



The impact of low birth weight and maternal age on adulthood offending[☆]



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ABSTRACT

Purpose: The current study examines the relationship between low birth weight and adult offending, and whether maternal age at childbirth moderates this relationship.

Methods: Using longitudinal data from mothers and offspring from the Providence sample of the Collaborative Perinatal Project, multivariate logistic regression models were used to study the relationship between low birth weight and adulthood arrest by maternal age.

Results: Offspring born at low birth weight were at an increased risk of adult arrest, but only if they were born to adolescent (and not adult) mothers. These results remained while controlling for preterm delivery, number of cigarettes smoked during pregnancy, mothers' marital status, socioeconomic status, African American race, gender, and court contact during adolescence.

Conclusions: Results highlight the importance of considering the moderating role of maternal age at childbirth, and underscore the notion that the adverse effect of a child born at low birth weight—with respect to crime—can be exacerbated if the child is born to a young mother but lessened or even ameliorated if born to an older mother. Theoretical and practical implications of these findings are discussed.

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Introduction

Growing interest in developmental explanations of antisocial behavior has resulted in an increase in empirical investigations of risk factors present at early phases of human development. Factors identified as early as the prenatal and perinatal stages may have important implications for long-term behavioral outcomes—including criminal behavior in adulthood—particularly when coupled with additional environmental risks (Arsenault, Tremblay, Boulerice, & Saucier, 2002; Moffitt, 1993; Piquero & Tibbetts, 1999; Raine, 1993, 2002). However, individuals who are at-risk at the time of birth but reared in an environment that promotes healthy development may be more likely to avoid maladaptive outcomes associated with prenatal and perinatal risk factors (Scarpa & Raine, 2007). It is, therefore, critically important to identify early risk factors, and to further investigate the conditions that may amplify or minimize their effects.

Low birth weight (LBW) has long been recognized as a major health issue and social concern (Almond, Chay, & Lee, 2005; Paneth, 1995). Birth weight is an indicator of infant health, and individuals born with LBW have been found to be at an increased risk for a multitude of physical, cognitive, and behavioral problems (Hack, Klein, & Taylor, 1995). As a result, in addition to the increased costs associated with the delivery and care of LBW infants, substantial investments have been made in programs, such as Medicaid and Women, Infants, and Children (WIC), that attempt to reduce the prevalence of LBW and the deleterious outcomes associated with it (Bitler & Currie, 2005; Currie & Gruber, 1996).

Although LBW is widely accepted as an important factor to consider in terms of human development and public policy, it has received limited attention in the field of criminology. There are both theoretical and empirical rationales for investigating the role of LBW for the development of antisocial and criminal behavior. In the sections that follow, we explain Moffitt's (1993) developmental taxonomy of offending, noting the relevance of LBW in explaining life-course-persistent styles of offending. Next, we review the available empirical literature that demonstrates the relationship between LBW and antisocial behaviors. Lastly, in light of the evidence suggesting that characteristics pertaining to one's rearing environment may moderate the effects of biological risk factors (Raine, 2002; Scarpa & Raine, 2007), we discuss the potential

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for maternal age to moderate the relationship between LBW and criminal behavior.

Theoretical foundation

Moffitt (1993) has proposed that two different types of offenders exist (adolescent-limited and life-course-persistent), each following a distinct developmental trajectory. Life-course-persistent offenders engage in various forms of behavioral problems at each stage of their lives, beginning in infancy and continuing well into their adult years. According to Moffitt, this group of offenders experiences neuropsychological deficits that are present at or very soon after birth, and may be due to biological or environmental influences. These individuals begin their lives at risk for numerous maladaptive outcomes, and are often born to parents encountering familial and economic limitations, which make them ill-suited to provide a rearing environment that would foster prosocial development. In short, life-course-persistent offenders experience both biological and environmental disadvantages that drastically increase their risk for antisocial outcomes.

In contrast, adolescent-limited offenders display behavioral instability across time, and their involvement in crime is typically less serious and restricted to their teenage years (Moffitt, 1993). Delinquency among this group is attributed to reaching biological maturity prior to reaching social maturity. This “maturity gap” becomes a source of frustration for the youths, and many begin to mimic the antisocial behaviors of life-course-persistent offenders in an effort to establish their adult social status. With the passage of time the maturity gap closes naturally, and adolescent-limited offenders no longer need to demonstrate their maturity by engaging in rebellious behaviors. Once young adulthood is reached, adolescent-limited offenders desist from crime and typically adopt a conventional lifestyle.

Relative to adolescence-limited offenders, life-course-persistent offenders are involved in a greater number of antisocial acts that are more serious in nature during their lives. Moreover, life-course-persistent offenders initiate antisocial behaviors in early childhood and the social consequences of those actions may accumulate, making it difficult for life-course-persistent offenders to ever escape a deviant lifestyle (Moffitt, 1993). This further demonstrates the importance of identifying the sources of their behavioral problems, and the conditions that may reduce their risk for long-term antisocial behavior.

