010; Galambos, Barker, & Tilton-Weaver, 2003). Barnes and Beaver (2010) created a direct measure of the maturity gap and found that it was predictive of minor delinquency and minor drug use but was not predictive of serious forms of these behaviors. These findings lend support for Moffitt’s arguments that AL offending is less severe and generally less likely to be person oriented as compared to LCP offending. Other research speaks to the effects of the maturity
gap but only indirectly (Beaver & Wright, 2005; Felson & Haynie, 2002; Haynie, 2003; Williams & Dunlop, 1999). These studies have linked pubertal development with both offending behaviors and victimization in adolescence (Haynie & Piquero, 2006). Taken together, these studies provide indirect support for Moffitt’s hypothesis linking the maturity gap to adolescent delinquency.

**MOFFITT’S ABSTAINER HYPOTHESIS**

In addition to proffering hypotheses regarding differential offending patterns, Moffitt extended an explanation of why some individuals abstain from delinquent activity. Recognizing that delinquency in adolescence is normative (Elliott et al., 1983), Moffitt (1993, 2006) argued that abstention from delinquency was extraordinary and requires an explanation. Similar to the AL hypothesis, Moffitt linked the maturity gap and exposure to delinquent peers with abstention from delinquency. Perhaps not surprisingly, her argument stated that abstainers skip the maturity gap, have less contact with delinquent peers, and/or encounter structural barriers that prevent their learning delinquent behaviors. According to Moffitt (1993),

Unfortunately, almost no research sheds light on the characteristics of teens who abstain from antisocial behavior altogether. Speculations are thus ill-informed by empirical observations. However, some predictions may be derived from the present theory of adolescence-limited delinquency. The predictions center on two theoretical prerequisites for adolescent-onset delinquency: the motivating maturity gap and antisocial role models. Some youths may skip the maturity gap because of late puberty or early initiation into adult roles. Others may find few opportunities for mimicking life-course-persistent delinquent models. (p. 689)

As noted in the above quotation, some youth are required to enter adult roles at an early age. For example, some children lose their parents and are suddenly responsible for raising their siblings. In these cases, Moffitt predicts that the adolescent will skip the maturity gap and, therefore, be more likely to abstain from delinquency. Other adolescents may skip the maturity gap because of a late onset of puberty. In this way, the maturity gap would not be experienced by the adolescent. Moffitt also argued that some youth abstain from delinquency because they do not have the requisite contact with delinquent peers. Recall that Moffitt’s argument differs from traditional social learning perspectives in that attachment to the peer group is believed to be less important. For Moffitt, the youth need only be aware of their peers’ delinquent behavior. Some youths, however, are ostracized from social groups because they have unappealing personality traits. These adolescents will be more likely to abstain from antisocial acts traditionally associated with delinquency because of their lack of opportunities to mimic the delinquent behavior of their peers.

Because delinquent behavior in adolescence is normative, Moffitt argued that abstainers would account for only a small proportion of the population. Evidence to support this argument was reported by Moffitt et al. (1996), who found that fewer than 10% of respondents in the Dunedin sample (a sample of New Zealand residents) were identified as abstainers, and similar estimates have been garnered from nationally representative samples of American youth (Piquero et al., 2005). Yet some studies have reported that nonoffenders constitute a larger portion of the population (Pulkkinen et al., 2009).

Although an extensive line of research has tested Moffitt’s hypotheses regarding the etiology of LCP offending and the offending trajectories of LCP and AL offenders, no
research has directly examined the hypotheses linking the maturity gap and contact with delinquent peer groups to delinquency abstention. There are a handful of studies that have examined some of the factors that underlie delinquency abstention (Boutwell & Beaver, 2008; Brezina & Piquero, 2007; Farrington et al., 2009; Moffitt et al., 1996; Piquero et al., 2005; Pulkkinen et al., 2009; Shedler & Block, 1990; White et al., 2001). Piquero et al. (2005), for example, analyzed data drawn from the National Longitudinal Survey of Youth 1997 to examine the factors that affect delinquency abstention. Building on the hypothesis that some adolescents are excluded from social groups because of undesirable personal characteristics, the authors estimated the effect of depression on association with delinquent peers. Their models indicated that youth who reported more sadness or depression were more likely to associate with delinquent peers, a finding opposite to Moffitt’s predictions. The authors also estimated the influence of personal and social characteristics on the probability of abstaining from delinquency. These models indicated that youth who had a greater proportion of delinquent peers, who had less attachment to their teachers, and who were given more autonomy by their parents were less likely to abstain from delinquency. Interestingly, however, the authors included the respondent’s level of physical maturity as a covariate. The effect of physical maturity on abstention from delinquency was not significantly different from zero. Because this study did not directly measure the maturity gap, it is difficult to determine how this finding informs Moffitt’s maturity gap hypothesis.

