Published in final edited form as:

J Dev Behav Pediatr. 2013 ; 34(9): 651–660. doi:10.1097/01.DBP.0000437725.39459.a0.

Parental Attributions for the Behavior Problems of Children and Adolescents With Autism Spectrum Disorders

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Abstract

Objective—The authors examined parental attributions for child behavior problems in 63 married couples of children and adolescents (aged 3–20 years) with autism spectrum disorders (ASDs). Both child-referent attributions (i.e., beliefs about causes related to the child or adolescent) and parent-referent attributions (i.e., beliefs about causes related to the parent) were examined along the dimensions of locus, stability, and controllability. Parent and child/adolescent factors related to parental attributions were identified, and the associations between parental attributions and parenting burden were explored.

Method—Mothers and fathers independently completed self-reported measures of parental attributions, parenting burden, and child behavior problems. Couples jointly reported on their son or daughter's severity of autism symptoms, intellectual disability status, age, and gender.

Results—Parents tended to attribute the behavior problems of their child/adolescent with an ASD to characteristics that were not only internal to and stable in the child/adolescent but also controllable by the child/adolescent. Mothers were more likely to attribute their son or daughter's behavior problems to characteristics that were less internal to and less stable in the child/adolescent with an ASD than were fathers. In addition, parents with a higher level of symptoms of the broader autism phenotype, parents of younger children, and parents of children/adolescents with intellectual disability, a higher severity of autism symptoms, and a higher severity of overall behavior problems were more likely to attribute their son or daughter's behavior problems to characteristics that were more internal to and stable in the child/adolescent and factors that were less controllable by the child/adolescent. Parental attributions were related to parents' level of parenting burden.

Implications—Findings have implications for designing appropriate interventions and services for families of children and adolescents with ASDs.

Index terms

autism; behavior problems; attribution; parents; parenting stress

Autism spectrum disorders (ASDs) are defined by a triad of impairments in communication, social reciprocity, and repetitive/restricted interests and behaviors.¹ In addition, one third to one half of children and adolescents with ASDs display behavior problems that significantly interfere with everyday functioning such as inattention, hyperactivity, and depressed and anxious affect.^{2,3} These co-occurring behavior problems have been shown to be stronger determinants of parenting burden, or parenting stress, than the core autism symptoms or intellectual functioning level of the child/adolescent with an ASD.^{4,5} The impact of child behavior problems on parents, however, is likely to depend in part on parents' attributions regarding the cause of these behaviors.

According to Weiner,⁶ parental attributions about the causality of behavior involve the dimensions of locus, controllability, and stability. Locus refers to beliefs that the cause of the behavior is because of characteristics that are internal to the person versus an external stimulus. Stability refers to beliefs about the permanency of the cause of the behavior and ranges from temporary to long lasting. Controllability refers to beliefs about whether the behavior is under the control of the individual. In this study, we will assess parental attributions related to the role of both the child/adolescent with an ASD (child-referent) and the parent (parent-referent) in causing behavior problems in children and adolescents with ASDs, as both sets of attributions may influence parents' affective responses.

Clinically, it has been noted that parents often attribute behavior problems to factors that are internal in and stable to the child/adolescent with an ASD and not controllable by the child/adolescent with an ASD, perhaps perceiving the child/adolescent's disability as the major cause of the behavior problem.⁷ This clinical observation is consistent with studies of parents of children and adolescents with other types of neurodevelopmental disorders. For example, when compared with parents of children/adolescents without mental health conditions, parents of children/adolescents with attention-deficit hyperactivity disorder (ADHD) believed that the cause of their child/adolescent's behavior problem was related to characteristics that were more internal to and less controllable by the child/adolescent.^{8,9} Parents of children/adolescents with ADHD were also less likely than parents of children/adolescents without mental health conditions to believe that their child/adolescent's behavior problems were related to characteristics that were internal to parents themselves and thus that their own parenting skills or qualities caused the behavior problem.

Among families of children and adolescents with ASDs, child and parent factors may influence parental attributions. Some of these factors may operate in a similar fashion as in non-ASD populations, whereas others may be unique to an ASD population. Research on families of children and adolescents without ASDs indicates that parents interpret the behavior of younger children as less controllable by the child than the behavior of older children or adolescents, as older children/adolescents are assumed to be better able to control their emotions and behaviors.¹⁰ In addition, parents in the general population were found to attribute child behavior problems to characteristics that are more internal to the child/adolescent and more controllable by the child/adolescent for boys than for girls, perhaps because of assumptions that boys are more driven to intentionally misbehave than girls.¹¹ It is unknown whether these age and gender effects persist within the context of ASDs.

