



The interactive effects of maternal personality and adolescent temperament on externalizing behavior problem trajectories from age 12 to 14

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ABSTRACT

Although previous research has corroborated the independent contributions of parent personality and adolescent temperament in predicting adolescents' externalizing behavior problems (EXT), few studies have examined their joint contribution to predict EXT in adolescence. In the present longitudinal study, first we examined the developmental trajectory of EXT from ages 12 to 14, and, next, we investigated the joint effects of mothers' irritability and adolescents' inhibitory control (IC) in predicting the developmental trajectory of EXT. Altogether, 106 mothers from Rome provided data annually for three years (M_{age} of child in wave 1 = 12.34 years, $SD = 0.77$; 53% boys). Mothers rated their irritability, adolescents' IC, and adolescents' EXT. Multilevel modeling indicated that EXT followed a quadratic trajectory with an increase from age 12 through age 13 followed by a slight downturn by age 14. Interactive effects emerged between mothers' irritability and adolescents' IC in predicting the developmental trajectory of EXT. IC buffered the detrimental effect of mothers' irritability on the development of adolescents' EXT. The practical implications of these findings are discussed.

1. Introduction

Externalizing behavior problems (EXT) include overt and covert problematic behaviors, such as aggression and delinquency, respectively, directed toward the external environment (Achenbach, 1991). A considerable amount of correlational research has shown that EXT is associated with a wide range of negative outcomes, such as academic failure, peer rejection, later involvement in antisocial and delinquent behaviors (e.g., Loeber & Hay, 1997; Moffitt, 1993; Patterson, DeBaryshe, & Ramsey, 1990). Transactional processes are likely represented in these associations whereby EXT increases the likelihood of other negative outcomes such as academic failure and peer rejection, and problems in other domains increase the likelihood of EXT. Accordingly, personality and developmental researchers have devoted their efforts to identifying adolescent and parental factors associated with EXT. Yet, the majority of previous research explored separately the effects of parent and adolescent personality characteristics on EXT (e.g., Prinzie, Onghena, & Hellinckx, 2005), thereby partially neglecting their joint contribution in predicting the development of adolescents' EXT. In

the present study we aimed to address this research gap by investigating the joint effects of mothers' irritability and adolescents' inhibitory control on the development of EXT during adolescence.

From a developmental perspective, adolescence is a phase in which the higher propensity to engage in risky behaviors may turn into more chronic EXT (Moffitt, 1993; Patterson et al., 1990). Several factors are jointly responsible for the vulnerability of adolescents to EXT, such as biological changes associated with puberty, the greater amount of time spent with peers that increases the risk of exposure to deviant models, as well as their enhanced desire of autonomy that can hinder parental supervision (e.g., Steinberg & Morris, 2001). Therefore, understanding how individual characteristics (i.e., temperament) and the family environment (i.e., parent personality) may interact is a critically important step for understanding the development of EXT.

1.1. Developmental trajectories of EXT

Although a decrease in EXT is likely to occur during the transition from childhood to adolescence because of parallel increases in socio-

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emotional functioning (e.g., sympathy; see Colasante, Zuffianò, & Malti, 2016), previous research has shown that adolescence represents a critical period for the development of EXT (e.g., Loeber & Hay, 1997; Moffitt, 1993). With few exceptions reporting a declining linear trajectory of EXT (i.e., aggressive and delinquent behaviors) from age 4 to 18 (e.g., Leve, Kim, & Pears, 2005), more complex non-linear EXT trajectories were identified during adolescence. For instance, Petersen, Bates, Dodge, Lansford, and Pettit (2015) found a quadratic trajectory of EXT from ages 5 to 24, that decreased from early childhood to pre-adolescence, increased during adolescence, and decreased from late adolescence to adulthood. In a study with youths aged 9 to 17 years, Lahey et al. (2000) found a quadratic trajectory of aggressive behaviors that peaked around 13 years and then declined during later adolescence. Similarly, Farrell, Sullivan, Esposito, Meyer, and Valois (2005) found curvilinear trajectories of EXT from ages 12 to 14, with an increase from age 12 through age 13 followed by a slight decrease by age 14.

In other studies in which EXT included DSM-oriented disorders, such as ADHD and substance abuse, the decline of EXT emerged later than late adolescence. For example, Walton et al. (2016) found that EXT (i.e., antisocial behavior, alcohol dependence disorder, and drug dependence disorder) shows a curvilinear trajectory from ages 17 to 29, increasing until age 24 and then decreasing rapidly until age 29.