Boutwell and Beaver (2008) analyzed the link between specific genes and delinquency abstention using the Add Health data. After controlling for environmental factors, such as exposure to neighborhood problems, they reported that males with more risk alleles on two dopaminergic genes (DRD2 and DRD4) were less likely to abstain from delinquency. The association between the two genes and delinquency abstention did not reach significance among females. Consistent with Moffitt’s theory, Boutwell and Beaver also reported that respondents with more contact with drug-using peers were less likely to abstain from delinquency.

Farrington et al. (2009) reported that nonoffenders were less likely than offenders to experience adverse rearing environments in childhood, were less likely to suffer from cognitive deficits, and were less likely to report daring, hyperactive, or impulsive behaviors. Nonoffenders were significantly less likely to have engaged in analogous behaviors, such as smoking and having sex in adolescence, than were persistent offenders. Other scholars have shown that offenders experience less success in school than do nonoffenders (Bergman & Andershed, 2009; Pulkkinen et al., 2009). Still, nonoffenders reported more anxiety and less social activity during adolescence than did AL or LCP offenders (Pulkkinen et al., 2009).

A few studies have examined life outcomes of abstainers (Bergman & Andershed, 2009; Farrington et al., 2009; Pulkkinen et al., 2009). These studies have converged on the overarching conclusion that abstainers fare better than persistent offenders in regard to life success. Nonoffenders were significantly more likely to have satisfactory accommodations and employment in adulthood as compared to persistent offenders (Farrington et al., 2009; Piquero et al., 2010). Pulkkinen et al. (2009) compared AL and LCP offenders to nonoffenders and found that the former reported more aggressive behavior and were less agreeable than nonoffenders in adulthood. Also, LCP offenders were more likely to work in blue-collar jobs and were more likely to be in the lower 20th percentile in terms of income as compared to nonoffenders. In short, abstainers appear to experience more positive outcomes in adulthood than offenders, especially when compared to LCP offenders.
CURRENT STUDY

The current study extends the delinquency abstention literature by offering an initial assessment of Moffitt’s maturity gap hypothesis. Specifically, four hypotheses are examined:

Hypothesis 1: Respondents who skip the maturity gap will be more likely to abstain from delinquency.

Hypothesis 2: Respondents who spend less time with their peers will be more likely to abstain from delinquency.

Hypothesis 3: Respondents who have less contact with delinquent peers will be more likely to abstain from delinquency.

Hypothesis 4: Respondents who are in the maturity gap and spend more time with their (delinquent) peers are less likely to abstain.

Hypotheses 1, 2, and 3 are drawn directly from Moffitt’s theory, and Hypothesis 4 is an extension of the theory. To be sure, although Moffitt did not directly hypothesize a specific interaction effect of the maturity gap and contact with peers, a logical inference from the theory is that the abstainers are less likely to succumb to the maturity gap and to be exposed to (delinquent) peers. (This is similar to Moffitt’s reasoning that AL delinquency is predicted by the maturity gap’s acting in concert with the adolescent social context.)

METHOD

DATA

The data were drawn from the National Longitudinal Study of Adolescent Health (Add Health), a longitudinal, nationally representative sample of American students in Grades 7 through 12. Data collection efforts began in 1994 when an in-school survey was completed by approximately 90,000 students. Next, a subsample of this original cohort was selected to be reinterviewed in their home (i.e., the Wave 1 in-home survey) along with their primary caregiver. The Wave 1 in-home surveys were designed to collect detailed information about the adolescents’ social life, their physical and emotional development, and their involvement in a range of activities. The Wave 1 surveys were completed by 20,745 adolescents and 17,700 of their primary caregivers (Harris et al., 2003).

Approximately 1 year after Wave 1 interviews were completed, a second round of interviews was conducted with 14,738 of the Wave 1 respondents (i.e., Wave 2). Certain respondents were not eligible to be reinterviewed at Wave 2. For example, respondents who were seniors in high school did not complete Wave 2 interviews. Most respondents were still in their adolescent years at Wave 2, and thus, the Wave 2 questionnaire was largely unchanged from the Wave 1 questionnaire. Respondents were again asked about their social life, their health, and their involvement in delinquent activities.