Approximately 40% to 60% of children and adolescents with ASDs have intellectual disability (ID).¹² In the presence of ID, parents may attribute their child/adolescent's behavior problem to low cognitive functioning and endorse more internal and more stable child-referent attributions and less controllable child-referent attributions. Similarly, the behavior problems of children/adolescents with a higher number of autism symptoms may be attributed to disability-related causes (more internal and stable and less controllable child-referent factors) when compared with the behavior problems of children/adolescents with a lower number of autism symptoms. Finally, parents of children and adolescents with ASDs who exhibit a higher overall severity of behavior problems may feel more discouraged about their own, in addition to their child/adolescent's, ability to control behavior problems, and endorse low levels of child- and parent-referent controllability.

There is a paucity of research in the general population examining differences in parental attributions between mothers and fathers. Among families of children and adolescents with disabilities, there tends to be a striking gender division of labor such that mothers take on the majority of childcare.¹³ As a result, when compared with fathers, mothers may be more aware of the environmental factors that contribute to their child/adolescent with an ASD's behavior problems, as they see their child/adolescent in a wider array of contexts, and are more aware of how their child/adolescent and they themselves can control the behavior problem. Thus, mothers may believe that their child/adolescent's behavior problems are because of factors that are less internal to and stable in the child/adolescent with an ASD and to factors that are more controllable by both the child/adolescent and parent themselves than are fathers.

Other parent factors may also be important in shaping parental attributions. Parents of children and adolescents with ASDs are themselves at risk for mild autism-like traits, referred to as the broader autism phenotype (BAP), presumably because of an underlying genetic vulnerability.¹⁴ In an earlier study, parents with a high level of BAP were more likely to attribute their child/adolescent with an ASD's behavior problems to parent-referent internal causes than were parents with a low level of BAP.¹⁵ The authors hypothesized that parents with a high level of BAP may have guilt that their child/adolescent is "like them" and take on responsibility for the child/adolescent's behavior problems. This finding has yet to be examined in other samples. Parent household income may also be related to parental attributions. Household income is related to parents' own education level and the extent to which the family has access to ASD services, which often require high out-of-pocket expenses.¹⁶ Parents with higher household incomes may have better knowledge of behavior management through both education and receipt of ASD services and, thus, believe that their child/adolescent's behavior problems are more controllable by both the child/adolescent and parents themselves than are parents with lower household incomes.

Research on the general population indicates that parental attributions determine affective responses to child/adolescent behavior problems.^{8,17} Specifically, attributions involving more stable and less controllable child-referent and parent-referent causes are related to increased levels of parenting burden.¹⁸ Parental attributions that the behavior problems of children/adolescents with ASDs are because of more stable and less controllable factors in the child/adolescent or parent may similarly be important determinants of parenting burden.

This Study

We examined parental attributions for child behavior problems in 63 married couples of children and adolescents with autism spectrum disorders (ASDs). Child and parent factors related to parental attributions were identified and the associations between parental attributions and parenting burden were explored. Based on clinical observations⁷ and findings on parents of children with attention-deficit hyperactivity disorder (ADHD),^{8,9} we hypothesized that, on average, parents would believe that their child/adolescent's behavior problem was because of characteristics that were internal to and stable in the child/adolescent, but not controllable by the child/adolescent. Based on findings from the general population,¹⁰ child/adolescent age was expected to be positively related to beliefs that the cause of the behavior problem was controllable by the child/adolescent with an ASD. Also based on findings from the general population,¹¹ parents of male patients with ASDs were expected to attribute the behavior problem to characteristics that were more internal to the child/adolescent and more controllable by the child/adolescent than were parents of female patients with ASDs. The presence of intellectual disability (ID) and a higher number of autism symptoms was expected to be related to attributions that the child/adolescent with ASD's behavior problem was because of disability-related causes and thus characteristics that were more internal to and stable in the child/adolescent and less controllable by the child/adolescent. Finally, in the context of a high severity of behavior problems, parents may feel discouraged in their child/adolescent's and their own ability to control the behavior problem, and thus the overall severity of the child/adolescent's behavior problems was expected to be related to beliefs that the cause of the behavior problem was less controllable by the child/adolescent and by the parent.

