AUTHOR NOTE

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Does Missing the Maturity Gap Predict Drug Abstention Among Adolescents?: An Analysis of Moffitt’s Developmental Taxonomy

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Abstract

Moffitt’s developmental taxonomy (1993) has generated considerable empirical research over the past two decades, most of which has centered on life-course persistent and adolescence-limited offenders. In an effort to expand the literature, this study examined the taxonomy’s maturity gap hypothesis which links this developmental event to deviance and delinquency. Using this theoretical framework, I tested Moffitt’s hypothesis to determine if those who “miss” the maturity gap are more likely to abstain from the drug use. Using data drawn from the National Longitudinal Study for Adolescent Health (Add Health), and employing the Barnes and Beaver (2009) statistical model, this study assessed the likelihood of drug abstention among male and female adolescents. Utilizing logistic regression, this analysis examined the impact of the maturity gap on drug abstention while controlling for other known correlates of drug use (e.g., age, self-control). The findings partially supported the taxonomy, indicating that the maturity gap was significantly and negatively related to minor drug use abstention for males, but not for females. Implications for Moffitt’s theory and suggestions for future research are discussed.

Key Words: adolescent, delinquency, drug use, maturity gap

INTRODUCTION

There is perhaps no greater phenomenon in the field of criminological research than that of the curvilinear association between age and crime. Since the 1880s, countless scholars have sought to identify the underlying force that produces the curvilinear relationship between age and crime, where the rate of criminality drastically increases during the years of adolescence, peaks in early adulthood, and then falls thereafter (Stolzenberg and Alessio 2008; Barnes and Beaver, 2009). While numerous theories have been proffered to account for this relationship, Stolzenberg and Alessio (2008) assert that two predominant hypotheses have been distinguished in criminological research. The first theoretical argument suggests the importance of a single trait manifested in the individual that causes criminality. Within this theoretical framework, no other theory has been more cited than the self-control theory of Gottfredson and Hirsh (1990).
Based on the assumption that the trait of self-control is shaped in early childhood, the theory asserts that low-self control is a byproduct of ineffective parenting that will remain with the individual throughout his life-course, making the individual more susceptible to involvement in deviance.

The second theoretical perspective used to explain the age crime curve focuses on the differences of social experiences and circumstances during one’s development. For instance, association with delinquent peers during adolescence has been the basis for much criminological inquiry (Stolzenberg and Alessio 2008; Barnes and Beaver 2009; Burgess and Akers 1966; Cloward 1957; Eysenck and Reckless 1961; Haynie 2002; Heimer 1997; Heimer and Matsueda 1994; Kreager 2004; Matsueda 1982; Parker and Auerhahn 1998; Reckless 1967; Shaw and McKay 1969; Warr 2002). In addition, lack of social bonds (Hirschi, 1969) and exposure to strain (Agnew, 1992) have also been studied as risk factors in delinquent involvement during adolescence.

Related to the second theoretical perspective, Moffitt’s Developmental Taxonomy (1993) is one of the most prominent hypotheses in recent years to have been established by social theorists. Poffering three classifications of individuals, Moffitt’s explanation centered primarily on two types of deviants: life-course persistent (LCP) offenders and adolescent-limited (AL) offenders. LCP offenders are believed to suffer from inherited neurological deficits that create antisocial behavior in early childhood that subsequently develops into criminality during adolescents and adulthood, an effect which is exacerbated when placed in crime-prone environments. While damaged psyches are believed to block the ability to behave constructively for LCP offenders, the deviancy associated with AL offenders are presumed to be a healthy facet of adolescence. Deviancy is described by Moffitt (1993) as no more than a mere adaptation by adolescents to cope with the intricate interlude between childhood and adulthood. Having reached full biological maturity, these adolescents are still denied access to the social sphere of adulthood. Thus, their biological and socially maturity are not consistent with one another in contemporary society. Rather, their social development, which involves all the benefits and responsibility of adulthood, lags far behind in comparison to their biological development - an occurrence termed the “maturity gap” by Moffitt (1993). In an effort to transcend this gap, adolescents will use deviance as a means to obtain the privileges of adulthood. However, once this gap is eliminated by way of normative age status, their deviance will subside as the behavior no longer serves as a coping mechanism for the adolescent.

Moffitt (1993) also provides a third typology of individuals, those that abstain from delinquency during the period of adolescence. This provides a complex query of sorts, for if delinquency is perceived as a normative behavioral approach to cope with the intricacies of adolescence as declared by Moffitt (1993), what motivates some adolescents to desist from minor forms of criminality that are so common during the difficult years of adolescence? Abstainers are, indeed, as much of a phenomenon as the adolescent limited offenders. The uniqueness of abstainers becomes increasing apparent upon reviewing the vast array of studies demonstrating that approximately 90% of adolescents will engage in at least one minor delinquent act during this transitional period (Piquero, Brezina, and Turner 2005) and that 80.5% will experiment with some form of illicit substance (Huang, DeJong, Towvin, Schneider 2009). Moffitt (1993) offered three explanations as to why some adolescents do not engage in delinquency: (1) structural barriers that obstruct them from learning about delinquency; (2) no maturity gap to act as catalyst for criminality; and (3) exclusion from social peer networks due to unpleasing personal characteristics. While much research has examined the multifaceted behavior of adolescent criminality, such as the interrelationships among puberty, social autonomy, desire for autonomy, and delinquency, only two studies to date (Barnes and Beaver 2009; Piquero and Brezina 2001) have tested Moffitt’s (1993) maturity gap thesis. In addition, criminological research has produced mixed findings related to adolescents who abstain from delinquency altogether.

Thus, in effort to address some of the inadequacies in the current criminological literature, the purpose of this study is to determine whether the maturity gap is able to predict drug abstention among adolescents. More specifically, does missing the maturity gap predict abstention from drug use among male and female adolescents? Using data drawn from the National Longitudinal Study for Adolescent Health (Add Health), and employing the Barnes and Beaver (2009) statistical model, this study assesses the likelihood of drug abstention among male and female adolescents. Utilizing logistic regression, this study will examine the impact of the maturity gap on drug abstention while controlling for other known correlates of drug use (e.g., age, self-control). The findings generated from this examination will benefit the criminological literature in three important ways. First, it will allow for better comprehension of the maturity gap hypothesis and adolescent abstention. As mentioned previously, only two studies have directly examined the effects of the maturity gap and research on juvenile abstention has provided mixed results. Second, this study will provide empirical validity for Moffitt’s Developmental Taxonomy (1993). While Moffitt argued that missing the maturity gap is why certain adolescents refrain from delinquency (when the behavior is deemed a normative adaptation to the social status of young adults), no study has ever been conducted to directly test whether such a supposition is valid. Third, and perhaps the most important, if such an association is discovered among Moffitt’s maturity gap hypothesis and abstention among adolescents, these findings could help in preventing juvenile delinquency. For instance, if the hypothesis is true that adolescents engage in criminality to obtain some of the privileges and responsibilities of adulthood, perhaps prevention programs could be established to let youth engage in community projects that bestow some authoritative responsibility to these adolescents, thus granting some adult-like privileges which these youth so desperately seek during these formative years.