A version of the Add Health data is publicly available, but this public-use data set does not include the entire sample as described above (Harris & Udry, 2010). Instead, one half of all respondents who completed an in-home interview at Wave 1 were selected and included in the public-use data. These data include information on approximately 6,500 respondents at Wave 1 (3,147 males and 3,356 females). Prior research has used the publicly available data to examine factors related to delinquency and victimization (Schreck, Burek, Stewart, & Miller, 2007). These publicly available data will be used for the current analysis.
Delinquency abstention. To identify abstainers, a Wave 1 and a Wave 2 delinquency index were constructed for each respondent. During Wave 1 interviews, each respondent was asked a series of questions tapping his or her involvement in 15 delinquent activities in the past 12 months. Respondents were asked to indicate whether and how often they painted graffiti, damaged property, lied to their parents, stole from a store, got into a serious fight, hurt someone badly enough to require medical attention, ran away from home, stole a car, stole something worth more than $50, broke into a house, committed an armed robbery, sold drugs, stole something worth less than $50, took part in a group fight, and acted loud or unruly in a public place. Responses were coded 0 (never), 1 (one or two times), 2 (three or four times), and 3 (five or more times). Answers to the 15 questions were summed into a single index tapping their involvement in delinquency at Wave 1 ($\alpha = .83$). To identify Wave 1 abstainers, respondents with a 0 on the Wave 1 delinquency index were assigned a value of 1. Respondents with a 1 or higher on the Wave 1 delinquency index were assigned a value of 0. Respondents with a missing value on the Wave 1 delinquency index were assigned a missing value for the Wave 1 abstainer variable.

Recall that the Wave 2 questionnaires were similar to the Wave 1 questionnaires. As a result, a Wave 2 delinquency index identical to the one computed at Wave 1 was calculated (i.e., the same 15 items used at Wave 1 were available at Wave 2; Wave 2, $\alpha = .83$). As before, respondents with a 0 on the Wave 2 delinquency index were assigned a value of 1, respondents with a 1 or higher on the Wave 2 delinquency index were assigned a value of 0, and respondents with a missing value on the Wave 2 delinquency index were assigned a missing value for the Wave 2 abstainer variable.

Finally, a third abstainer variable was created that identified respondents who abstained from delinquency at both Wave 1 and Wave 2. Respondents who scored a 0 on the Wave 1 delinquency index and on the Wave 2 delinquency index were coded as 1. Respondents with nonzero scores on either the Wave 1 or the Wave 2 delinquency index were coded as 0. Respondents with a missing value on either Wave 1 or Wave 2 delinquency indexes were coded as missing. Descriptive statistics for these variables and the other variables and scales used in the analyses are presented in Tables 1 and 2.

Maturity gap. Moffitt (1993) states that the maturity gap is the result of a disparity between biological maturity and social maturity. Available at Wave 1 and Wave 2 are measures of each respondent’s level of biological maturity as well as measures of his or her level

### TABLE 1: Descriptive Statistics for Add Health Study Variables: Dependent Variables

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wave 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstainer</td>
<td>1,444</td>
<td>22.56</td>
</tr>
<tr>
<td>Nonabstainer</td>
<td>4,957</td>
<td>77.44</td>
</tr>
<tr>
<td>Wave 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstainer</td>
<td>1,399</td>
<td>29.32</td>
</tr>
<tr>
<td>Nonabstainer</td>
<td>3,372</td>
<td>70.68</td>
</tr>
<tr>
<td>Wave 1 &amp; Wave 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abstainer</td>
<td>639</td>
<td>13.56</td>
</tr>
<tr>
<td>Nonabstainer</td>
<td>4,073</td>
<td>86.44</td>
</tr>
</tbody>
</table>
of social maturity. Biological maturity was measured differently across gender. Male biological maturity was measured by combining each respondent’s answers to four questions that tapped physical development (items were identical at Wave 1 and Wave 2). Specifically, male biological maturity was indexed by asking the respondents to describe (a) how much hair they had under their arms, (b) the thickness of their facial hair, (c) whether their voice was lower than it was in grade school, and (d) their overall level of physical development compared to other boys their age. Responses were coded so that higher values indicated greater biological maturity, and responses to the four questions were summed together to create the male biological maturity scale (Wave 1, \( \alpha = .66 \); Wave 2, \( \alpha = .70 \)).

Similar to the male biological maturity scale, females were asked four questions concerning their physical development (items were identical at Wave 1 and Wave 2): (a) Describe their changing breast size, (b) describe their changing curvaceous body, (c) indicate whether they had ever menstruated, and (d) describe their overall physical development compared to other girls their age. Female responses were also coded so that higher values reflected greater biological maturity, and the values were summed together to create the female biological maturity scale (Wave 1, \( \alpha = .64 \); Wave 2, \( \alpha = .63 \)). Prior research using the Add Health data has used both the male and female biological maturity scales (Beaver & Wright, 2005; Felson & Haynie, 2002; Haynie, 2003).