Given evidence that mothers spend more time than fathers in childcare,¹³ we hypothesized that mothers, when compared with fathers, would believe that the behavior problem of their child/adolescent with an ASD was because of characteristics that were less internal to and stable in the child/adolescent and less controllable by the child/adolescent and by the parent. Based on a previous study of parents of children/adolescents with ASDs,¹⁵ parents with a higher level of on broader autism phenotype (BAP) were expected to endorse beliefs that their child/adolescent's behavior problem was because of characteristics that were more internal to parents themselves than were parents with a lower level of BAP. Household income was expected to be positively related to attributions that the child/adolescent's behavior problem was because of factors that were controllable by the child/adolescent and by the parent, as parents with higher incomes may have better understanding of behavior management through both education and receipt of services. Finally, based on research on the general population,¹⁸ beliefs that the behavior problem was because of characteristics that were more stable in the child/adolescent with an ASD and less controllable by the child/adolescent and by the parent were expected to be related to higher levels of parenting burden.

METHOD

Participants

This study was approved by the University of Wisconsin-Madison IRB. Sixty-three married couples of children and adolescents with an autism spectrum disorder (ASD) residing in a Midwestern state in the United States participated in the study. Participants were recruited from a variety of sources including fliers mailed to families of children or adolescents who had received an educational label of ASD in public schools and fliers posted on ASD listservs, ASD clinics, and community settings (e.g., libraries). The majority of the parents ($n = 121$) were the biological parent of the child/adolescent with an ASD; however, 3 parents were stepparents and 2 parents were adoptive parents, all of whom had been a primary parenting figure for at least 3 years. All children/adolescents had been given a diagnosis of an ASD based on DSM-4 criteria by a medical or educational specialist (evaluation included the Autism Diagnostic and Observational Schedule¹⁹) as documented in a medical or educational record. Moreover, all children/adolescents were required to meet or exceed the ASD cutoff based on parent report on the Social Communication Questionnaire (SCQ²⁰). If couples had multiple children with ASDs, 1 child was randomly selected as the target child. Table 1 displays sociodemographic information on parents and the child/adolescent with an ASD.

Measures

Child Demographics—The child/adolescent with autism spectrum disorder's (ASD) gender and date of birth were reported by parents. Gender was coded as male (0) and female (1). Age was coded in years. The child/adolescent with ASD's intellectual disability (ID) status was assessed through review of their medical or educational record; ID was considered if he/she had a medical diagnosis of mental retardation and/or met criteria for mental retardation based on IQ and adaptive behavior testing. ID status was coded as not present (0) or present (1).

Parent Demographics—Parents reported on their gender (0, male and 1, female) and household income, which was coded 0 to 14, starting at less than \$20,000 (0) and increasing by \$10,000 intervals.

Parental Cognitive Attributions—The Parental Attribution Questionnaire (PAQ), a modified version of the Attribution and Control Questionnaire, has previously been used with parents of children and adolescents with autism spectrum disorders (ASDs).¹⁵ Parents are asked to describe a recent incident in which their child/adolescent did something naughty or bad and then to rate their agreement using a 5-point Likert scale from “strongly disagree” to “strongly agree” with 12 statements related to the main causes of the behavior. Higher scores reflect more internal, stable, and controllable causes. In parents of children with ASDs, the PAQ demonstrated good internal consistency.¹⁵ In the present sample, the PAQ also had strong internal consistency (range, 0.79–0.89).

Severity of Autism Symptoms—The Social Communication Questionnaire (SCQ)²⁰ is a parent questionnaire with 40 yes-no questions that rate the child/adolescent's autism

spectrum disorder-related social functioning and communication. The SCQ was shown to have adequate reliability and validity.²⁰ The SCQ had good internal consistency in the present sample (Cronbach's $\alpha = .83$).

Overall Severity of Behavior Problems—The child/adolescent with an autism spectrum disorder's (ASD) overall severity of behavior problems was assessed through a 10-day daily diary in which mothers and fathers separately rated the frequency (present vs absence) and severity (5-point scale) of their child/adolescent's behavior problems using a modified version of the Scales of Independent Behavior-Revised (SIB-R²¹). The SIB-R assess 8 types of behavior problems and was shown to have high concurrent validity in individuals with developmental disabilities.²¹ Instead of assessing behavior problems within the last 2 weeks, the SIB-R was used to assess daily behavior problems. This modified version was found to have had adequate within- and between-person variability in mothers of individuals with ASDs.²² In this study, the average daily total severity score of behavior problems was used.

Broader Autism Phenotype—Parents rated their own broader autism phenotype (BAP) symptoms using the Broader Autism Phenotype Questionnaire (BAPQ²³), a measure of BAP that was derived from direct assessment measures of personality and pragmatic language characteristics associated with autism spectrum disorders (ASDs).¹⁴ Respondents rate the frequency of 36 statements from 1 (very rarely) to 6 (very often). The BAPQ was shown to be reliable and to be highly related to direct assessment measures.²³ The BAPQ had good internal consistency within the present sample (Cronbach's $\alpha = .79$).

