

# Psychopathology Trajectories of Children With Autism Spectrum Disorder: The Role of Family Poverty and Parenting

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**Objective:** Children with autism spectrum disorder (ASD) are reported to have high rates of co-occurring psychopathology. Little is known about risk factors that might contribute to this psychopathology. This study modeled the effect of family poverty on psychopathology trajectories in young children with ASD, and examined whether home organization and maternal warmth and involvement could buffer the effect of poverty on children's psychopathology. **Method:** The sample comprised 209 children with ASD who participated in the UK's Millennium Cohort Study, a population birth cohort study. Individual trajectories of psychopathology at ages 3, 5, and 7 years were analyzed using growth curve models. Psychopathology was assessed with the Strengths and Difficulties Questionnaire. **Results:** Children with ASD exhibited increasingly high rates of psychopathology over time. Family poverty was associated with broad and specific (emotional and conduct problems) psychopathology, but not with changes in psychopathology over time. Warmth, involvement, and home organization did not buffer the association of family poverty with psychopathology. However, low warmth explained the relationship between poverty and broad psychopathology, and predicted annual changes in broad psychopathology. Warmth was associated with fewer conduct problems and less hyperactivity, and with an annual decrease in peer and conduct problems. Household chaos was a risk factor for conduct problems, as was maternal involvement for peer problems. **Conclusions:** Family poverty, low maternal warmth, and household chaos are risk factors for externalizing problems in children with ASD. Maternal warmth may be a key target for intervention, particularly in poorer families of children with ASD. *J. Am. Acad. Child Adolesc. Psychiatry*, 2013;52(10):1057–1065. **Key Words:** autism spectrum disorder (ASD), household chaos, parenting, psychopathology, trajectories

Autism spectrum disorder (ASD) describes a group of pervasive developmental disorders, including autism and Asperger's syndrome.<sup>1</sup> Children with ASD exhibit a range of problems, including communication difficulties, impairments in reciprocal social interaction, limited imagination, and repetitive and restricted patterns of behaviors. Currently, ASD affects roughly 1% of the child population.<sup>2</sup> Recent research has demonstrated that children and adolescents with ASD can exhibit additional psychiatric symptoms and disorders, such as anxiety disorders, oppositional defiant disorder, and attention-deficit/hyperactivity disorder (ADHD), that do not form part of the diagnostic

criteria for ASD.<sup>3-5</sup> This co-occurring psychopathology may have a severe impact on children with ASD and their families; contrary to the *DSM-IV-TR* hierarchical rules, *DSM-5* allows a diagnosis of ADHD alongside a diagnosis of ASD.<sup>6</sup>

Although the etiology of ASD is unclear, genetic risk factors are known to contribute to its development. Twin studies consistently reveal a high concordance rate among monozygotic compared to dizygotic twins with autism. However, rates are not 100%,<sup>7</sup> highlighting the potential importance of environmental factors. One line of investigation into environmental influences addresses the role of family and contextual factors for psychopathology in children with ASD.<sup>4</sup> These factors play little role in ASD symptomatology itself. Bettelheim's<sup>8</sup> proposition that autism may result from poor parenting behaviors has been discredited. However, environmental factors



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including aspects of parenting and parent–child interaction may contribute to the co-occurrence of psychopathology and ASD.<sup>9–12</sup>

Family socioeconomic disadvantage (SED) is widely acknowledged as a risk factor of psychopathology in the general population of children.<sup>13</sup> However, research elucidating its role in psychopathology of children with ASD is generally limited and has produced mixed results.<sup>14,15</sup> In a cross-sectional study using a population-representative sample of 10- to 14-year-olds with ASD, family material deprivation was not associated with children’s psychiatric disorders.<sup>4</sup> However, in a follow-up study, deprivation predicted less improvement in emotional symptoms over time.<sup>16</sup> Using a more detailed measure of family SED and a large longitudinal population sample, we aimed to explore the role of family poverty in the development of psychopathology in children with ASD from preschool age to middle childhood. Longitudinal data allowed us to get closer to estimating causal relations than would cross-sectional data. We also explored the role in this association of 3 factors related to resilient outcomes in typically developing children: maternal warmth, maternal involvement, and home organization. Examining the role of the above factors in the development of psychopathology in the early years in children with ASD may help professionals to identify at-risk children with ASD early. Interventions for these children may be most useful during early development.<sup>17</sup>

#### Maternal Warmth, Maternal Involvement, and Home Organization

There is much evidence for the role of home organization and maternal warmth and involvement in mental health outcomes in typically developing children.<sup>18–22</sup> However, there is little research on the role of these factors in psychopathology in atypical populations. With regard to warmth, there is evidence that its effect on behavior problems in autistic children may be nonlinear, with behavioral difficulties being linked both with parenting that is highly intrusive and lacking in warmth and responsiveness, and with emotional overinvolvement.<sup>23,24</sup> However, warm, sensitive, facilitative parenting has been associated with optimal behavioral development in adolescents and adults with ASD.<sup>10</sup> Regarding involvement, although Osborne *et al.*<sup>25</sup> found no relationship between parental involvement and behavior problems in autistic children, more recently, Osborne and Reed<sup>9</sup>

found strong evidence of involvement interacting bidirectionally with parenting stress, a powerful risk factor of adjustment problems in children with developmental disabilities.<sup>26</sup> Finally, household chaos, a home environment characterized by high levels of noise and disorganization and low levels of regularity and routine,<sup>27</sup> strongly predicts behavioral problems in typically developing<sup>27</sup> and autistic<sup>28</sup> children. To date, no study has investigated the role of household chaos in the development of behavior problems in ASD children. Previous research with typically developing children has also suggested that warm and involved parenting and home organization may not only predict adjustment but also promote resilience, that is, better-than-expected outcomes in children exposed to contextual risk factors.<sup>21,29</sup> It is possible that similar effects may be evident in the ASD population. To date, no study has tested this.

#### The Present Study

It is difficult to isolate the causal impact of SED, as many factors might jointly determine SED and child psychopathology. To avoid attributing to SED what should be attributed to correlated determinants of both SED and psychopathology, we adjusted for maternal qualifications as a proxy for family socioeconomic status and an indicator of human capital in the family. We also adjusted for children’s verbal cognitive ability and low birthweight status. Verbal cognitive ability is a strong predictor of emotional and behavioral adjustment among children in the general population,<sup>30</sup> and among those with ASD.<sup>16</sup> It is also related to childhood family poverty.<sup>31</sup> Low birthweight children are at increased risk for developing psychiatric problems by middle childhood.<sup>32</sup>

We hypothesized that, both concurrently and over time, SED and household chaos would contribute to heightened levels of psychopathology, whereas greater parental warmth and involvement would be associated with less psychopathology. Also, given their association with resilience among children in the general population, we hypothesized that parental involvement, parental warmth, and home organization would moderate (i.e., buffer) the effect of SED on children’s psychopathology.

In our analysis of these relationships, we tested the role of parenting in mediating and moderating<sup>33</sup> the effect of SED. A mediator is a variable that accounts for the relation between the

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