Respondents’ level of social maturity was measured by analyzing their responses to seven questions tapping the level of social autonomy granted to them by their parents (items were identical at Wave 1 and Wave 2). Respondents were asked to indicate (0 = no and 1 = yes) whether their parents allowed them to make decisions regarding their curfew, the people they spent time with, what they wore, how much television they watched, what they watched on television, their bedtime, and what they ate. The social maturity index was created
by summing across the seven items so that higher values reflected more social maturity (Wave 1, $\alpha = .62$; Wave 2, $\alpha = .65$).

The first step toward calculating maturity gap scores was to standardize the values for the biological and social maturity indexes. This procedure ensured that each index was measured on a similar scale. The second step was to create a difference score between each respondent’s standardized social maturity value and his or her biological maturity value. To do so, the standardized social maturity index was subtracted from the standardized biological maturity index (i.e., biological maturity – social maturity). This process led to the creation of a male maturity gap variable and a female maturity gap variable, both of which were measured continuously with a normal distribution. Maturity gap values were calculated at Wave 1 and at Wave 2.

The values of the maturity gap variables are important for assessing Moffitt’s theory. Respondents receiving a zero on the maturity gap variables had values on the biological maturity and social maturity indexes that were equivalent. According to Moffitt, these adolescents are not caught in the maturity gap and will be more likely to abstain from delinquency. Respondents with less biological maturity than social maturity were assigned negative values on the maturity gap variables. According to Moffitt, these respondents will be more likely to abstain from delinquency. Respondents who experienced more biological maturity than social maturity were assigned values greater than zero on the maturity gap variables. These respondents are caught in the maturity gap and should be less likely to abstain from delinquency (Barnes & Beaver, 2010).

**Time spent with peers.** Individuals may abstain from delinquency because they lack access to peers, making it impossible to mimic delinquent behavior. They can thus be considered “social isolates.” Individuals who spend less time with their peers, therefore, should be more likely to abstain from delinquency than individuals who spend a lot of time with their peers. To account for these effects, a measure available at Wave 1 and at Wave 2 was used to tap the amount of time each respondent spent with his or her peers. Specifically, the question asked respondents how many times they hung out with their friends in the past week (0 = not at all, 1 = one or two times, 2 = three or four times, 3 = five or more times). Higher values indicated that the respondents spent more time with their peers.

**Drug-using peers.** Adolescents may abstain from delinquency because they are not exposed to delinquent peers. To capture these effects, a measure of each respondent’s contact with drug-using peers was included. During Wave 1 and Wave 2 interviews, respondents were asked to indicate how many of their three best friends smoked cigarettes at least once a month, drank alcohol at least once a month, and used marijuana at least once a month (0 = none, 1 = one, 2 = two, 3 = three). To create the drug-using peers scale, the values for each of these three questions were summed (Wave 1, $\alpha = .75$; Wave 2, $\alpha = .75$). Higher values reflected more contact with drug-using peers. Prior research has used this same scale (Bellair, Roscigno, & McNulty, 2003; DeLisi, Barnes, Beaver, & Gibson, 2009).

**Low self-control.** Because self-control is one of the most salient predictors of delinquency and crime (Gottfredson & Hirschi, 1990; Pratt & Cullen, 2000), it is important to account for self-control when considering delinquency abstention. Available at Wave 1 and
Wave 2 is a five-item low-self-control scale that has been identified by prior Add Health studies (Perrone, Sullivan, Pratt, & Margaryan, 2004). For example, respondents were asked questions regarding their ability to focus their mind and to get along with others. The five items were factor analyzed and a single-factor solution best fit the data. As a result, answers to the five items were summed into a scale where higher values indicated lower self-control (Wave 1, α = .67; Wave 2, α = .66).

Control variables. Respondents’ age and race were controlled. Age was coded continuously in years, and race was coded dichotomously (0 = non-White, 1 = White).

ANALYSIS

To examine the four hypotheses presented earlier, the analysis proceeded in four steps. (Because of the different maturity gap measures, all analyses were conducted separately for males and females.) First, maturity gap values for Wave 1 abstainers were compared to maturity gap values for Wave 1 nonabstainers using a difference-of-means test. Second, the effect of the Wave 1 maturity gap on Wave 1 delinquency abstention was considered in a logistic regression that included controls for the other covariates. In these models, we explored the possibility that the maturity gap interacted with the two peers measures by introducing two multiplicative interaction terms. The multiplicative interaction terms were created by mean-centering all the constituent variables (i.e., the maturity gap variable, the time spent with peers variable, and the drug-using peers variable) and then by multiplying the mean-centered maturity gap variable by the mean-centered time spent with peers variable and by the mean centered drug-using peers variable. These multiplicative interaction terms were introduced to the models in a stepwise fashion to allow for the consideration of multicollinearity.