Parenting Burden—Mothers and fathers independently completed the Burden Interview,²⁴ a measure of the subjective difficulty and distress and objective burden associated with care giving. The Burden Interview consists of 29 items rated on a 4-point scale from 0 (not at all) to 3 (extremely) and was shown to have strong reliability and concurrent validity in mothers of individuals with autism spectrum disorders (ASDs).²⁵ In the present sample, the Burden Interview had strong internal consistency (Cronbach's $\alpha = .81$).

Data Analysis Plan

Intersperse correlations were conducted to examine the degree of correspondence in mothers' and fathers' ratings. Correlations were conducted to identify the child/adolescent and parent factors related to parental attributions and the association between parental attributions and parenting burden. Data from married couples are typically considered nonindependent observations.²⁶ Given this nonindependence, we used a multilevel modeling approach²⁷ using hierarchical linear modeling software (HLM²⁸), which enabled us to treat parents as being nested within couples and, thus, account for both the between-and within-couple variance in parental attributions.

Using multilevel modeling, we examined the child and parent factors related to parental attributions and the effect of parental attributions on parenting burden. Level 1 (parent-level) variables included parent gender, parent broader autism phenotype (BAP), overall severity

of behavior problems, and parental attributions. Level 2 (couple level) variables included child intellectual disability (ID) status, number of autism symptoms, child age, child gender, and household income. Effect coding was used for parent gender (mothers = -1, fathers = 1) but not for other categorical variables. All other variables were grand-mean centered.²⁷ Level 1 slopes were constrained, whereas level 1 intercepts and level 2 slopes varied at random.

RESULTS

Interspouse Correlations

Table 2 presents the means, standard deviations, ranges, and interspouse correlations for parent and child factors, parental attribution, and parenting burden. The interspouse correlations for child behavior problems and parenting burden indicate moderate consistency across spouses. There was not a significant interspouse correlation for parental broader autism phenotype (BAP). The interspouse correlations for parental attributions of child-referent stability and controllability and parent-referent stability indicated moderate consistency across spouses.

Average Pattern of Parental Attributions

As shown in Table 2, on average, parents' child-referent attributions indicated that they believed that the behavior problem was caused by characteristics that were more internal and stable in the child/adolescent but that these characteristics could be controlled by the child/adolescent. In terms of parent-referent attributions, parents were equivocal in ratings of locus, stability, and controllability, with average scores falling in the middle of the rating scale.

Parent and Child Factors and Parental Attributions

Table 3 presents correlations between parent and child characteristics and parental attributions. Parent broader autism phenotype (BAP) scores were significantly positively correlated with child-referent attributions of controllability. The child/adolescent with an autism spectrum disorder's (ASD) intellectual disability (ID) status was significantly negatively correlated with child-referent attributions of controllability. The number of the child/adolescent's autism symptoms was significantly positively correlated with child-referent attributions of stability and negatively correlated with child-referent attributions of controllability. The severity of the child/adolescent with an ASD's overall behavior problems was also significantly positively correlated with child-referent attributions of locus (i.e., internal) and stability and negatively correlated with child-referent attributions of controllability. The severity of the child/adolescent with ASD's overall behavior problems was significantly negatively correlated with parent-referent attributions of controllability.

Multilevel models using hierarchical linear modeling (HLM) software were conducted to identify the child and parent variables related to child-referent and parent-referent parental attributions. Parent gender was included to test for differences in effects between mother and fathers. Table 4 presents findings for these models.

There was a significant main effect of parent gender, overall severity of behavior problems, and child/adolescent age on child-referent attributions of locus (internal). Consistent with our hypothesis, mothers believed that their child/adolescent's behavior problem was because of characteristics that were less internal to the child/adolescent with an ASD than fathers. Across all couples, when the other predictors were at their mean value, parents of children/adolescents with a higher than average severity of overall behavior problems and parents of older children/adolescents believed that the behavior problem was because of characteristics that were more internal to the child/adolescent than parents of children/adolescents with a lower than average severity of overall behavior problems and parents of younger children. There was a significant main effect of parent gender, parent BAP, overall severity of behavior problems, and number of autism symptoms on child-referent attributions of stability. Mothers believed that the child/adolescent with ASD's behavior problem was because of characteristics that were less stable to the child/adolescent than fathers. Across all couples, when other predictors were at their mean value, parents with a higher than average level of BAP believed that the behavior problem was because of characteristics that were more stable in the child/adolescent with an ASD than parents with a lower than average level of BAP. Parents of children/adolescents with ASDs with a higher than average overall severity of behavior problems and a higher than average number of autism symptoms also believed that the behavior problem was related to characteristics that were more stable in the child/adolescent than parents with a lower than average overall severity of behavior problems. Finally, there was a significant main effect of overall severity of child behavior problems, child ID status, and number of autism symptoms on child-referent attributions of controllability. Parents believed that the child/adolescent with an ASD was less able to control the behavior problem if the child/adolescent had a higher than average overall severity of behavior problems, ID, or a higher than average number of autism symptoms.