LITERATURE REVIEW

Moffitt’s developmental taxonomy (1993) presented an explanation for the age-crime curve that is firmly rooted in criminological research. When official crime rates are plotted against age, this delineation depicts that the rates for both prevalence and incidence of offending appears highest during adolescence and drastically drops in adulthood. Moffitt hypothesized that this was due to two distinct categorizations of individuals that engage in criminality: life-course persistent offenders (LCP) and adolescent limited-offenders (AL) offenders. She also alluded to a third category: abstainers, the rare individuals who refrain from delinquency during adolescence. Numerous studies have supported Moffitt’s Developmental Taxonomy by reporting differential correlates for LCP and AL offenders (Aguilar, Sroufe, Egeland, and Carson 2000; Arseneault, Tremblay, Boire, and Saucier 2002; Brennan, Hall, Br, Najman, and Williams 2003; Chui, Hill, Hawkins, Gilchrist, and Nagin 2002; Dean, Brame, and Piquero 1996; Donnellan, Gc, and Wenk 2000; Fergusson, Horward, and Nagin 2000; Kjelsberg
Life-Course Persistent Offenders

LCP offenders comprise the small group of offenders whose antisocial behavior remains relatively constant throughout their lifetime. Moffitt (1993) specified that predictors of LCP behavior should include health, gender, temperament, cognitive abilities, school achievement, personality traits, mental disorders, hyperactivity, family attachment bonds, child rearing practices, parent and sibling deviance, and socioeconomic status. While this group represents only a small faction of offenders, they account for the majority of offenses committed. Problem behavior, while constant for the LCP offender, manifests itself based on new social opportunities that arise at different points in his/her physical and social development. Moffitt suggests that neuropsychological deficiencies that were caused by disruption in the ontogenesis of the fetal brain are partially responsible for the antisocial behavior exhibited by these individuals. And when coupled with criminogenic environments, this genetic predisposition to antisocial conduct is further exasperated, thus culminating in a pathological personality.

Studies have shown that mal-development in an infant nervous-system, coupled with social adversity and poor parenting, were all predictors of early onset violent behavior unique to the LCP path (Moffitt 2006; Patterson, De Garmo, and Knutson 2000; Arsenault, Tremblay, Boulerice, and Saucier 2002; Raine, Brennan, and Mednick 1994; Raine, Brennan, Mednick, and Mednick 1996). Raine, Lencz, Taylor, Hellige, Bihr, Llacas, Lee, Ishikawa, and Colletti (2003) found that two nervous system abnormalities in relation to brain development, enlargement of the corpus callosum and abnormal corpus callosum connective function, were associated with antisocial personality disorders in adults. Similar studies have shown that risk characteristics predictive of LCP offenders, such as neurological abnormalities, delayed motor development, and uncontrolled temperament could be observed as early as three years of age (Moffitt 1996; Jeglum-Bartush, Lynam, Moffitt, and Silva 1997; Moffitt 1990; Moffitt and Caspi 2001; Moffitt Lynam and Silva 1994; Piquero 2001; Raine 2002; Gibson, Piquero, Tibbetts 2002; McGloin, Travis, Pratt, and Piquero 2006; Tibbetts and Piquero 1991; Turner, Hartman, and Bishop 2007; Neugebauer, Koek, and Susser 1999; Raine, Moffitt, Caspi, Loeb, Southamer-Loeber, and Lynam 2005).

Adolescent-Limited Offenders

AL offenders comprise the majority of offenders whose antisocial behavior is confined primarily to that of adolescence. Studies have found that adolescents often experience elevated internalizing symptoms and perceptions of stress by the age of sixteen which are consistent with the taxonomy’s hypothesis that adolescents experience psychological distress during the maturity gap which motivates the adolescent to engage in antisocial behavior (Moffitt 1996; Zebrowitz, Andreoletti, Collins, Lee, and Blumenthal 1999; Vaaranen 2001; Galambos, Barker, and Tilton-Weaver 2003 Aguilar, Sroufe, and Egeland, and Carlson 2000; Agnew 1992; Agnew 1984). Moffitt (1993) utilized the theory of “social mimicry” from the ethology sphere to explain how adolescents might mimic the antisocial behavior of life-course persistent youth in an effort to attain the maturity status that is associated with engaging in delinquency. Thus, the AC offender mimics the antisocial behavior of LCP offenders in an attempt to overcome the maturity gap.

Moffitt (1993) explains that the social maturity of youth in today’s society is reached at a later age than in previous eras, even though youth have reached full biological maturity. While adolescents may have reached full physical development, today’s society delays the positive aspects of adulthood, such as seeking employment, sexual experiences, establishing independence, and so on. Thus, these adolescents are caught in the maturity gap, where their biological maturity does not correlate to their social maturity. Due to this frustration experienced by teens, they begin to mimic the LCP offenders whose antisocial behavior such as drinking, having sex, and defying authority seem to overcome this gap and allow access to the privileges of adulthood. Thus, for adolescents to engage in adolescence-limited delinquent behavior they must have: motivation to do so, the desire to overcome the gap between biological and social maturity, access to role models for delinquent behavior, older peers, and reinforcement for such behavior, so that they feel older as a result (Galambos, 2003, p. 254). Once the privileges of adulthood are no longer prohibited, youth no longer need to mimic the antisocial behavior of the LCP offenders, thus demonstrating why AL offenders limit their delinquency to adolescence and then desist in later adulthood.

Puberty and the Maturity Gap

Numerous studies have examined the influence of pubertal development on antisocial behavior. Their findings indicated that pubertal development was positively associated with delinquent behavior, but more so for males. They determined that pubertal development significantly impacted an adolescent’s association with delinquent peers and found that pubertal development intensifies certain individual characteristics, such as negative interactional skills, low-self control, and association with antisocial counterparts. (Beaver and Wright 2005; Felson and Haynie 2002).

Research exploring the association of pubertal timing and delinquency have shown that adolescents, specifically males, that physically matured early or late in comparison to their peers reported a wider range of delinquency, including higher levels of crime and school opposition behaviors, as compared to on-time matures. (Williams and Dunlop 1999; Galambos, Barker, and Tilton-Weaver 2003). Barnes and Beaver (2009), utilizing data from the National Longitudinal Study of Adolescent Health, constructed the first direct measure of the maturity gap to predict minor forms of delinquency and drug use among male and female youth. Consistent with Moffitt’s hypothesis that the maturity gap is the result of a disjuncture between biological maturity and social maturity, Barnes and Beaver computed two new variables that were constructed by standardizing the biological maturity measures and the social maturity measures (parent permissiveness index was employed to measure social maturity) which was then followed by each respondent’s standardized social maturity value being subtracted from their standardized biological maturity score, thus creating a direct measure of the maturity gap. Their findings were consistent with Moffitt’s maturity gap hypothesis for male minor delinquency and male minor drug use. Their findings indicated male respondents with higher scores on the maturity gap scale reported more
involvement in minor delinquency and minor drug use. Moffitt’s maturity gap thesis, however, was not supported with the female subsample.