Third, the effects of the Wave 1 covariates on abstention that occurred at both Wave 1 and Wave 2 were considered in a logistic regression model. In this way, the analysis used the longitudinal aspects of the Add Health data. This longitudinal portion of our analysis is important because it further explores individuals who abstained for lengthier periods of time. Finally, the fourth part of the analysis examined the effects of changes in the maturity gap from Wave 1 to Wave 2, changes in time spent with peers from Wave 1 to Wave 2, and changes in contact with drug-using peers from Wave 1 to Wave 2 on changes in delinquency abstention from Wave 1 to Wave 2. Specifically, a fixed-effects logistic regression model was estimated to determine whether changes in the key independent variables from Wave 1 to Wave 2 corresponded to changes in delinquency abstention status from Wave 1 to Wave 2. The fixed-effects regression model removes any variation that is attributable to time-stable factors (i.e., persistent heterogeneity) by calculating difference scores for each of the variables in the model. In this way, the fixed-effects model estimates the effects of time-varying factors, such as the maturity gap and contact with peers, on changes in abstention status (Allison, 2009). Given the dynamic nature of the maturity gap and exposure to delinquent peer groups, the fixed-effects model is arguably the most appropriate test of Moffitt’s theory.

RESULTS

The findings from the difference-of-means tests indicated that Wave 1 abstainers had significantly lower (or more negative) scores on the Wave 1 maturity gap variables than did
nonabstainers. This finding was observed among both males (abstainer mean maturity gap = −.14, nonabstainer mean maturity gap = .03; \( t = 2.80, p < .05 \)) and females (abstainer mean maturity gap = −.09, nonabstainer mean maturity gap = .02; \( t = 2.01, p < .05 \)) and was consistent with Moffitt’s hypotheses.

Table 3 presents the results from the logistic regression models predicting Wave 1 delinquency abstention using Wave 1 covariates for males. Model 1 included the maturity gap variable along with controls for the respondent’s self-control, age, and race. As can be seen, the maturity gap was significantly and negatively related to delinquency abstention, indicating that males with lower (or more negative) maturity gap values were more likely to abstain from delinquency. This finding is in line with Moffitt’s hypothesis. Respondent’s self-control was also a significant predictor of abstention, as those with lower self-control were less likely to abstain.

Model 2 introduces the variables time spent with peers and drug-using peers. Both variables had a negative relationship with delinquency abstention: Respondents who spent more time with their peers and respondents with more drug-using friends were less likely to abstain from delinquency. The maturity gap continued to significantly predict abstention after these variables were included in the model. Model 3 introduced the interaction term between the variable time spent with peers and the maturity gap variable. The interaction effect failed to attain significance. Model 4 introduced the interaction term between the variable drug-using peers and the maturity gap variable, and it significantly predicted abstention. Thus, higher maturity gap values and more contact with drug-using peers combine to predict a significantly lower likelihood of abstaining, a finding consistent with Moffitt’s theory.

The interaction from Model 4 is presented graphically in Figure 1. The bold line represents the effect of the maturity gap on the predicted probability of delinquency abstention for respondents who were in the lower 75th percentile of the variable drug-using peers (i.e., less contact with drug-using peers), and the dashed line represents the effect of the maturity gap for respondents who were in the upper 25th percentile of the variable drug-using peers. As can be seen, respondents who had less contact with drug-using peers and who had the lowest maturity gap values had the highest predicted probability of abstaining from delinquency (i.e., the bold line with a predicted probability of abstaining of ~.25).
Next, we examined the probability of abstention for respondents with different combinations of the three key additive effects described above (see Table 4). The first combination examined the probability of abstention for males who were assigned the minimum value on the maturity gap variable, on the variable time spent with peers, and on the variable drug-using peers. As can be seen, males meeting these criteria had an average probability of abstaining of .42. In contrast, males who scored the maximum value on the maturity gap variable, on the variable time spent with peers, and on the variable drug-using peers had a probability of abstaining of .02—a very low likelihood of delinquency abstention. These findings are consistent with Moffitt’s theory.
The results from the logistic regression models predicting Wave 1 abstention using Wave 1 covariates for females can be found in Table 5. Model 1 shows that the maturity gap was a significant predictor of abstention from delinquency after controlling for self-control, age, and race. In line with Moffitt’s prediction, the effect is negative such that females with lower scores on the maturity gap were more likely to abstain from delinquency. Model 2 introduces the variables time spent with peers and the drug-using peers. Both variables maintained a negative and statistically significant relationship with abstention. Interestingly, the effect of the maturity gap was no longer significantly predictive of abstention after the two peers variables were included. It appears that the effect of the maturity gap on abstention from delinquency for females is fully mediated by the effects of the variables time spent with peers and drug-using peers. Models 3 and 4 introduce the interaction terms, neither of which were statistically significant.