There was a significant main effect of child ID status and child autism symptoms on parent-referent attributions of locus (i.e., internal). When other predictors were at their mean value, parents of children/adolescents with ASDs with ID and a higher than average number of autism symptoms believed that their sons' or daughters' behavior problem was because of characteristics that were less internal to parents themselves than did parents of children/adolescents with ASDs without ASD and a lower than average number of autism symptoms. There was a significant main effect of the child/adolescent's autism symptoms on parent-referent attributions of stability. Parents felt that the behavior problem was caused by a less stable characteristic in parents themselves if the child/adolescent with an ASD had a higher than average number of autism symptoms. Finally, there was a significant main effect of overall severity of child behavior problems on parent-referent attributions of controllability. Specifically, parents believed that they had more control over the behavior problem if their child/adolescent had a lower than average overall severity of behavior problems.

Parental Attributions and Parenting Burden

Table 2 also displays correlations between parenting burden and parental attributions. Parents' level of parenting burden was significantly positively associated with beliefs that the child/adolescent with an autism spectrum disorder's (ASD) behavior problem was caused by characteristics that were more internal and stable in the child/adolescent. Parents

reported higher parenting burden if they believed that the cause of the behavior problem was related to characteristics that were more stable in parents themselves and less controllable by parents themselves.

Multilevel models were conducted to identify child-referent and parent-referent attributions related to parenting burden. Child and parent factors were included in the model to control for their associations with parenting burden. Separate models were run for the 3 child-referent and parent-referent attributions. Parent gender was included to test for differences in effects between mothers and fathers. In addition, the potential moderating effect of parent gender $\times$ parental attributions on parenting burden was examined. However, there were no significant moderating effects, and thus this moderation variable was not included in final models. Table 5 presents the multilevel model findings.

In terms of the child-referent attribution models, there was a significant positive effect of parent gender, parent broader autism phenotype (BAP), overall severity of child behavior problems, and number of autism symptoms on parenting burden. Mothers reported higher levels of parenting burden than did fathers. Parents with a higher than average level of BAP and parents of children/adolescents with ASDs with a higher than average severity of overall behavior problems and number of autism symptoms reported higher levels of parenting burden than did parents with a lower than average level of BAP and parents of children/adolescents with a lower than average severity of overall behavior problems and number of autism symptoms. After controlling for the impact of parent and child characteristics on parenting burden, there was a significant main effect of child-referent attributions of locus (i.e., internal) and stability on parenting burden. In reference to the overall mean, parents who had higher than average beliefs that their son's or daughter's behavior problem was because of characteristics that were more internal and stable in the child/adolescent with ASD reported higher levels of parenting burden.

In terms of the parent-referent attribution models, there was a significant positive effect of parent BAP, overall severity of behavior problems, and severity of autism symptoms on parenting burden. After controlling for the impact of parent and child characteristics, there was a significant effect of parent-referent attributions of stability and controllability on parenting burden. In reference to the overall mean, parents who endorsed higher than average beliefs that the behavior problem was caused by a characteristic that was more stable in parents themselves and less controllable by parents themselves reported higher levels of parenting burden.

DISCUSSION

Our findings suggest that parents' affective reactions to the behavior problems of their child/adolescent with an autism spectrum disorder (ASD) are influenced by their cognitions about the causes of these behavior problems. Consistent with our hypothesis, on average, parents believed that their son/daughter's behavior problem was caused by characteristics that were more internal and stable in the child/adolescent with an ASD. This finding is consistent with clinical observations⁷ and findings in parents of children with other neuro-developmental

disabilities^{8,9} and suggests that parents tend to attribute the behavior problems of children and adolescents with ASDs to their child's disability.

In contrast to our hypothesis, on average, parents believed that the cause of the behavior problem could be controlled by the child/adolescent with an ASD. This finding differs from that of studies of children/adolescents with attention-deficit hyperactivity disorder (ADHD) in which parents believed that the internal characteristics causing their child/adolescent's behavior problems could not be controlled by the child/adolescent.^{8,9} This difference suggests that parents view behavior problems related to ASDs as more controllable by the child/adolescent than the nature of behavior problems related to ADHD and, therefore, may be more open to behavioral management interventions than parents of children/adolescents with ADHD. Within the current study, parents were ambivalent in their beliefs related to their parent-referent beliefs of locus, stability, and controllability.

