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Aggressive behavior problems in children with autism spectrum disorders: Prevalence and correlates in a large clinical sample

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ABSTRACT

Aggressive behavior problems (ABP) are frequent yet poorly understood in children with autism spectrum disorders (ASD) and are likely to co-vary significantly with comorbid problems. We examined the prevalence and sociodemographic correlates of ABP in a clinical sample of children with ASD ($N = 400$; 2–16.9 years). We also investigated whether children with ABP experience more intensive medical interventions, greater impairments in behavioral functioning, and more severe comorbid problems than children with ASD who do not have ABP. One in four children with ASD had *Child Behavior Checklist* scores on the Aggressive Behavior scale in the clinical range (T-scores ≥ 70). Sociodemographic factors (age, gender, parent education, race, ethnicity) were unrelated to ABP status. The presence of ABP was significantly associated with increased use of psychotropic drugs and melatonin, lower cognitive functioning, lower ASD severity, and greater comorbid sleep, internalizing, and attention problems. In multivariate models, sleep, internalizing, and attention problems were most strongly associated with ABP. These comorbid problems may hold promise as targets for treatment to decrease aggressive behavior and proactively identify high-risk profiles for prevention.

1. Introduction

Aggressive behaviors in children with autism spectrum disorder (ASD) are the primary cause of residential placement (Mandell, 2008) and are associated with greater functional impairment and more intensive medical interventions (Lecavalier, 2006; Tureck, Matson, Turygin, & Macmillan, 2013; Witwer & Lecavalier, 2005). Additionally, aggressive

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behaviors in children with ASD are a frequent source of parental concern (Mazurek, Kanne, & Wodka, 2013) and are known to increase family stress, financial strain, and demands on caregivers (Hodgetts, Nicholas, & Zwaigenbaum, 2013; Lecavalier, Leone, & Wiltz, 2006). While aggressive behavior in ASD is important due to the detrimental effects on caregiving, it may also be a risk factor for later poor outcomes. For instance, in the general population, aggressive behavior in childhood is linked to other maladaptive behaviors including delinquency/conduct problems, emotional dysregulation, low peer acceptance, and peer rejection (Card, Stucky, Sawalani, & Little, 2008). However, despite the clinical significance of aggressive behaviors in ASD, the prevalence and correlates of these behaviors are poorly understood.

Previous research suggests that aggressive behaviors are more common among children with ASD than in other populations (Bronsard, Botbol, & Tordjman, 2010; Farmer & Aman, 2011; Mayes et al., 2012; McClintock, Hall, & Oliver, 2003). However, prevalence estimates of aggressive behaviors in children with ASD vary widely, ranging from 8% to 68% (see Table 1). This variation is likely due to differences in the definitions of aggressive behaviors, the measures used, and the sample ascertainment methods. Estimates are considerably higher when based on non-standardized measures of parent-reported aggressive behavior. For example, Kanne and Mazurek (2011) estimated the prevalence of current aggressive behavior as 56%, based on parent ratings of mild to severe physical aggression on a single item on the *Autism Diagnostic Interview-Revised*. In a recent study using a large sample ($N = 1584$) from the Autism Treatment Network (ATN), the prevalence of aggressive behavior was 53.7%, based on a yes or no response from parents about whether aggressive behaviors were a current concern (Mazurek et al., 2013). However, these estimates are difficult to evaluate, particularly when samples encompass children within a wide age range, because it is not known how parents of children without ASD at different ages would respond.

In contrast, studies that have used validated measures of aggression tend to report lower prevalence estimates (see Table 1). For example, two previous studies measured aggressive behaviors using the *Child Behavior Checklist* (*CBCL*; Achenbach & Rescorla, 2000, 2001), a standardized measure with satisfactory national norms and with demonstrated reliability and validity in both clinical and non-clinical populations. In these studies, aggressive behavior problems (ABP), defined as *CBCL* aggressive behavior *T*-scores in the clinical range ($\geq$70), were present in 8–23% of children with ASD (Georgiades et al., 2011; Hartley, Sikora, & McCoy, 2008). However, both studies included only young children, limiting the generalizability of the findings and the ability to examine age trends. Therefore, clarification is needed to identify accurate rates of aggressive behavior problems in populations with ASD, to determine whether these rates vary systematically with age, and to better understand the factors associated with increased risk of such behaviors.