Although Moffitt (1993) hypothesizes that neuropsychological deficits are present very early in the life-course, there is no consensus on how to identify individuals with those deficiencies before they begin to engage in deviant behaviors. In the current investigation, LBW serves as an indicator of neuropsychological deficits. Prior research has taken a similar approach to identifying individuals that may be born with neuropsychological deficits (Chen, Lin, & Liu, 2010; Tibbetts & Piquero, 1999), and a relationship has been observed between LBW and cognitive and behavioral problems, further suggesting that it may be an important predictor of later offending.

Low birth weight

The developmental outcomes of LBW individuals vary tremendously. While the majority of LBW babies avoid adverse outcomes, it is not uncommon for individuals born LBW to display at least minimal problems in cognition and behavior as they develop (Hack et al., 1995). A recent meta-analysis indicated that individuals born with a LBW are more likely to have deficits in executive functioning, internalizing and externalizing behavioral problems, reduced mathematics and reading abilities, and greater levels of inattention during childhood (Aarnoudse-Moens, Weisglas-Kuperus, van Goudoever, & Oosterlaan, 2009). Additionally, the deficits experienced by those with LBW continue to persist into adolescence and early adulthood (Aarnoudse-Moens et al., 2009; Hack, 2006). Compared to those born at a normal birth weight, evidence also suggests that LBW individuals may be more aggressive

and display conduct problems during childhood (Fan, Portuguese, & Nunes, 2013; Ross, Lipper, & Auld, 1990; Vaske, Newsome, & Boisvert, 2013), have a greater number of delinquent peers in adolescence (Jackson & Beaver, 2014), are at a higher risk for early-onset delinquency (Gibson, Piquero, & Tibbetts, 2001; Tibbetts & Piquero, 1999) and criminal behavior in early adulthood (Chen et al., 2010). Importantly, the negative outcomes associated with LBW, such as an early onset of aggression and antisocial behavior, have also been linked to life-course-persistent styles of offending (Huesmann, Dubow, & Boxer, 2009; Moffitt, 1990; Moffitt & Caspi, 2001; Robins, 1978).

While LBW is related to a number of developmental problems, the majority of studies on the effects of LBW do not extend beyond childhood. Studies that do investigate the long-term effects of LBW are few in number, and rarely examine the impact on criminal outcomes in adulthood. The results of the limited studies on the relationship between LBW and adult criminality remain inconclusive. For example, Chen et al. (2010) found that LBW was a significant predictor of offending in early adulthood; however, other studies have found that LBW individuals reported less or similar rates of involvement in criminal behavior than normal weight subjects (Cooke, 2004; Hack et al., 2004). These mixed findings, in addition to the limited follow-up periods, indicates that (1) further investigations of the relationship between LBW and offending later into adulthood are needed; and (2) conditions that may moderate the effects of the relationship between LBW and adult offending should be examined.

Maternal age as a moderator of the effects of low birth weight on criminal behavior

Studies have shown that the effects of prenatal and perinatal factors, including LBW, on criminal behaviors may be moderated by environmental factors, such as disadvantaged and adverse family conditions (Piquero & Lawton, 2002; Piquero & Tibbetts, 1999; Turner, Hartman, & Bishop, 2007). It has been suggested that mother's age at time of birth may also moderate the relationship between low birth weight and offspring offending (Chen et al., 2010). Young mothers tend to differ from adult mothers in several key ways. They tend to be more depressed (Leadbeater & Bishop, 1994), stressed (Passino et al., 1993), have poorer parenting skills (Causby, Nixon, & Bright, 1991), receive less prenatal care (Ketterlinus, Henderson, & Lamb, 1990), have lower socioeconomic status (McCarthy & Hardy, 1993), and display various behavioral problems, including substance use and antisocial behavior (Coyne & D'Onofrio, 2012; Kessler et al., 1997; Ketterlinus, Lamb, & Nitz, 1994; Miller-Johnson et al., 1999).

Interestingly, the risk factors for teenage motherhood are similar to the risk factors for delinquent and criminal involvement and include sociodemographic characteristics (Coley & Chase-Lansdale, 1998), low family SES (Xie, Cairns, & Cairns, 2001), maternal educational achievement (Mersky & Reynolds, 2007), being raised in a single-parent household (Fergusson & Woodward, 1999), residence in a high poverty neighborhood (South & Crowder, 2010), a family history of teenage births (East, Reyes, & Horn, 2007; Meade, Kershaw, & Ickovics, 2008), and childhood conduct problems (Woodward, Fergusson, & Horwood, 2001). Taken together, it appears that young motherhood may be part of a broader constellation of environmental, familial, and personal problems, thereby potentially limiting the adolescent mother's ability to optimally raise and nurture her child, especially if the child has developmental problems (Panzarine, 1988).

Not all teenage mothers have difficulties; however, those that do may put their child at increased risk for various maladaptive behaviors (Coyne & D'Onofrio, 2012). In fact, several studies have examined the effects of young motherhood on offspring behavioral development throughout the life course. These studies reveal that adolescent children of teenage mothers tend to be at increased risk of dropping out of school, perform poorly in school, display conduct problems as well as externalizing and internalizing behavioral problems, become pregnant

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