Consistent with our hypothesis, we found that parents of sons and daughters with ASDs who had intellectual disability (ID) and a higher severity of autism symptoms were more likely to believe that the child/adolescent was unable to control the behavior problem. The number of the child/adolescent's autism symptoms was also related to beliefs that the behavior problem was because of stable characteristics in the child/adolescent. Children and adolescents with ASDs with ID and those with more autism symptoms may be seen as having a severe disability that causes their behavior problems and that they are less able to control this disability.

Also consistent with our hypothesis, we found that mothers were more likely than fathers to attribute the behavior problem to characteristics that are less internal and less stable within the child/adolescent with an ASD. In this sample, mothers reported spending twice as much time in childcare as fathers; this may foster greater insight into the environmental causes of the child/adolescent's behavior problem and make mothers more aware of how the child/adolescent can control their behavior problems.

In line with our hypothesis, parents of children/adolescents with ASDs with a higher severity of overall behavior problems believed that the cause of their son/daughter's behavior problem was because of more internal and stable characteristics in the child/adolescent and was less controllable by parents themselves and by the child/adolescent than were parents of children/adolescents with a lower severity of overall behavior problems. In the face of a high severity of child behavior problems, parents may feel hopeless about their own ability to control the behavior problem and their child/adolescent's ability to control the behavior problem.

In contrast to our hypothesis, the gender of the child/adolescent with an ASD was not related to parental attributions. Thus, normative assumptions that boys purposefully misbehave, which have been found in typically developing populations,^{10,11} are not held in the context of ASDs. Unexpectedly, parents of older children/adolescents with ASDs believed that the cause of the behavior problem was related to characteristics that were more internal to the child/adolescent than did parents of younger children/adolescents. When

children are younger, parents may still be grappling with their son/daughter's diagnosis and may be more likely to attribute behavior problems to disability-related causes.

In the current study, parents with a higher level of broader autism phenotype (BAP), when compared with parents with lower levels of BAP, believed that their son or daughter's behavior problem was because of more stable characteristics in the child/adolescent with an ASD. Thus, parents who themselves struggle with autism-like symptoms may see the behavior problem of their child/adolescent as being more stable and difficult to change than parents who do not struggle with these symptoms. In contrast to the earlier study by Whittingham et al,¹⁵ parental BAP was not related to beliefs about parents' own role in causing their child/adolescent's behavior problem. Household income, in contrast to our hypothesis, was not associated with parental attributions.

In the current study, parental attributions for child behavior problems were related to parenting burden. After controlling for the impact of parent and child characteristics, parents who believed that the behavior problem was because of internal and stable characteristics in the child/adolescent with an ASD reported higher levels of parenting burden than did parents who did not hold these beliefs. In addition, parents who believed that the behavior problem was caused by characteristics that were more stable in and less controllable by parents themselves reported higher levels of parenting burden than did parents who did not hold these beliefs.

There are several strengths to this study including the use of a daily diary to gather information on behavior problems as opposed to a global rating and multilevel modeling to control for the dependency in data from couples. There are also several limitations. Our sample consisted of predominately white and well-educated parents who were married; findings may not generalize to other racial/ethnic groups, parents with lower education, or parents who are not married. The study also included a wide child/adolescent age range. Future research should investigate why parents of younger children with ASDs attributed child behavior problems to characteristics that were more internal to the child than did parents of older children/adolescents. The study also relied on a single reporter using self-reported measures. Parental attributions and parenting burden are inherently subjective; however, we repeated analyses using spousal ratings of the severity of child behavior problems, as opposed to self-ratings, and found few differences in results. Finally, there were 5 nonbiological parents of children/adolescents with ASDs in the sample; the parental attributions of nonbiological parents may differ from those of biological parents, and this issue should be examined in future studies.

Implications and Next Steps

In summary, on average, parents attributed their child/adolescent with an autism spectrum disorder's (ASD) behavior problems to more internal and stable and less controllable factors in the child/adolescent. Fathers, parents with higher levels of broader autism phenotype (BAP), parents of younger children, and parents of children/adolescents who have intellectual disability (ID), a higher number of autism symptoms, and more severe overall behavior problems are particularly at risk for such beliefs. Holding more internal and stable

and less controllable child-referent attributions and more stable and less controllable parent-referent attributions was related to higher levels of parenting burden.