Table 6 presents the predicted probabilities of abstaining from delinquency on the basis of different combinations of the key independent variables for females. Similar to the results for males, the predicted probabilities indicated that females who were assigned the minimum value on the maturity gap variable, the variable time with their peers, and the
variable drug-using peers were more likely to abstain from delinquency (predicted probability = .45) than were females who scored the maximum value on these three variables (predicted probability = .02).

The remainder of the analysis examines the effects of the maturity gap and the two peers variables longitudinally. Table 7 presents the results from models where the Wave 1 covariates are used to delineate respondents who abstained at both Wave 1 and Wave 2. With two exceptions, the findings were consistent with the Wave 1 (i.e., cross-sectional) results. The first exception was that the Wave 1 maturity gap did not predict Wave 1 and Wave 2 abstention for males. Further investigation determined that the maturity gap was not being mediated by the peers variables (analysis not shown). The second exception was that the Wave 1 maturity gap was not fully mediated by the effects of the peers variables for females. In other words, when considered longitudinally, the female maturity gap maintains a direct effect on abstention that occurs across both Waves 1 and 2.

The final step in the analysis was to examine the effects of changes in the maturity gap, changes in time spent with peers, and changes in exposure to drug-using peers on changes in delinquency abstention. To estimate these models, fixed-effects logistic regression was employed (Table 8). The first model presented in Table 8 analyzed changes in delinquency abstention from Wave 1 to Wave 2 for males. As can be seen, the maturity gap significantly influenced changes in delinquency abstention: Respondents who scored higher on the maturity gap variable at Wave 2 than at Wave 1 were less likely to abstain at Wave 2 as compared to Wave 1. Put differently, respondents who were not caught in the maturity gap

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**TABLE 7:** Logistic Regression Predicting Abstention at Wave 1 and Wave 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Males</th>
<th></th>
<th></th>
<th>Females</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>OR</td>
<td>SE</td>
<td></td>
<td>OR</td>
<td>SE</td>
</tr>
<tr>
<td>Maturity gap</td>
<td>-.09</td>
<td>0.91</td>
<td>.06</td>
<td>-.08*</td>
<td>0.92</td>
<td>.05</td>
</tr>
<tr>
<td>Time with peers</td>
<td>-.25*</td>
<td>0.78</td>
<td>.07</td>
<td>-.22*</td>
<td>0.80</td>
<td>.06</td>
</tr>
<tr>
<td>Drug-using peers</td>
<td>-.26*</td>
<td>0.77</td>
<td>.04</td>
<td>-.30*</td>
<td>0.74</td>
<td>.04</td>
</tr>
<tr>
<td>Low self-control</td>
<td>-.26*</td>
<td>0.77</td>
<td>.03</td>
<td>-.31*</td>
<td>0.73</td>
<td>.03</td>
</tr>
<tr>
<td>Age</td>
<td>.15*</td>
<td>1.16</td>
<td>.05</td>
<td>.09*</td>
<td>1.09</td>
<td>.04</td>
</tr>
<tr>
<td>Race</td>
<td>.09</td>
<td>1.09</td>
<td>.16</td>
<td>.45*</td>
<td>1.56</td>
<td>.14</td>
</tr>
</tbody>
</table>

*Note. Covariates measured at Wave 1. OR = odds ratio. *p < .05 (one-tailed tests).*