**Abstainers**

If Moffitt’s (1993) theory is, indeed, correct and delinquency is no more than a mere normative adaptational behavioral for adolescents, then the existence of youth who abstain from antisocial behavior must be a truly rare phenomenon. Moffitt (1993) hypothesized that not engaging in delinquency is uncharacteristic for youth and abstention from such deviance was due to missing the maturity gap because of early access to adult roles or personal characteristics unappealing to other adolescents that causes them to be excluded from peer group activities. The rarity of adolescent abstainers has been confirmed by numerous studies demonstrating that approximately 90% of adolescents will engage in at least one minor delinquent act during this transitional period (Piquero, Brezina, and Turner, 2005) and that 80.5% will experiment with some form of illicit substance (Huang, DeJong, Towvin, Schneider 2009).

According to Moffitt’s (1993) hypothesis, delinquency abstention is due to either 1) the fact that some young people fail to experience the maturity gap and therefore lack the motivation for experimenting with crime, or that 2) some individuals suffer from characteristics that make them unattractive to other teens and excludes them from entry into newly popular delinquent groups. Prior empirical research has identified abstainers as withdrawn youth who appeared to be relatively neurotic, nervous, shy, unresponsive, and generally (socially) maladjusted (Moffitt 2006; Nagin and Tremblay 1999; Shedler and Block 1990; Wiesner and Capaldi 2003; Farrington and West 1995; Allen, Wiesner, and Hawking 1989). More recent studies, however, have shown that there is a group of adolescent abstainers who refrain from delinquent behavior due to valid justifications. Huang, DeJong, Towvin, Schneider (2009) discovered that youth who abstain from alcohol use are often involved in religious groups, employed ten or more hours a week, and have close associations to adolescents who also abstain.

Studies find that abstention is a more common occurrence among female youth. This is believed to be associated with the increased likelihood that female youth will experience isolation and loneliness during adolescence. This may prohibit their acceptance into peer networks which lowers their probability of associating with delinquent peers and decreases their opportunity to be involved in delinquent behavior (Piquero, Brezina, and Turner, 2005; Wilsnack 2000). It has also been shown that Black youth are more likely to abstain from alcohol use in comparison to their White counterparts. Reasoning for such results is often centered upon two rationales: 1) Black youth have a higher probability of associating with religious groups, and 2) Black youth tend to have more family support and/or control than White youth (Watt and Rogers 2007).

Boutwell and Beaver (2008) findings suggested that abstainers, both male and female, have less contact with delinquent peers, have higher levels of self-control, and have significantly less DRD4 risk alleles, a dopamine receptor gene thought to be associated with the development of antisocial behavior. Isolating males within the sample specifically, less DRD2 risk alleles, (an additional dopamine receptor gene associated with the development of antisocial behavior), in conjunction with less DRD4 risk alleles, were found to be significantly associated with abstention. Results did not indicate, however, the effect of DRD2 was significant for abstention when applied to females.

Unfortunately, research that has examined the unique characteristics of adolescents who abstain from delinquency and drug use has produced mixed results. While Moffitt (1996) asserts that adolescents who abstain are socially isolated individuals or experience no maturity gap in comparison to their counterparts, this has yet to be confirmed or discounted. As much of a phenomenon as the age curve is in criminological research, abstainers are, indeed, a unique group among adolescents. Therefore, Moffitt (1996) emphasizes that the study of abstainers is crucial for the premise that AL delinquency is a normative adaptational behavior by adolescents. Sociometric studies should therefore examine whether abstention from delinquency and drug use is, indeed, correlated with missing the maturity gap or unpopularity and social isolation from peer social groups. Thus, this analysis seeks to fill the void in criminological research by examining whether missing the maturity gap is predictive of drug abstention among adolescents.

**The Current Study**

Despite widespread attention to Moffitt’s developmental taxonomy (1993), no statistical model has been able to fully examine the direct effects the maturity gap has on male and female delinquency. Utilizing data from the National Longitudinal Study of Adolescent Health, Barnes and Beaver (2009) constructed the first direct measure of the maturity gap by constructing two new variables, the male maturity gap variable and female maturity gap. These variables were computed by standardizing the male and female biological maturity scales to ensure equal weight is given, then subtracting the parent permissiveness index (this index was used to measure social maturity) from the male and female biological maturity scales. Utilizing negative binomial regression, Barnes and Beaver (2009) found that the maturity gap was a valid predictor of male delinquency and drug use, but not female delinquency and drug use. Therefore, any analysis that focuses on the effects of the Moffitt’s (1993) maturity gap hypothesis, should include a statistical model similar to the one employed by Barnes and Beaver (2009).

Overall, there has been no confirmation of the social characteristics for the rare adolescents who abstain from delinquency and drug use. Previous research has offered findings supporting Moffitt’s (1993) supposition that abstainers are either socially isolated individuals excluded from social peer groups or experience no maturity gap to act as catalyst for delinquency (Wiesner and Capaldi 2003). Conversely, there have also been findings that contradict Moffitt’s (1993) hypothesis and show abstainers are, in reality, more well-adapted than their delinquent counterparts; this finding was consistent even when adolescents were within the maturity gap (Piquero, Brezina, and Turner 2005). However, due to conflicting results in prior research, the true characteristics of adolescents who abstain from delinquent and drug use remain to be revealed.

Thus, in effort to address some of the inadequacies in previous literature pertaining to the Moffitt (1993) Taxonomy, the current study, following the Barnes and Beaver’s (2009) statistical approach, examines the direct effects the maturity gap has on male and female drug use abstention. If Moffitt’s (1993) theory is correct in that missing the maturity gap is positively associated with abstention from delinquency and drug use, then the presence of a maturity gap should be negatively related to abstention from delinquency and drug use. Thus, the current study explores two research questions: (1) does missing the maturity gap predict drug use abstention among male adolescents; and (2) does missing the maturity predict drug use abstention among female adolescents? Due to past literature demonstrating differential effects of the maturity gap for males and females concerning delinquency and drug use (Barnes and Beaver 2009), differential effects of puberty on male and female offending (Piquero and Brezina 2001), and differential...
effects on puberty for male and female victimization (Haynie and Piquero 2006), separate models for males and females in the current study are estimated.

METHODOLOGY

Sample
The current study utilizes data drawn from the public use version of the first wave of the National Longitudinal Study of Adolescent Health (Add Health), a representative sample of United States adolescents enrolled in grades 7 through 12. The sample consists of 132 middle schools and high schools selected by stratified random techniques. More than 90,000 students attending these selected schools were administered a self-report questionnaire. From these respondents, a random subsample was then selected to participate in home-based interviews. The subsample for the home-based interviews consisted of 20,745 adolescents and 17,700 of their primary caregivers, which typically was the mother of the adolescent. The information garnered a detailed account of an adolescent’s personality traits, their social relationships, and their individualized and group behaviors.