Parents of children/adolescents with ASD's report high levels of parenting burden when compared with parents of children/adolescents without disabilities and parents of children/adolescents with other types of disabilities.²⁹ Our findings suggest that interventions that alter parental attributions about behavior problems may reduce parenting burden. Such interventions should work to instill beliefs that the behavior problems of children/adolescents with ASDs are not necessarily because of internal and stable causes in the child/adolescent and can often be controlled by the child/adolescent and parents themselves. Such beliefs may foster feelings of hope in parents, which may reduce the emotional toll of experiencing a high level of child behavior problems.

Parental attributions shape parenting strategies within the general population.³⁰ In the context of ASDs, parental beliefs that the son/daughter's behavior problem is because of more internal and stable, and less controllable child-referent causes may make parents unwilling to try behavioral modification. Thus, parental attributions may need to be modified to get parents to "buy-in" to programs aimed at teaching parenting strategies. Future research should study ways to successfully alter parenting attributions. Research is also needed to examine other determinants of parenting attributions such as the type of behavior problem and the receipt of ASD services. The mechanisms contributing to differences in parental attributions by child age should also be investigated.

Acknowledgments

This research was supported by grants from the University of Wisconsin Graduate School and National Institute of Mental Health (1R01MH099190-01A1 to S. Hartley).

We would like to thank the families who participated in this study for their ongoing support.

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Table 1**Characteristics of Parents and Children/Adolescents with Autism Spectrum Disorders**

Parent	
Age, yr, M (SD)	42.56 (6.35)
Range	28–62
Household income, M (SD)	\$90–100K (\$20K)
Range	<20K–>\$180K
Education, n (%)	
Less than high school degree	2 (3.17)
High school degree/GED	15 (23.80)
College degree	31 (49.21)
Graduate/professional degree	15 (23.80)
Race/ethnicity, n (%)	
Caucasian, non-Hispanic	56 (88.89)
Hispanic	3 (4.76)
African-American	1 (1.59)
Native American	1 (1.59)
Asian	2 (3.17)
Child/adolescent with an autism spectrum disorder	
Age, yr, M (SD)	11.70 (5.00)
Range	3.24–20.43
Gender, n (%)	37 (63.7)
ID, n (%)	29 (46.03)
Mild	18 (28.58)
Moderate	7 (11.11)
Severe	4 (6.35)
Age of diagnosis, yr, M (SD)	5.21 (3.65)
Diagnosis, n (%)	
Autistic disorder	35 (55.56)
Asperger disorder	18 (28.57)
Pervasive developmental disorder not otherwise specified	6 (9.52)
Autism spectrum	4 (6.35)

GED, general educational development; ID, intellectual disability; M, mean; SD, standard deviation.

Table 2

Mother-Father Comparisons of Key Variables in Models

Variable	Mothers		Fathers		Interspouse <i>r</i>
	M (SD)	Range	M (SD)	Range	
Severity child BP	4.12 (2.89)	1–10.90	2.88 (2.94)	0–13.70	.39**
Severity of parent BAP	94.80 (20.73)	61–145	103.35 (18.16)	66–142	.14
Parenting burden	20.20 (9.96)	2–47	19.76 (9.84)	1–44	.38**
Child-referent attributions					
Internal	6.68 (2.11)	3–10	7.04 (1.53)	4–10	.01
Stable	6.04 (1.91)	2–10	6.08 (1.87)	2–10	.47**
Controllable	6.68 (1.74)	3–10	6.48 (1.58)	3–9	.48**
Parent-referent attributions					
Internal	5.78 (2.14)	2–10	4.94 (2.01)	2–9	–.09
Stable	5.48 (1.87)	2–10	5.75 (1.72)	2–10	.38**
Controllable	5.12 (1.86)	2–10	4.98 (1.67)	2–8	.09

Severity child BP has a scale range of 0 to 40; parent BAP has scale range of 0 to 216; parenting burden has scale range of 0 to 87; and child-referent attributions and parent-referent attributions have scale range of 0 to 10.

*
 $p < .05$.

**
 $p < .01$.

M, mean; SD, standard deviation; BP, behavior problems; BAP, broader autism phenotype.

Table 3
Correlations Between Parental Attributions and Child and Parent Factors and Parenting Burden

	Child Age	Child ID (Present vs Absent)	Child Gender	Severity Child BP	No. Child Autism Symptoms	Severity of Parent BAP	Household Income	Parenting Burden
Child-referent attributions								
Internal	.08	-.14	-.17	.29*	.19	.06	.12	.35**
Stable	.14	-.17	-.12	.25*	.28*	.10	.09	.47**
Controllable	-.07	-.22*	.03	.24*	-.24*	.21	.01	-.12
Parent-referent attributions								
Internal	.12	.02	.03	-.08	.02	-.09	.10	.09
Stable	.10	-.17	-.10	.19	.29*	.18	.08	.46**
Controllable	-.04	-.02	-.08	.26*	.33*	.09	-.02	-.32**

Child age coded in years; Child ID: present = 1, absent = 0; child gender: boys = 0, girls = 1. Household income was coded 0 to 14, starting at less than \$20,000 (0) and increasing by \$10,000 intervals.

