



# Pathways to early delinquency: Exploring the individual and collective contributions of difficult temperament, low maternal involvement, and externalizing behavior<sup>☆</sup>



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## ABSTRACT

**Background:** The purpose of this study was to investigate the impact of difficult temperament and maternal involvement, measured at ages one and three years, respectively, on externalizing behavior at age five and early delinquency at age nine.

**Methods:** Maternal- and child-reports from 4,897 members of the Fragile Families and Child Wellbeing Study (FFCWS) were included in a path analysis of four of five waves of FFCWS data: Wave 2 (difficult temperament at age 1), Wave 3 (maternal involvement at age 3), Wave 4 (externalizing behavior at age 5), and Wave 5 (delinquency at age 9).

**Findings:** Although difficult temperament at age 1 displayed a weak zero-order correlation with delinquency at age 9 and low maternal involvement at age 3 failed to correlate with delinquency at age 9, both entered into significant chained relationships with delinquency via externalizing behavior at age 5. In addition, difficult temperament at age 1 seemed to evoke low parental involvement at age 3.

**Conclusions:** The respective roles of a difficult temperament, maternal involvement, and externalizing behavior in a proximal chaining process may be partially responsible for the continuity that has been observed in antisocial behavior over time.

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## Introduction

It is a well-known empirical fact that temperament (Lahey et al., 2008; Leve, Kim, & Pears, 2005; Nigg, 2006) and low parental support (Brophy & Dunn, 2002; Côté, Vaillancourt, LeBlanc, Nagin, & Tremblay, 2006; Smith, Calkins, Keane, Anastopoulos, & Shelton, 2004) are associated with later externalizing behavior. There is also a well-documented relationship between early externalizing behavior and subsequent delinquency (Campbell, Spieker, Burchinal, & Poe, 2006; Loeber & Burke, 2011; Timmermans, van Lier, & Koot, 2009). As interesting as these findings are, they still leave three crucial questions unanswered. First, although temperament and parenting are both linked to externalizing behavior, are they meaningfully connected to one another? Second, is the temperament/parenting-externalizing behavior relationship the result of mediation, moderation or both? Third, is there a causal connection between temperament, early parenting and subsequent delinquency that runs through externalizing behavior? In an effort to answer these

and other questions the current study examined individual and collective or chained relationships among difficult temperament, maternal involvement, externalizing behavior, and early delinquency.

A series of studies have identified the presence of bidirectional relationships between temperament and several less than optimal parenting styles. Eisenberg et al. (1999), for instance, determined that negative emotionality in a 6 to 8 year old child predicted parental distress two years later and that parental distress predicted further negative emotionality in the child two years after this. Correlations have also been observed between a fearful and irritable temperament and inadequate parenting (Lengua & Kovacs, 2005) and between a difficult childhood temperament and early negative parenting (Kiff, Lengua, & Zalewski, 2011). Most recently, Lee, Zhou, Eisenberg, and Wang (2012) observed a bidirectional relationship between authoritarian parenting and a difficult early temperament marked by low effortful control and high anger/frustration. Because temperament data were only available for one wave of the current study, the focus of the present investigation was on the unidirectional relationship between early temperament, subsequent parental involvement, and later externalizing and delinquent behavior.

Biological sex has the potential to moderate the effect of temperament and parenting on externalizing and delinquent behavior, although this area of research has produced mixed results. Gender intensification theory holds that girls are more affected by disruptions in family

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relations than boys (Davies & Windle, 1997) and while some studies note that parenting factors correlate better with externalizing and delinquent behavior in girls than in boys (Leve et al., 2005; Walters, 2013), other studies show just the opposite (McFadyen-Ketchum, Bates, Dodge, & Pettit, 1996; Miner & Clarke-Stewart, 2008) or indicate that sex does not moderate parenting at all (De Haan, Prinzie, & Deković, 2012; Eisenberg et al., 2005). Much the same situation is encountered when studies on the interactive effect of sex on temperament are reviewed (Miner & Clarke-Stewart, 2008; Shaw, Keenan, & Vondra, 1994). The current study consequently sought to ascertain whether sex interacts with either temperament or parental involvement in the development of later externalizing and delinquent behavior.

Smekens, Riksen-Walraven, and van Bakel (2007) conducted a study in which they determined that angry temperament moderated the relationship between parenting and externalizing behavior and that later parenting mediated the relationship between early parenting and subsequent externalizing behavior. In a study published that same year, Simons, Simons, Chen, Brody, and Lin (2007) discerned that cognitive factors mediated the relationship between early parenting and later delinquency. Findings from these and other studies raise the possibility that mediation may be as important as moderation in explaining the chain of events running from early temperament and parenting to later externalizing and delinquent behavior. Walters (2014), for instance, ascertained that youth's perception of parental attitudes toward deviance and youth attitudes toward deviance mediated the relationship between actual parental attitudes toward deviance and youth delinquency even though the zero-order correlation between actual parental attitudes toward deviance and youth deviance was non-significant. This suggests that a proximal chaining process may be partially responsible for the conflicting results obtained in research on the developmental precursors of antisocial behavior. Conceptualizing the variables as sequential links in a chain, it could be argued that as the distance between links increases correlations between variables decrease though they remain linked by the intervening effect of other variables in the chain.