Using the Barnes and Beaver (2009) statistical model, this analysis will examine whether missing the maturity gap will be predictive of drug abstention among male and female adolescents. Descriptive statistics for all the scales in the model are included in Table 1 and a listing of the items constructing the scales is available in Appendix A.

Dependent Variables
Abstention from minor drug use. Replicating Barnes and Beaver (2009), the current study created a minor drug use scale by combining the variables from the wave I Add Health dataset to measure an adolescent’s cigarette, alcohol, and marijuana use. Since this analysis is predicting abstention from drug use and not actually using drugs, responses were recoded to 1 = abstainers and 0 = non-abstainers. Moffitt (1993) hypothesized that adolescents not caught in the maturity gap would be more likely to abstain from drug use.

Abstention from serious drug use. To construct the serious drug use scale for wave I, the current study utilizes the methodological approach of Barnes and Beaver (2009) and employs responses that reflected an adolescent’s use of cocaine, inhalants (glue or solvents), LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, and prescription pills. Due to the focus of this analysis, the responses were recoded so that 1 = abstainers and 0 = non-abstainers. In line with Moffitt’s (1993) hypothesis, missing the maturity gap should be predictive of abstention from drug use among adolescents.

Abstention from drug use during the last 30 days. The drug use during the last 30 days scale measures if an adolescent used any forms of drugs (minor or serious) during the last 30 days from which the original survey was administered during the first wave of the Add Health survey. Responses were summed together to create the wave I drug use during the last 30 days scale, with higher values indicating more drug use during the last 30 days. The items were recoded to 1 = abstainers and 0 = non-abstainers. Moffitt’s (1993) theorized that abstention from drug use among adolescents would be due to a lack of a maturity gap experienced by an adolescent.

Independent Variables
Biosocial variable-maturity gap. Earlier analyses examined the effects of the maturity gap on juvenile delinquency and drug use by constructing multiplicative interaction terms. However, ever used any type of drugs (minor or serious) in his/her lifetime. Because of the nature of this analysis, which seeks to determine whether missing the maturity gap is predictive of drug

**Table 1. Descriptive Statistics for Add Health Study Variables**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
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<td><strong>Dependent Variables</strong></td>
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<td></td>
</tr>
<tr>
<td>Abstention From Minor Drug Use</td>
<td>.30</td>
<td>.46</td>
<td>.00</td>
<td>1.00</td>
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<tr>
<td>Abstention From Serious Drug Use</td>
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<td>.34</td>
<td>.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Abstention From Drug Use During Past 30 Days</td>
<td>.65</td>
<td>.48</td>
<td>.00</td>
<td>1.00</td>
</tr>
<tr>
<td><strong>Biosocial Variables</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male Maturity Gap</td>
<td>-.007</td>
<td>1.26</td>
<td>-3.57</td>
<td>4.85</td>
</tr>
<tr>
<td>Female Maturity Gap</td>
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<td>1.28</td>
<td>-4.16</td>
<td>5.24</td>
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<td><strong>Covariates</strong></td>
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<tr>
<td>Delinquent Peers</td>
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<td>2.61</td>
<td>.00</td>
<td>9.00</td>
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<tr>
<td>Low Self-Control</td>
<td>6.32</td>
<td>3.14</td>
<td>1.00</td>
<td>20.00</td>
</tr>
<tr>
<td>Age</td>
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<td><strong>Controls</strong></td>
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<tr>
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</tr>
<tr>
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<tr>
<td>Black</td>
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</tbody>
</table>

abstention, responses were recoded so that 1 = abstainers and 0 = non-abstainers. In line with Moffitt’s (1993) hypothesis, missing the maturity gap should be predictive of abstention from drug use among adolescents.
statistical interactions can have numerous methodological insufficiencies, such as the issue of collinearity, which is further exasperated when employing non-linear techniques. Due to these methodological deficits inherent in previous studies, Barnes and Beaver (2009) constructed a direct measure of the maturity gap. Utilizing data from the National Longitudinal Study of Adolescent Health, Barnes and Beaver (2009) constructed the first direct measure of the maturity gap to predict delinquency and drug use among male and female youth. Consistent with Moffitt’s hypothesis, the maturity gap is the result of a disjuncture between biological maturity and social maturity, therefore, they computed two new variables that were constructed by standardizing the biological maturity measures and the social maturity measures (parent permisiveness index was employed to measure social maturity) which was then followed by each respondent’s standardized social maturity value being subtracted from their standardized biological maturity score. Maturity gap variables were created for males and females separately.

Biological maturity for males was calculated by summing an adolescent’s responses to the following four questions related to his physical development: (1) self-description of hair under arms, (2) self-description of thickness of facial hair, (3) whether or not an adolescent’s voice is lower than in grade school, and (4) overall physical development relative to other males of equivalent age status. Responses were coded so that higher values were reflective of greater biological maturity for males at wave I. Biological maturity for females was calculated by summing an adolescent’s responses to the following four inquiries related to her physical development: (1) self-description of changing breast size, (2) self-description of changing curvaceous body; (3) whether or not an adolescent ever menstruated, and (4) overall physical development relative to other females of equivalent age status. Responses were coded so that higher values were reflective of greater biological maturity for females at wave I. Both biological maturity measures have been deemed valid measures of an adolescent’s biological maturity by prior researchers (Barnes and Beaver 2009; Beaver and Wright 2005; Bellair, Rossigno, and McNulty 2003).

Social maturity for male and female adolescents was measured by utilizing the parental permisiveness index from the first wave of the Add Health data. The index was constructed by employing seven questions that measured the level of autonomy that the adolescent was given by their parents. Inquires explored the degree of autonomy by soliciting responses to specify if the adolescent was given the privilege to decide on particular elements in their personal lives. For instance, what time to be home on weekends, what to wear, how much television they could watch were some of the items. Responses were coded dichotomously, where 0 = no and 1 = yes. The items were summed together so that higher values indicated more social maturity.

The maturity gap variable for males and females was constructed by initially standardizing the male and female biological measures and the parental permisiveness index to ensure all measures were given equal weight. Then each adolescent’s standardized social maturity value was subtracted from their standardized biological maturity score. Thus, the new variable created signified the wave I maturity gap values for males and females by subtracting the standardized wave I parental permisiveness index from the standardized wave I male and female biological indexes. Values of 0 for the maturity gap variable reflected that an adolescent’s biological maturity and social maturity was equal illustrating the adolescent was not caught in that maturity gap. Values less than 0 for the maturity gap variable reflected that an adolescent’s biological maturity was less than his/her social maturity indicating the adolescent was not caught in that maturity gap. Values greater than 0 for the maturity gap variable reflected that an adolescent’s biological maturity was greater than his/her social maturity indicating the adolescent was caught in that maturity gap.