**TABLE 8:** Fixed-Effects Logistic Regression Predicting Changes in Delinquency Abstention From Wave 1 to Wave 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Males</th>
<th></th>
<th></th>
<th>Females</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>OR</td>
<td>SE</td>
<td></td>
<td>OR</td>
<td>SE</td>
</tr>
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<td>Maturity gap</td>
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<td>0.82</td>
<td>.08</td>
<td>-.12*</td>
<td>0.88</td>
<td>.07</td>
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<tr>
<td>Time with peers</td>
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<td>0.93</td>
<td>.09</td>
<td>-.15*</td>
<td>0.86</td>
<td>.09</td>
</tr>
<tr>
<td>Drug-using peers</td>
<td>-.15*</td>
<td>0.86</td>
<td>.05</td>
<td>-.19*</td>
<td>0.83</td>
<td>.05</td>
</tr>
<tr>
<td>Low self-control</td>
<td>-.08*</td>
<td>0.92</td>
<td>.04</td>
<td>-.10*</td>
<td>0.90</td>
<td>.04</td>
</tr>
<tr>
<td>Age</td>
<td>.77*</td>
<td>2.17</td>
<td>.11</td>
<td>.43*</td>
<td>1.54</td>
<td>.11</td>
</tr>
</tbody>
</table>

*Note. Coefficients represent changes in covariates from Wave 1 to Wave 2. OR = odds ratio. *p < .05 (one-tailed tests).*
at Wave 1 but were caught in the maturity gap at Wave 2 were less likely to abstain at Wave 2 than at Wave 1 and instead transitioned to offending at Wave 2. Similar to the cross-sectional models presented earlier, the variable contact with drug-using peers was significant. The coefficient was negative, meaning that respondents who had more contact with drug-using peers at Wave 2 than at Wave 1 were less likely to abstain at Wave 2 compared to Wave 1. The effect of the variable time spent with peers was in the predicted direction but did not attain statistical significance.

The second model in Table 8 analyzed changes in delinquency abstention for females. The results indicated that changes in the maturity gap corresponded with changes in delinquency abstention and were in the predicted direction (i.e., females who experienced the maturity gap at Wave 2 but not at Wave 1 were more likely to offend at Wave 2). Additionally, females who spent more time with peers at Wave 2 compared to Wave 1 were less likely to abstain at Wave 2 as compared to Wave 1. A similar pattern emerged for the variable drug-using peers. The effect of the maturity gap on changes in delinquency abstention for females maintained sign and significance after the peers variables were included (i.e., there was no evidence of mediation).

DISCUSSION

Moffitt (1993) set forth an explanation of delinquency abstention that identified the maturity gap and contact with delinquent peers as two critical predictors. A handful of studies have analyzed the impact of peers on delinquency abstention (Boutwell & Beaver, 2008; Brezina & Piquero, 2007; Piquero et al., 2005), and the conclusion garnered from these studies is that peers play an important role in predicting which adolescents will refrain from delinquent activity. The results from the current study corroborate these findings and extend them by presenting an initial analysis of the relationship between the maturity gap and delinquency abstention.

In summarizing the results, it is important to contextualize them within the four hypotheses that were considered. Findings indicated support for the link between the maturity gap and delinquency abstention for males and females (Hypothesis 1). The only exception was that the Wave 1 maturity gap did not delineate between males who abstained at Wave 1 and Wave 2 from those who offended at Wave 1 or Wave 2. In all other cases, respondents who had lower values on the maturity gap were more likely to abstain from delinquency, and this effect was observed for changes in the maturity gap and changes in abstention over time. Recall, however, that the effects of the maturity gap appeared to be mediated by the two peers variables for females in the cross-sectional models. The current study also found support for a link between the amount of time spent with peers and delinquency abstention (Hypothesis 2). Specifically, adolescents who reported spending less time with their peers were more likely to abstain from delinquency. This finding was consistent across males and females. The multivariate analyses also indicated that respondents who reported having fewer friends who used marijuana, alcohol, and tobacco were more likely to abstain from delinquency (Hypothesis 3).

The analysis also revealed that respondents who spent no time with their peers, who had no contact with drug-using peers, and who had the lowest maturity gap values had a much greater probability of abstaining than those who spent a lot of time with their peers, who
had contact with drug-using peers, and who had higher maturity gap values. This relationship held for both males and females. The variables maturity gap and drug-using peers also appeared to interact in predicting abstention from delinquency. Specifically, higher maturity gap values coupled with more contact with drug-using peers decreased the likelihood of delinquency abstention (Hypothesis 4). Conversely, respondents who had very low maturity gap values and very low contact with drug-using peers were more likely to abstain, as Moffitt would likely hypothesize. This finding, however, was restricted to males. The interaction between the maturity gap and time spent with peers failed to attain significance across the male and female subsample analyses. In all, evidence was found supporting Hypotheses 1, 2, and 3, but it was somewhat less robust regarding Hypothesis 4.

Finally, the results from the fixed-effects models are of particular interest and warrant closer attention. These models estimated the effects of changes in the key independent variables on changes in delinquency abstention status from Wave 1 to Wave 2. Because the maturity gap is an evanescent factor that is still in flux during adolescence (Moffitt, 1993), linking changes in the maturity gap with changes in delinquency abstention provides a strong test of Moffitt’s theory. The findings from these models corroborated the findings from the cross-sectional models by supporting Hypotheses 1, 2, and 3.

