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# Informant similarities, twin studies, and the assessment of externalizing behavior: A meta-analysis

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## ABSTRACT

The purpose of this study was to examine similarity within informant ratings of the externalizing behavior of monozygotic (MZ) and dizygotic (DZ) twin pairs. To do this, we conducted a meta-analysis of correlations within ratings completed by mothers, fathers, teachers, and youth. We retrieved  $n = 204$  correlations for MZ twins and  $n = 267$  correlations for DZ twins from  $n = 54$  studies containing  $n = 55$  samples. Results indicated that all four informants were significant negative predictors of within-informant correlations in their ratings of MZ, but not DZ twins. In the case of longitudinal studies and as the age of MZ twins increased, similarity within ratings by mothers was significantly greater than similarity within ratings by fathers. Among participant characteristics, we found that (a) age was a significant negative predictor of similarity within ratings for MZ twins; (b) race was a significant predictor of similarity within ratings for both MZ and DZ twins, but in the opposite direction; and (c) DZ opposite sex twins were a significant negative predictor of within-rating similarity. Among study characteristics for MZ twins, participant group and longitudinal study were significant negative predictors of within-rating similarity, and for both MZ and DZ twin pairs, non-independence in the data was a significant negative predictor of within-rating similarity. For DZ twins, multiple informants were significant positive predictors of within-rating similarity, and in longitudinal studies with DZ twins, similarity within ratings by mothers was significantly greater than similarity within ratings by fathers, and similarity within ratings by fathers was significantly less than similarity within ratings by teachers and youth. For both MZ and DZ twins, the following study characteristics were significant positive predictors of similarity within ratings: study group, number of time points, and multiple constructs. All four informants appeared equally skilled at predicting within-informant correlations for MZ (but not DZ) twins, with participant characteristics having different predictive effects for MZ compared to DZ twins, and study characteristics having comparable predictive effects for both twin types. Overall, these findings suggest effective discrimination on the part of four informants who rated the externalizing behavior of MZ and DZ twins.

## 1. Introduction

Externalizing behavior is one of the most common reasons children and youth are referred to schools, clinics, and residential treatment centers for mental health problems (Adelman & Taylor, 2010; Briesch, Ferguson, Volpe, & Briesch, 2013; Frick & Silverthorn, 2001; Lyman & Campbell, 1996; National Research Council and Institute of Medicine, 2009). Externalizing

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behavior is broadly conceived as the violation of societal norms and the personal and property rights of others (Burt, 2009a). Researchers have identified distinct subtypes of externalizing behavior within a broad spectrum, including overt aggression, covert aggression (i.e., rule-breaking and delinquency), oppositional defiance, impulsivity/attention, and emotion dysregulation (Olson et al., 2013). These forms of behavior and their contexts for expression are likely to change across development. For example, covert aggression (rule-breaking) during childhood may consist of lying and stealing from family members and friends, and during adolescence it may consist of delinquent acts, such as truancy, vandalism, and burglary (Loeber et al., 1993; Olson et al., 2013). Alternatively, externalizing behavior may stay the same across different contexts, as in the case of overt aggression among 5–10% of the population of youth, who engage in physical fighting from early childhood through adolescence and into adulthood (Burt, 2009a; Dodge & McCourt, 2010; Moffitt, 1993; National Research Council and Institute of Medicine, 2009; Stanger, Achenbach, & Verhulst, 1997; Tremblay, 2000).

### 1.1. Informants and the development of externalizing behavior

Externalizing behavior occurs across settings (home, school, neighborhood, community) and in interactions with disparate individuals (parents, siblings, teachers, peers); thus, multiple informants have been called upon to assess it (Achenbach, McConaughy, & Howell, 1987; De Los Reyes, 2013). Similar to the manner in which youth externalizing behavior varies across settings, informants vary systematically in the settings where they observe externalizing behavior (De Los Reyes, 2013; De Los Reyes, Salas, Menzer, & Daruwala, 2013; Dirks, De Los Reyes, Briggs-Gowan, Cella, & Wakschlag, 2012).