Control Variables

Delinquent peers. This measure consists of inquiries on how many of the respondents’ three best friends smoke cigarettes at least once a month, drink alcohol at least once a month, and use marijuana at least once a month. Responses were coded as 0 = none, 1 = one, 2 = two, 3 = three. Higher values reflect more contact with delinquent peers. Responses to these three items were summed to form the delinquent peers scale for wave I. The delinquent peers scale is consistent with scales used by previous researchers utilizing the Add Health data (Barnes and Beaver 2009; Beaver and Wright 2005; Bellair, Rossigno, and McNulty 2003).

Low self-control. Any statistical model within the criminological sphere should include a measure of self-control since any model which fails to include such a measure is likely to be misspecified (Pratt and Cullen 2000). Therefore, this study includes a five item scale equivalent to the ones constructed by Perrone, Sullivan, Pratt, Margaryan (2004) and Beaver (2008) in the model. The self-control scale is constructed by utilizing inquiries that measured simple tasks, preference for physical activities, impulsivity, and self-centeredness dimensions of self control. Queries examined an adolescent’s inability to keep his/her mind on what they were doing, trouble getting his/her homework done, difficulty paying attention to school, trouble getting along with his/her teachers, and whether he/she felt they were doing everything just about right. Barnes and Beaver (2009) conducted exploratory and confirmatory analysis to examine the psychometric properties of the scales and found that a single factor solution best explained the five items comprising the scale.

Demographics. Age and race were included in the statistical model as control variables in this analysis. Age is included as a continuous variable (measured in years) in the statistical model. Race was initially coded by Barnes and Beaver (2009) as a dichotomous variable, where 0 = non-white and 1 = White. However, for this analysis, race was recoded into two separate dichotomous variables: White, where 1 = White and 0 = non-White and Black, where 1 = Black and 0 = others. By doing this, the current study was able to estimate the likelihood of abstaining from drug use based on 1) being white versus some other race and 2) black versus some other race.

Plan of Analysis

The original study of Barnes and Beaver (2009) utilized negative binomial regression to examine the direct effects of the maturity gap on delinquency and drug use. Negative binomial regression was the preferred method for their analysis because the dependent variables were non-normally distributed. In addition, to account for the design features of the Add Health Survey, the negative binomial models were estimated using survey–correction methods in which observations were weighed by the inverse probability of selection into the sample and standard errors were adjusted by accounting for the clustering of observations within schools (Barnes and Beaver 2009). Due to the dichotomous nature of the dependent variable, the most appropriate method to utilize for the purposes of the current study is to employ estimations of the odds of abstention from drug use occurring when the maturity gap is or is not present. Therefore, the preferred method for this study is logistic regression to determine the effect of the wave I maturity gap on wave I drug use (i.e., whether or not a respondent abstained from drug use). Models are estimated separately for males and females in the sample and all models presented are multivariate, thus the
effects of the maturity gap are estimated after controlling for the effects of the other independent variables. Barnes and Beaver (2009) assert that since the maturity gap is a phenomenon that varies from year to year, the most appropriate way to examine the maturity gap is by calculating cross-sectional models where the maturity gap and the outcome measures are drawn from the same wave of data. While cross-sectional data can be viewed as a limitation in sociological research, due to Moffitt’s (1993) theory which suggests that the relationship between missing the maturity gap and abstention from drugs is actually contemporaneous- that is, happening at the same time with no temporal lag, it is not problematic that cross-sectional data are utilized for this analysis. Thus, the effects of the maturity gap should be relatively immediate and even though a youth may be caught in the maturity gap one year, it does not dictate that the youth will be caught in the maturity gap a year later (Barnes and Beaver 2009).

It is also of importance to reiterate that this analysis does not seek to calculate whether an adolescent caught in the maturity gap will engage in drug use, but rather to determine if missing the maturity gap will predict abstention from drug use among adolescents. Since the maturity gap variable was created by Barnes and Beaver (2009) to measure the effects as the maturity gap grew larger, anything less than zero means that an adolescent’s biological maturity was less than his/her social maturity, zero meant the adolescent’s biological and social maturity were equal, and anything higher than zero meant the adolescent’s biological maturity exceeded his/her social maturity. Thus, the maturity gap variable should be negatively correlated to abstention from drug use for males and females if Moffitt’s (1993) theory holds correct that adolescents will abstain from drug use during the last thirty days (r = -.035, p < .01). However, no correlation was discovered between the male maturity gap and abstention from serious drug use. Recall that Moffitt (1993) hypothesized that AL offenders caught in the maturity gap would engage, primarily, in minor forms of delinquency for these adolescents are merely trying to cope with difficulties associated with the disjuncture between their biological and social maturity and do not suffer the same neurological and behavioral complexities of LCP offenders that engage in more serious forms of criminality. And while Moffitt did not hypothesize how the maturity gap would influence serious versus minor drug use, Barnes and Beaver (2009) assert that it appears a logical extension of the theory to hypothesize that the maturity gap is predictive of minor but not serious forms of drug use. Therefore, these findings provide empirical support for this premise. A negative correlation was also discovered between the male maturity gap variable and abstention from drug use during the last thirty days (r = -.035, p < .01).

In contrast to what Moffitt had theorized, the maturity gap variable was not found to be significantly correlated to any form of drug abstention for females within the sample. While this contradicts Moffitt’s assumption and prior research that puberty is associated with delinquency and victimization among female adolescents (Schreck, Burek, Stewart, and Miller 2007; Galambos, Barker, and Tilton-Weaver 2003; Haynie 2003), the results are not entirely surprising. Past literature has shown that females are more likely to be abstainers compared to their male counterparts (Moffitt et al. 1996; Moffitt, Caspi, Rutter, and Silva 2001; Moffitt 2003, Thornberry and Krohn 2000; Barnes and Beaver 2009; Piquero, Brezina, and Turner 2005). Given the fact that females develop at a faster rate, on average, than males, perhaps females have learned to cope with difficulties associated with the maturity gap in a unique fashion. Thus, the effects of the maturity gap may be experienced by female adolescents in a similar manner to male adolescents but are handled differently, oftentimes not directly leading to delinquency or drug use.

All control variables (delinquent peers, low-self-control, age and race) were found to be significantly and negatively correlated with the four classifications of abstention from drug use (abstention from minor drug use, abstention from serious drug use, abstention from overall drug use, and abstention from drug use during the last 30 days).