In the general population, the developmental course and correlates of aggressive behaviors have been well studied (Broidy et al., 2003; Nagin & Tremblay, 2001; National Institute of Child Health & Human Development [NICHD] Early Child Care Research Network, 2004; Tremblay et al., 2004). Instrumental physical aggressive behaviors reliably peak at about 24 months of age and decline thereafter (Nagin & Tremblay, 1999; NICHD Early Child Care Research Network, 2004). Family variables such as low family income, low parent education levels, maternal antisocial behavior, maternal depression, and maternal early onset of childbearing account for significant variability in aggressive behaviors in typically developing children (Gross, Shaw, & Moilanen, 2008; Nagin & Tremblay, 2001; Tremblay et al., 2004). Additionally, higher rates of aggressive behaviors are associated with male sex (Lansford et al., 2006; NICHD Early Child Care Research Network, 2004), early language delays (Dionne, Tremblay, Boivin, Laplante, & Pérusse, 2003; Séguin, Parent, Tremblay, & Zelazo, 2009; Van Daal, Verhoeven, & Van Balkom, 2007), lower intellectual functioning (Tremblay, 2000), and higher levels of hyperactivity (Nagin & Tremblay, 2001). In most population samples, there are few children with significant aggressive behaviors who do not also exhibit clinically significant inattention/hyperactivity (Jester et al., 2005; Nagin & Tremblay, 2001).

Yet few of the factors associated with aggressive behaviors in typically developing populations have been consistently associated with aggressive behaviors in children with ASD. For example, the association between aggressive behavior and age is not clear. Higher levels of aggressive behaviors (primarily physical) have been found in younger children in some studies (Kanne & Mazurek, 2011; Mazurek et al., 2013), but not in others (Farmer & Aman, 2011; Hartley et al., 2008; Maskey, Warnell, Parr, Le Couteur, & McConachie, 2013; Murphy et al., 2005; Sikora, Hall, Hartley, Gerrard-Morris, & Cagle, 2008). Gender has consistently not been associated with aggressive behavior in children with ASD as in typical populations (Farmer & Aman, 2011; Hartley et al., 2008; Kanne & Mazurek, 2011; Kozlowski, Matson, & Rieske, 2012; Mazurek et al., 2013; Murphy, Healy, & Leader, 2009; Sikora et al., 2008). In terms of family demographics, higher levels of aggressive behaviors in children with ASD have been linked to both lower parent education levels (Mazurek et al., 2013) and higher family incomes (Kanne & Mazurek, 2011), leaving some question as to how aggression relates to family socio-economic status. Finally, similar to findings in typically developing children, increased aggressive behaviors have been found among children with ASD with impaired cognitive functioning (Dominick, Davis, Lainhart, Tager-Flusberg, & Folstein, 2007), language (Dominick et al., 2007; Hartley et al., 2008), and adaptive skills (Hartley et al., 2008; Mazurek et al., 2013), though negative findings have also been reported (Kanne & Mazurek, 2011; Maskey et al., 2013; Mazurek et al., 2013; Murphy et al., 2009).

Aggressive behaviors may also be influenced by the severity of a child's ASD symptoms (Jang, Dixon, Tarbox, & Granpeesheh, 2011). In one study, aggressive children (based on parent report) had more severe parent-reported (but not clinician-observed) social and communicative deficits (Kanne & Mazurek, 2011). Aggressive behaviors have also been linked to increased repetitive, stereotyped, and ritualistic behaviors as well as resistance to change in children with ASD (Dominick et al., 2007; Kanne & Mazurek, 2011).

In addition to core ASD symptoms, having ASD increases the risk of a number of comorbid problems that are known to increase challenging behavior in this population (Matson & Kuhn, 2001; Matson et al., 2011; Matson, Neal, & Fodstad, 2010).