Historically, researchers have relied on parent (especially mother) and teacher ratings of externalizing behavior during the childhood years, followed by youth self-ratings during adolescence (Rhee & Waldman, 2002). This selection of raters reflects both the developmental and setting contexts for externalizing behavior, such as parents who observe behavior in the home and neighborhood during the childhood years; teachers who observe the behavior of youth in classrooms and at school; and adolescents who observe externalizing behavior outside of the home and with fellow young people (Kraemer et al., 2003; Loeber et al., 1993; McMahon & Frick, 2005; Olson et al., 2013). Likewise, in longitudinal research with the same individuals studied over time, parent and teacher ratings of externalizing behavior are prevalent during childhood, and youth self-ratings and criminal reports are prevalent in adolescence (Rhee & Waldman, 2002). This is likely the case because researchers recognize that (a) interactions between parents and children at home provide the early context for the development of externalizing behavior (e.g., Patterson, Reid, & Dishion, 1992); and (b) teachers are more likely to observe externalizing behavior and refer children to school-based intervention teams in elementary compared to secondary schools (Briesch et al., 2013). These parent-interactions and teacher-referral patterns mirror a developmental and setting change in externalizing behavior. Youth are likely to decrease their externalizing activities in school and increase their engagement with peers in externalizing activities during adolescence. Rater assessment reflects this change from childhood to adolescence, with researchers asking adolescent youth to (a) describe the frequency of their unsupervised time with peers (e.g., Pettit, Bates, Dodge, & Meece, 1999); (b) nominate those peers who are aggressive (e.g., Cairns & Cairns, 1994); and (c) engage in conversations about delinquent activities with peers (e.g., Dishion, Spracklen, Andrews, & Patterson, 1996).

### 1.2. Longitudinal research, informants, and externalizing behavior

Given the link between developmental patterns and settings for externalizing behavior, along with informants who observe that behavior, longitudinal research offers a unique opportunity to study the behavioral patterns of individuals according to the same and different informants, prospectively and over time. In longitudinal research, individuals can participate in repeated measurement of behavior for a significant span of their lives (Cairns & Cairns, 1994). Longitudinal designs allow researchers to examine early influences on externalizing behavior during childhood and adolescence (e.g., negative parenting and lack of supervision, from parent interviews), and the subsequent, potentially moderating influence of youth-rated friendships, peer affiliations, and peer antisocial behavior; as well as teacher reports of antisocial behavior in school (Lansford, Criss, Pettit, Dodge, & Bates, 2003; Patterson et al., 1992). In addition to the example from Lansford et al. (2003) of the varied use of informants in longitudinal research, longitudinal researchers have employed the same, varied informants in the assessment of externalizing behavior over time, relying on parents, teachers, youth, and peers to rate behavior across development (e.g., Cairns & Cairns, 1994; Patterson et al., 1992).

We identified three meta-analyses of longitudinal studies of externalizing behavior in which researchers employed a plethora of informants, alone and in combination (i.e., parent, teacher, youth, and peer informants), as predictors and as externalizing outcomes. For example, Leschied and colleagues examined child externalizing behavior in a meta-analysis of 29 prospective longitudinal studies beginning in early childhood, middle childhood, and adolescence, identifying childhood externalizing as a significant predictor of adult criminal convictions and self-reported criminal behavior (Leschied, Chiodo, Nowicki, & Rodger, 2008). In contrast, Loth and colleagues identified child externalizing behavior as a significant predictor of later self-reported depression, using various combinations of teacher, parent, and youth ratings between the ages of 6 and 13 as predictors (Loth, Drabick, Leibenluft, & Hulvershorn, 2014). Derzon (2010) examined 119 longitudinal studies of more than 100 family risk factors in early and middle childhood and adolescence to predict youth externalizing behavior at different ages, measured in part by parent ratings on the *Child Behavior Checklist, CBCL* (Achenbach & Rescorla, 2001). Longitudinal research is critical for understanding the development of externalizing behavior within individuals, as well as the settings for behavior and the roles of informants in describing it.

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