A series of logistic regression analyses were performed to independently analyze the predictors for each classification of abstention from drug use (Tables 3 through 6). Models were separately examined for the male and female cohorts. The results of the logistic regression analyses of the maturity gap variable for the male and female models on minor drug use abstention are presented in Table 3. Findings indicate that the maturity gap had a statistically significant and negative effect on minor drug use abstention for males (O.R. = .919, p < .05). This analysis confirms that male adolescents with higher scores on the maturity gap scale were 92% less likely to abstain from minor drug use. Conversely, when the analysis isolated the biosocial variable from the control factors for the female model, no statistically significant effect was found. The measures of delinquent peers (O.R. = .586, p < .01), low-self-control (O.R. = .886, p < .01), and age (O.R. = .896, p < .01) had statistically significant and negative effects on minor drug abstention for males. Similarly, delinquent peers (O.R. = .565, p < .01), low-self control (O.R. = .852, p < .01), and age (O.R. = .858, p < .01) were also found significant for females. However, no significant effects were found for the dichotomous race variables and minor drug use abstention for males or females.

Findings for the maturity gap variable for the male and female models on serious drug use abstention are illustrated in Table 4. The analysis demonstrates that the biosocial variable produces no significant effect on serious drug use abstention for the male and female cohorts. Conversely, delinquent peers (O.R. = 1.234, p < .01) and low self control (O.R. = .903, p < .05) were found to have statistically significant and negative effects on serious drug use abstention for males. Delinquent peers (O.R. = .723, p < .01) and low self control (O.R. = .865, p < .01) were also found to be significant for the female serious drug use abstention model. Age was not found to be significant in either model but race (Black) was found to be positively associated with abstention from serious drug use in the female cohort (O.R. = .238, p < .01) demonstrating that Black female adolescents are more likely to abstain from serious drug use compared to White female youth.

1. The models were also estimated controlling for Hispanic ethnicity to determine if Hispanic adolescents were more or less likely than other students to report abstention. Of the eight models re-estimated, the Hispanic variable was found to be significant in only two of these models (minor drug use abstention for the male model O.R. = .685, p < .05; any drug use abstention for the male model O.R. = .693, p < .05).
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Table 2. Correlation Matrix Among Independent and Dependent Variables

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
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<td>1</td>
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<td>0.01</td>
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<td>0.02</td>
<td>0.07</td>
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<td>-0.04</td>
<td>-0.06</td>
<td>0.06</td>
<td>0.04</td>
</tr>
<tr>
<td>2</td>
<td>-0.02</td>
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<td>-0.07</td>
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</tr>
<tr>
<td>3</td>
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<td>1.00</td>
<td>-0.04</td>
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<td>-0.04</td>
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<tr>
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<td>0.00</td>
<td>0.00</td>
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</tr>
<tr>
<td>5</td>
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<td>-0.07</td>
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<td>-0.04</td>
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<td>-0.04</td>
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<td>0.00</td>
<td>0.00</td>
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<td>-0.04</td>
<td>0.00</td>
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<tr>
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<td>0.00</td>
<td>-0.04</td>
<td>-0.07</td>
<td>-0.04</td>
<td>1.00</td>
<td>-0.04</td>
<td>-0.07</td>
<td>-0.04</td>
<td>0.00</td>
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<td>0.00</td>
<td>0.00</td>
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<td>-0.04</td>
<td>-0.04</td>
<td>-0.04</td>
<td>-0.04</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note 1: * = p< .05 ** = p<.01

Note 2: (1) Male maturity gap scale, (2) Female maturity gap scale, (3) Respondent's age, (4) Respondent's race (Black), (5) Respondent's race (White), (6) Delinquent peers scale, (7) Low self control scale, (8) Abstainers from minor drug use, (9) Abstainers from serious drug use, (10) Abstainers from drug use, (11) Abstainers from drug use during the last 30 days

The analysis for the maturity gap variable on overall drug use abstention for the male and female models is presented in Table 5. The findings illustrate that the maturity gap has a statistically significant and negative effect on overall drug use abstention for males (O.R. = .923, p < .05). Male adolescents scoring high on the maturity gap scale were 92% less likely to abstain from overall drug use. No statistically significant effect was found for females in the sample. Measures of delinquent peers (O.R. = .588, p < .01), low-self control (O.R. = .884, p < .01), and age (O.R. = .897, p < .01) were shown to have statistically significant negative effects on overall drug use abstention for males.

Table 3. Logistic Regression Predicting Abstention From Minor Drug Use For Males and Females

<table>
<thead>
<tr>
<th></th>
<th>Male Model</th>
<th>Female Model</th>
</tr>
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<tbody>
<tr>
<td><strong>B</strong></td>
<td><strong>SE</strong></td>
<td><strong>Wald</strong></td>
</tr>
<tr>
<td><strong>Biosocial Variable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maturity Gap</td>
<td>-.084*</td>
<td>.038</td>
</tr>
<tr>
<td>Control Variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delinquent Peers</td>
<td>-.531**</td>
<td>.032</td>
</tr>
<tr>
<td>Low Self-Control</td>
<td>-.121**</td>
<td>.017</td>
</tr>
<tr>
<td>Age</td>
<td>-.110**</td>
<td>.028</td>
</tr>
<tr>
<td>White</td>
<td>-.169</td>
<td>.150</td>
</tr>
<tr>
<td>Black</td>
<td>.272</td>
<td>.163</td>
</tr>
<tr>
<td>Constant</td>
<td>2.52</td>
<td>.466</td>
</tr>
<tr>
<td>-2 Log likelihood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cox &amp; Snell R2</td>
<td>.237</td>
<td>.265</td>
</tr>
<tr>
<td>Nagelkerke R²</td>
<td>.339</td>
<td>.370</td>
</tr>
</tbody>
</table>

Note 1: * = p< .05 ** = p<.01

Drug use abstention for males. In addition, delinquent peers (O.R. = .563, p < .01), low self control (O.R. = .848, p < .01), and age (O.R. = .861, p < .01), were also found to be significant for females. However, no effects were found for either of the race variables.

Table 6 presents the findings from the models predicting drug abstention during the past thirty days. The results demonstrate that the maturity gap has a statistically significant and negative effect on drug use abstention during the past thirty days for the male cohort (O.R. = .924, p < .05). Male adolescents scoring high on the maturity gap scale were 92% less likely to abstain from drug use during the past thirty days. No effect was discovered at a statistically significant level for the female cohort. All control variables (delinquent peers - O.R. = .575, p < .01; low self control - O.R. = .898, p < .01) and demographic factors (age - O.R. = .939, p < .05; White - O.R. = .692, p < .05; Black - O.R. = .1.419, p < .05) had statistically significant negative effects on drug abstention during the last thirty days for the male cohort. And all control variables (delinquent peers - O.R. = .621, p < .01; low self control - O.R. = .861, p < .01) and demographic factors (age - O.R. = .887, p < .01; White - O.R. = .684, p < .05) had statistically significant negative effects on drug abstention during the last thirty days for the female cohort. Black female adolescents were,
Table 4. Logistic Regression Predicting Abstention From Serious Drug Use For Males and Females