1.2. Mother's personality and Adolescent's EXT

Using the Five Factor Model as a reference framework, previous studies indicated that low emotional stability and, to a lesser extent, low agreeableness and low conscientiousness were those parental personality characteristics consistently associated with children's EXT. For instance, in a study with children aged 33 to 37 months, van Aken et al. (2007) found that high levels of parental emotional stability predicted negatively both children's attention problems and aggressive behaviors. Similarly, in a study with children aged 5 to 11 years, Prinzie, Onghena, Hellinckx, Grientes, et al. (2005) found that high scores of parental emotional stability and conscientiousness were negatively related to children's EXT. The predictive role of parental emotional stability on child EXT also has been corroborated longitudinally. In a longitudinal study with children aged 4 to 9 years, Prinzie, Onghena, and Hellinckx (2005) showed that parents' emotional stability and conscientiousness were associated with lower initial levels of EXT when children were 4 years old.

Other parental dispositional characteristics, such as anger, hostility, and negative emotionality also have been associated with children's EXT. For example, in a longitudinal study with children followed from 4.7 years to 9.7 years of age, Denham et al. (2000) found that both parental anger and hostility predicted higher children's EXT over time.

In the present study, we focused on maternal irritability because this dimension has received less attention in relation to EXT. This is relatively surprising because a consistent body of research reported that high levels of irritability, defined by Caprara et al. (1985) as the tendency to be angry and reactive to the slightest provocation and disagreement, can predispose to aggression across different contexts (e.g., Bettencourt, Talley, Benjamin, & Valentine, 2006). In the context of family studies, Greenwald, Bank, Reid, and Knutson (1997) as well as Shay and Knutson (2008) showed that parental irritability predicted aggressive behaviors toward the child (i.e., physical discipline), which, in turn, could influence the development of children's aggressive behaviors (for a review, see Gershoff, 2002). Because previous studies focused on the childhood period, we sought to clarify whether the effect of mothers' irritability on EXT represented a consistent developmental risk factor during adolescence. We expected that mothers' irritability could predict adolescents' EXT. Importantly, because contextual factors, such as daily hassles related to family life, may further exacerbate one's own general irritability level (or trait-level), we also examined whether both mothers' irritability trait-level and their momentary deviations

(i.e., feeling more irritable than usual; state-level effects) could jointly influence adolescents' EXT.

1.3. Adolescent's temperament and EXT

In analyzing children's temperamental characteristics associated with EXT, researchers mostly focused on effortful control (EC) and its subdimensions (e.g., Eisenberg et al., 2005; Lemery, Essex, & Snider, 2002). EC, which includes the abilities to manage attention (i.e., attentional control), inhibit a dominant response (i.e., inhibitory control), and activate a subdominant response (i.e., activational control) (Rothbart & Bates, 2006), represents the dispositional tendency to be able to employ top-down control to self-regulate (Nigg, 2017). As a key facet of temperament-based self-regulatory characteristics, EC modulates emotional response and behaviors (Nigg, 2017) and plays a central role in the development of a wide range of socioemotional and behavioral outcomes, including EXT. In this regard, several studies clearly showed that low inhibitory control (IC), a specific component of EC, was consistently related to EXT. For example, in a longitudinal study, Lemery et al. (2002) found that low levels of children's IC at 3.5 and 4.5 years of age predicted parents' reports of EXT at 5.5 years of age. Similarly, in a cross-cultural study, Olson et al. (2011) found that 4-year-old children's IC was negatively related to mother-reported EXT. This association is still present across adolescence. For instance, Eisenberg et al. (2005) found that a lack of IC at age 11 predicted parents' and teachers' reports of EXT at age 13.

According to previous research, we expected that low IC may predict adolescents' EXT. Moreover, similar to mothers' irritability, we also investigated the effect of IC at both the trait- and state-level. To our knowledge, no previous studies have examined the role that children's variations from their mean level of IC have on their EXT.

1.4. The present study

Although previous research has focused on risk factors associated with children's EXT by examining the direct effects of parental personality traits (i.e., neuroticism) and child temperamental characteristics (i.e., IC), less attention has been given to exploring the interactive relations between adolescent (i.e., low IC) and family (i.e., highly irritable mother) risk factors in relation to the development of adolescent's EXT. Thus, following the risk-buffering model (e.g., Rutter et al., 1997) that assigns a primary importance to the interaction between temperamental and environmental characteristics in child development, the present study extended previous research by examining the joint effects of mothers' irritability and adolescents' IC on adolescents' EXT. We hypothesized that: (a) mothers' irritability (trait- and state-level) would be associated with higher levels of adolescents' EXT; (b) adolescents' IC (trait- and state-level) would be negatively associated with EXT; and (c) adolescents' IC would buffer the relation between mothers' irritability and EXT. Specifically, we expected that the positive relation between mothers' irritability and adolescents' EXT would be weakened by high levels of adolescents' IC. Mothers rated their irritability and adolescents' IC and EXT.

2. Method

For additional information on the "Method" section, please see Supplementary materials.

2.1. Sample

A convenience sample of 106 mothers from Rome provided data over three years in three waves. Participants were recruited from schools that served socio-economically diverse populations in Rome. In the present study, adolescents (47% girls) averaged 12.34 years ($SD = 0.77$) in wave 1, 13.21 years ($SD = 0.81$) in wave 2, and

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