Despite these findings, three limitations must be discussed. First, the measure of the maturity gap is not perfectly consistent with Moffitt’s theory. Specifically, she argued that youth must perceive the maturity gap for it to be relevant. The Add Health data do not include information necessary to calculate the perceived maturity gap. As a result, we relied on objective measures of biological and social maturity. The degree to which perceptual measures would produce different conclusions remains an open question. It should be noted, however, that despite using an objective maturity gap measure, our findings supported Moffitt’s predictions.

Second, the delinquency measure referenced only a subset of delinquent acts. To be sure, each respondent’s involvement, or noninvolvement, in 15 different delinquent activities was examined. The possibility remains, however, that some respondents identified as abstainers were involved in delinquent activities that were not tapped by the Add Health questionnaire (either because the scope of the questions was too limited or because of the truncated age range of the Add Health respondents). Thus, some respondents identified as abstainers may have been misclassified. The current results are likely to have been attenuated as a function of the number of nonabstainers who appear in the abstainer group. Specifically, the key independent variables should have less predictive power as measurement error on the dependent variable increases. On a related note, to the extent that LCP offenders appear in the Add Health sample, the current results are likely to be attenuated. Although not directly addressed by Moffitt’s theory, it may be argued that LCP offenders are more likely to skip the maturity gap. If this were the case, the estimated effect of the maturity gap on abstention would be weaker as a function of the number of LCP offenders in the sample.

Third, a respondent’s involvement in delinquency may affect his or her peer group associations as well as maturity gap level (by influencing the way his or her parents treat him or her). Although strides toward addressing this issue were taken (i.e., longitudinal modeling and fixed-effects modeling), the possibility can never be eliminated. Future work may address this issue by testing for reciprocal effects between the key variables.
Moffitt’s developmental taxonomy has received an impressive amount of attention from criminologists. Against this backdrop, it is surprising that no studies have examined Moffitt’s predictions regarding the maturity gap and delinquency abstention. This study addresses an important void in the extant literature. Moffitt suggested that allotting youth more social maturity—for example, allowing them to have a “say” in family decisions—may be one way to circumvent the maturity gap and reduce adolescent delinquency. Our findings lend support to this suggestion, and it will be interesting for subsequent efforts to continue examining why some adolescents refrain from delinquency and crime.

Historically, the study of deviance has focused on explaining individual’s actions (i.e., why people did what they did)—especially their criminal actions. Control theory, however, turned this focus on its head by instead drawing attention to the factors that explained non-crime (Hirschi, 1969). In this vein, control theory focuses more on people’s morality and control than on the factors that drive criminal behavior. Moffitt’s abstainers may well represent another type of deviant (at least statistically) because they refrain from delinquency when such behavior is normative (during adolescence). Interestingly, Moffitt suggested that the abstainer will refrain not out of moral or ethical constraint, as control theory would suggest, but because of personal and/or social factors that preclude their foray into adolescent social contexts where delinquency is normative behavior. For now, it appears that exploration of the factors driving abstaining behaviors demonstrates very well the complexity of human behavior and the difficulty of explaining a phenomenon such as crime (and noncrime).

NOTES

1. We also created an alternative measure of the maturity gap by standardizing respondents’ answers to each of the biological maturity questions before creating the biological maturity scale. From there, the steps outlined were followed, creating a “fully standardized” maturity gap measure. This new fully standardized version correlated a near unity with the original coding, $r > .98$, indicating that the results are not affected by alternative coding strategies.

2. Respondents who did not change in abstention status from Wave 1 to Wave 2 were removed from these analyses. Specifically, respondents who abstained at both waves or who offended at both waves were removed from the fixed effects analyses.

3. A reviewer noted the possibility that the two peers variables might interact with one another in predicting abstention. Specifically, it may be the case that the effect of time with peers is a protective factor for respondents’ whose peers are prosocial. A supplemental analysis tested this hypothesis by creating a multiplicative interaction term between the two peers variables and reestimating the models. The results from these analyses did not support the hypothesis.

REFERENCES


J. C. Barnes is an assistant professor in the Criminology Program at the University of Texas at Dallas. His recent work examines how genetic and environmental influences can facilitate a better understanding of antisocial behavior, trajectories of offending, and desistance from a criminal career. Recent work has been published in *Aggressive Behavior, Criminology*, and the *Journal of Criminal Justice*. 
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