<table>
<thead>
<tr>
<th>Male Model</th>
<th>Female Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td><strong>Biosocial Variable</strong></td>
<td></td>
</tr>
<tr>
<td>Maturity Gap</td>
<td>-.057</td>
</tr>
<tr>
<td><strong>Control Factors</strong></td>
<td></td>
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<tr>
<td>Delinquent Peers</td>
<td>-.386**</td>
</tr>
<tr>
<td>Low Self-Control</td>
<td>-.102**</td>
</tr>
<tr>
<td>Age</td>
<td>-.054</td>
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<tr>
<td>White</td>
<td>.210</td>
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<td>Black</td>
<td>1.645</td>
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<tr>
<td>Constant</td>
<td>2.88</td>
</tr>
</tbody>
</table>

-2 Log likelihood: 1627.077
Cox & Snell R²: .154
Nagelkerke R²: .294

Note 1: * = p< .05
Note 2: ** = p<.01

Table 5. Logistic Regression Predicting Abstention From Any Drug Use For Males and Females

<table>
<thead>
<tr>
<th>Male Model</th>
<th>Female Model</th>
</tr>
</thead>
<tbody>
<tr>
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<td>SE</td>
</tr>
<tr>
<td><strong>Biosocial Variable</strong></td>
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</tr>
<tr>
<td>Maturity Gap</td>
<td>-.081*</td>
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<tr>
<td><strong>Control Variables</strong></td>
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<tr>
<td>Delinquent Peers</td>
<td>-.530**</td>
</tr>
<tr>
<td>Low Self-Control</td>
<td>-.124**</td>
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<tr>
<td>Age</td>
<td>-.109**</td>
</tr>
<tr>
<td>White</td>
<td>-.149</td>
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<tr>
<td>Black</td>
<td>.297</td>
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<tr>
<td>Constant</td>
<td>2.47</td>
</tr>
</tbody>
</table>

-2 Log likelihood: 2625.003
Cox & Snell R²: .341
Nagelkerke R²: .466

Note 1: * = p< .05
Note 2: ** = p<.01

Table 6. Logistic Regression Predicting Abstention From Drug Use During the Past 30 Days For Males and Females

<table>
<thead>
<tr>
<th>Male Model</th>
<th>Female Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td><strong>Biosocial Variable</strong></td>
<td></td>
</tr>
<tr>
<td>Maturity Gap</td>
<td>-.076*</td>
</tr>
<tr>
<td><strong>Control Factors</strong></td>
<td></td>
</tr>
<tr>
<td>Delinquent Peers</td>
<td>-.558**</td>
</tr>
<tr>
<td>Low Self-Control</td>
<td>-.107**</td>
</tr>
<tr>
<td>Age</td>
<td>-.063*</td>
</tr>
<tr>
<td>White</td>
<td>-.369*</td>
</tr>
<tr>
<td>Black</td>
<td>-.350*</td>
</tr>
<tr>
<td>Constant</td>
<td>4.0</td>
</tr>
</tbody>
</table>

-2 Log likelihood: 2533.105
Cox & Snell R²: .341
Nagelkerke R²: .466

Note 1: * = p< .05
Note 2: ** = p<.01

once again, shown to be more likely to abstain from any type drug use within the thirty day time period (O.R. =1.40, p < .05).

**CONCLUSION & DISCUSSION**

The purpose of this analysis was to better comprehend the characteristics of the rare individuals who abstain from delinquency during the complex years of adolescents. If antisocial behavior is an adaptation or coping mechanism used by youth in an attempt to transcend a gap that prohibits social maturity, as proffered by Moffitt (1993), what can explain adolescents who abstain from delinquency and drug use altogether? Is the supposition presented by Moffitt (1993) that missing the maturity gap results in abstention? Little research has sought to examine the predictive strength of the maturity gap on adolescent abstainers, and only one study to date (Barnes and Beaver 2009) has directly measured the effects of the maturity gap. Thus, the goal of this research was to examine if youth who miss the maturity gap, meaning their biological maturity did not outweigh their social maturity, would be more likely to abstain from drug use.

Consistent with Moffitt’s (1993) hypothesis, findings from this analysis, indicated that the maturity gap variable was significantly and negatively related to minor drug use abstention for males, suggesting that if male adolescents are not embedded in the intricacies of the maturity gap, they are more likely to abstain from minor drug use. These effects were observed even when controlling for two of strongest predictors of delinquency and drug use: delinquent peers and low self-control (Barnes and Beaver 2009). Also consistent with Moffitt’s taxonomy, no association was discovered between the male maturity gap variable and serious drug use abstention. While...
Moffitt (1993) did not offer a specific hypothesis of the effects of the maturity gap and various forms of drug use, Barnes and Beaver (2009) argue that the taxonomy’s claim that the effects of the maturity gap will yield minor forms of delinquency but not serious forms of criminality can be applied to the drug use as a rational extension of the original theory. Consistent with Moffitt (1993), overall abstention from drug use and abstention from drug use during the last 30 days were both found to be negatively related to the maturity gap variable for males, suggesting that male adolescents missing the maturity gap are more likely to abstain.

Conversely, the analysis of the female cohort did not support Moffitt’s (1993) hypothesis. No statistically significant association was found between the female maturity gap variable and any of the four dependent variables, abstention from minor drug use, abstention from serious drug use, abstention from overall drug use, and abstention from drug during the last 30 days. Barnes and Beaver (2009) found similar results in their study and extended a probable rationalization for such findings. They highlight how differential effects have been shown in previous research for pubertal development on male and female victimization and suggest that the lack of an association, positive or negative, between the maturity gap and delinquency and drug use may be due to the differential effects that puberty has on male and female offending. For instance, Haynie and Piquero (2006) found that the effect of puberty on victimization was stronger for males within their sample than females.

It is of importance to note some of the limitations inherent in this analysis. While the Barnes and Beaver (2009) statistical model did offer the first direct measure of the maturity gap, it failed to capture all items required to measure the maturity gap. For instance, the measure of parental permissiveness did not confine all elements of social maturity as defined by Moffitt (1993). Moffitt (1993:687) states that social autonomy for adolescents is repressed due to their inability to: “….work or get a driver’s license before age 16, marry or vote before age 18 or buy alcohol before age 21, and they are admonished to delay having children and establishing their own private dwelling until their education is completed at age 22...” Thus, some elements of significance were not grasped fully by their statistical model. In addition, they also stress the perception of “felt” social maturity and actual social maturity. Moffitt (1993) emphasized the “felt” social maturity was more of a significant predictor to delinquency and drug use compared to actual social maturity. Therefore, social maturity is not necessarily how much autonomy an adolescent is granted but, rather, the perception of autonomy. Barnes and Beaver (2009), however, assert that since it was the adolescents themselves reporting on how much autonomy was granted to them in the parental permissiveness index, the degree of autonomy felt by these adolescents may have been indirectly seized by their model.

Another issue deals with the peer delinquency measure. Previous studies have stressed the importance of directly measuring peer delinquency as opposed to utilizing self-reported measures of peer delinquency for adolescents’ responses to peer behavior have been shown to be inflated and prone to projection effects (Haynie and Osgood 2005). However, employing self-reported measure of delinquent peers would likely inflate the effect of the delinquent peers measure in all of the models, which may cause an underestimation, not overestimation, of the true effects of the maturity gap on the outcome measures.