Extending the proximal chaining hypothesis to the relatively weak relationships observed when temperament and early parenting are correlated with later delinquency (see van der Voort, Linting, Juffer, Bakersman-Kranenburg, & van Ijzendoorn, 2013), we can see that temperament and early parenting, by virtue of their position on the chain, could potentially affect delinquency even though their zero order correlations with delinquency are weak. Proper evaluation of this hypothesis, however, requires that certain variables be controlled. This should include a range of pre-existing factors that could potentially shape child temperament and parenting behavior; factors such as low birth weight, family structure, family income, and parental race. Hence, a model capable of simultaneously testing two chains, one running from difficult temperament to maternal involvement to externalizing behavior to early delinquency and the other running from difficult temperament to externalizing behavior to early delinquency, and of controlling for potentially important pre-existing variables was employed in this study as a means of testing the chaining hypothesis.

DeLisi and Vaughn (2014) offer a temperament-based theory of antisocial behavior that may provide the conceptual framework that is required to make sense of the temperament-offending relationship. According to this theory, low effortful control and high negative emotionality are temperamental traits that contribute to self-regulatory difficulties in childhood and adolescence, all of which then lead to an evolving pattern of adult criminality. An early age of onset of offending behavior is said to be a direct consequence of these early self-regulatory problems (DeLisi, Neppel, Lohman, Vaughn, & Shook, 2013). In addition, difficult temperament can evoke certain environmental reactions which, in turn, contribute to future self-regulatory and behavioral problems (Barrett & Fleming, 2011). The weak relationship commonly observed between temperament and later criminality (van der Voort et al., 2013) would seem to present a problem for the DeLisi and

Vaughn (2014) model. That is, until one considers the role of chaining in the overall process and the ability of proximal events like temperament and early maternal involvement to link to more distal outcomes like delinquency by way of the chaining process.

#### *The current study*

The purpose of this study was three-fold: 1. ascertain whether difficult temperament is capable of evoking low maternal involvement even after controlling for pre-existing levels of maternal involvement; 2. check for moderation effects by evaluating interactions between sex and difficult temperament/maternal involvement; 3. determine whether variables like difficult temperament and maternal involvement are linked to early delinquency by a series of mediating variables. The first hypothesis stated that difficult temperament at age 1 would predict maternal involvement at age 3, after controlling for maternal involvement at age 1. The second hypothesis held that sex would moderate difficult temperament and maternal involvement in their relationships with each other, externalizing behavior, and early delinquency. The third hypothesis predicted that difficult temperament and maternal involvement would be linked to early delinquency via externalizing behavior and that the difficult temperament → maternal involvement → externalizing behavior → delinquency and difficult temperament → externalizing behavior → delinquency chains would both be significant.

## **Method**

### *Participants*

Participants were 4897 children from the Fragile Families and Child Wellbeing Study (FFCWS; Reichman, Teitler, Garfinkel, & McLanahan, 2001). The FFCWS is a nationally representative cohort of 4898 children born between 1998 and 2000 in 20 U.S. cities with populations  $\geq 200,000$ . Stratified random sampling was used to select 16 of the 20 cities, although non-marital births were oversampled. Follow-ups were conducted when the child was one year of age (Wave 2), three years of age (Wave 3), five years of age (Wave 4), and nine years of age (Wave 5). One case from the FFCWS was not included in the current study because it has missing data on all study variables. The sample used in the current study consisted of 2568 boys (52.4%) and 2329 girls (47.6%). Ethnically, 49.7% of the mothers were Black, 30.8% were White, 12.2% were Hispanic, 2.6% were Asian, and 4.5% were American Indian, whereas 50.6% of the fathers were Black, 26.9% were White, 13.8% were Hispanic, 2.3% were Asian, and 4.3% were American Indian.

### *Measures*

#### *Difficult temperament*

Difficult temperament was measured at Wave 2 with three items: 1. Child often fusses and cries; 2. Child gets upset easily; 3. Child reacts strongly when upset. Each item was evaluated by the child's mother during Wave 2 of the FFCWS using the following five-point rating scale: 1 = not at all, 2 = a little, 3 = somewhat, 4 = a lot, and 5 = very much. The three items were summed to produce a difficult temperament score that ranged from 3 to 15 and which demonstrated modest to moderate internal consistency (Cronbach  $\alpha = .60$ ; mean inter-item correlation = .33).

#### *Maternal involvement*

Nine items posed to mothers during the Wave 3 interview were used to assess maternal involvement. These items asked how many days a week (0–7) the mother: 1. Sings songs or nursery rhymes with the child; 2. Hugs or shows physical affection to the child; 3. Tells the child that she loves him/her; 4. Reads stories to the child; 5. Tells stories to the child; 6. Plays inside with toys with the child; 7. Permits the child

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