In addition, the Barnes and Beaver (2009) statistical model does not differentiate between LCP and AL offenders because the Add Health dataset is a school-based cohort of adolescents which previous studies have shown to contain a very low base-rate of LCP offenders (Barnes and Beaver 2009; DeLisi 2001; DeLisi 2005). LCP offenders have a greater probability of being absent from school by way of suspension, skipping school, or expulsion and, thus, are likely to be excluded from school-based samples.

Additional research should replicate the findings of the current study with other samples that contain significant variation of LCP and AL offenders to better grasp the maturity gaps’ effects on drug use and drug use abstention. In addition, the same study could also be re-analyzed longitudinally to examine the effects of adolescent behavior as the maturity gap changes. Moffitt’s (1993) theory suggests that the relationship between missing the maturity gap and abstention from drugs is contemporaneous, happening at the same time with no temporal lag. Thus, the effects of the maturity gap should be relatively immediate and even though a youth may be caught in the maturity gap one year does dictate that the youth will be caught in the maturity gap a year later (Barnes and Beaver 2009). However, only one study has examined in longitudinal analysis whether such a hypothesis is true. The current analytic model could also be extended as a basis for future research to examine the maturity gap’s effects on abstention from other acts, such as sexual activity.

Overall, the findings from this analysis offer partial support for Moffitt’s (1993) hypothesis of adolescent abstainers. Missing the maturity gap does appear to be a valid predictor of drug use abstention for males. However, similar findings were not found for females in the sample as missing the maturity gap was not linked to female abstention from drug use, a result inconsistent with Moffitt’s (1993) taxonomy but parallel to other studies demonstrating the differential effects of pubertal development on males and females (Haynie and Piquero 2006). Future research should explore the differential effects the maturity gap has on male and female delinquency and drug use and, subsequently, the differential effects the maturity gap has on male and female abstention in an effort to better comprehend what leads adolescents to delinquency and discover what causes some youth to abstain from such behavior to construct appropriate prevention and intervention programs for at-risk youth.

**APPENDIX A. DESCRIPTION OF VARIABLES AND SCALERS**

**Male Pubertal Development Scale**

Scale created by summing the following four self-reported measures:

1. Self-description of hair under arms (1 = no hair at all; 2 = a little hair; 3 = not a lot, but it has grown; 4 = a lot of thick hair; 5 = lots, as much as a grown man)
2. Self-description of thickness of facial hair (1 = a few scattered hairs, not thick; 2 = a little thick, but lots of skin showing; 3 = thick, can’t see much skin; 4 = very thick, like a grown man)
3. Voice lower than in grade school? (1 = about the same as grade school; 2 = a little lower than in grade school; 3 = somewhat lower than in grade school; 4 = a lot lower than in grade school; 5 = much lower, like a grown man)
4. Physical development in comparison with other boys your age (1 = younger than most; 2 = younger than some; 3 = about average; 4 = older than some; 5 = older than most)

**Female Pubertal Development Scale**

Scale created by summing the following four self-reported measures:
1. Self-description of changing breast size (1 = about the same size as grade school; 2 = a little bigger than grade school; 3 = somewhat bigger than grade school; 4 = a lot bigger than grade school; 5 = a whole lot bigger than grade school)
2. Self-description of changing breast curvaceous body (1 = about as curvy as grade school; 2 = a little more curvy than grade school; 3 = somewhat more curvy than grade school; 4 = a lot more curvy than grade school; 5 = a whole lot more curvy than grade school)
3. Ever menstruated? (0 = no; 1 = yes)
4. Physical development in comparison with other girls your age (1 = younger than most; 2 = younger than some; 3 = about average; 4 = older than some; 5 = older than most)

**Parental Permissiveness Scale**
Scale created by summing the following seven self-reported measures:
1. the time you must come home on weekend nights? (0 = no; 1 = yes)
2. the people you hang around with?
3. what you wear?
4. How much television you watch?
5. what you eat?
6. what time you go to bed on weeknights?
7. the time you must come home on weekend nights? (0 = no; 1 = yes)

**Minor Drug Use Scale**
Scale created by summing the following items from Wave I:
1. Have you ever tried cigarette smoking, even just 1 or 2 puffs? (0 = no; 1 = yes)
2. Have you had a drink of beer, wine, or liquor - not just a sip or a taste of someone else’s drink – more than 2 or 3 times in your life?(0 = no: 1 = yes)
3. How old were you when you tried marijuana for the first time? If you never tried marijuana, enter “0” (0 = never; 1 = have tried in past)

**Serious Drug Use Scale**
Scale created by summing the following items from Wave I:
1. How old were you when you tried any kind of cocaine – including powder, freebase, or crack cocaine – for the first time? If you never tried cocaine, enter “0.” (0 = never; 1 = have tried in past)
2. How old were you when you tried inhalants, such as glue or solvents, for the first time? If you never tried inhalants, such as these, enter “0.” (0 = never; 1 = have tried in past)
3. How old were you when you first tried any other type of illegal drug, such as LSD, PCP, ecstasy, mushrooms, speed, ice, heroin, or pills, without a doctor’s prescription? If you never tried any other type of illegal drug, enter “0.” (0 = never; 1 = have tried in past)

**Delinquent Peers Scale**
Scale created by summing the following three items:
1. Of your three best friends, how many smoke at least one cigarette a day? ( 0 = none; 1 = 1 friend; 2 = 2 friends; 3 = 3 friends)
2. Of your three best friends, how many drink alcohol at least once a month?
3. Of your three best friends, how many use marijuana at least once a month?

**Low Self-Control Scale**
Scale created by summing the following items:
1. You feel like you are doing everything just about right? (1 = strongly agree; 2 = agree; 3 = neither agree nor disagree; 4 = disagree; 5 = strongly disagree)
2. Do you have trouble getting along with your teachers? (0 = never; 1 = just a few times; 2 = about once a week; 3 = almost every day; 4 = every day)
3. Do you have trouble paying attention in school? (0 = never; 1 = just a few times; 2 = about once a week; 3 = almost every day; 4 = every day)
4. Do you have trouble keeping your mind focused? (0 = never or rarely; 1 = sometimes; 2 = a lot of the time; 3 = most of the time or all of the time)
5. Do you have trouble getting your work done? Do you have trouble getting along with your teachers? (0 = never; 1 = just a few times; 2 = about once a week; 3 = almost every day; 4 = every day)

**REFERENCES**


**BIOGRAPHICAL SKETCH**

Valarie Mendez, M.S., currently lectures for the Criminal Justice Department at the University of Texas at San Antonio. She holds a Baccalaureate in Criminal Justice and a Master’s Degree in Justice Policy and will be part of the incoming Fall 2011 cohort for the Ph.D. program in Applied Demography and Organization Studies/Policy Track at UTSA.