* $p < .05$.

** $p < .01$.

ID, intellectual disability; BP, behavior problems; BAP, broader autism phenotype.

Table 4
Multilevel Model Results for Effect of Parent and Child Variables on Child-Referent Attributions

Variable	Internal			Stable			Control		
	Coeff	SE	t ratio	Coeff	SE	t ratio	Coeff	SE	t ratio
Child-referent attributions									
Intercept	6.80	0.17	40.35*	6.40	0.19	34.04*	6.40	0.18	34.92*
Parent gender	-0.39	0.17	2.02**	-0.42	0.13	-3.22**	-0.12	0.14	0.92
Severity of parent BAP	-0.03	0.02	-0.49	0.05	0.02	2.23**	0.01	0.01	0.34
Severity child BP	0.11	0.04	2.73*	0.11	0.05	2.25**	-0.12	0.04	-2.24**
Child/parent characteristics									
Child ID status (present vs absent)	-0.18	0.29	-0.60	-0.51	0.32	-1.60	0.79	0.38	2.07**
No. child autism symptoms	0.02	0.03	0.60	0.07	0.03	2.51**	-0.06	0.22	-2.73*
Child age	0.09	0.04	2.50**	0.04	0.04	1.02	-0.02	0.03	-0.48
Child gender	0.13	0.36	0.37	-0.44	0.39	1.12	0.14	0.42	0.33
Household income	0.04	0.05	0.83	0.02	0.05	0.32	0.02	0.44	0.47
Parent-referent attributions									
Intercept	5.71	0.06	90.39*	5.91	.018	31.97*	4.96	0.17	28.69*
Parent gender	-0.03	0.08	-1.39	-0.35	0.17	-2.04	0.16	0.15	1.06
Parent BAP	0.01	0.01	1.17	-0.01	0.02	-0.27	-0.03	0.02	-1.50
Severity child BP	0.02	0.02	0.89	0.11	0.06	1.98	-0.20	0.05	-3.68**
Child/parent characteristics									
Child ID status (present vs absent)	-0.30	0.12	-2.41**	-0.63	0.33	-2.01	-0.07	0.29	-0.23
No. child autism symptoms	-0.02	0.01	-2.57**	0.07	0.03	2.23**	0.01	0.03	0.52
Child age	0.02	0.01	1.16	0.05	0.04	1.29	-0.04	0.03	-1.38
Child gender	-0.23	0.14	-1.56	-0.26	0.04	-0.64	0.23	0.35	0.68
Household income	0.01	0.01	-0.90	0.01	0.04	-0.13	-0.01	0.05	-0.47

$df = 62$. Parent gender: mothers = -1, fathers = 1; child age coded in years. Child ID: present = 1, absent = 0. Child gender: boys = 0, girls = 1. Interclass correlation for child-referent models: internal = 0.003; stable = 0.36, and control = 0.26. Interclass correlation for parent-referent models: internal = 0.01, stable = 0.30, and control = 0.08.

* $p < .01$.

 $p < .05$.

BAP, broader autism phenotype; BP, behavior problem; Coeff, coefficient; SE, standard error.

Table 5
Multilevel Model Results for Effect of Child- and Parent-Referent Attributions on Parenting Burden

Variable	Internal			Stable			Control		
	Coeff	SE	t ratio	Coeff	SE	t ratio	Coeff	SE	t ratio
Child-referent attributions									
Intercept	21.50	1.02	20.99*	19.28	1.27	15.20*	21.41	1.06	20.19*
Parent gender	-0.59	0.28	-2.32**	0.33	0.13	2.46**	2.58	3.13	-0.71
Severity of parent BAP	0.18	0.08	2.42**	0.09	0.04	2.14**	0.11	0.04	2.65**
Severity child BP	0.66	0.20	3.36*	0.45	0.21	2.12**	0.59	0.20	4.13*
Attribution	1.27	0.35	3.25*	1.49	0.45	3.32*	-0.20	0.50	-0.89
Couple level									
Child ID status (present vs absent)	1.22	1.77	0.86	1.88	1.85	1.02	2.24	1.87	0.12
No. child autism symptoms	0.25	0.11	2.29**	0.33	0.13	2.46**	0.23	0.13	1.82
Child age	-0.02	0.18	-0.09	0.04	0.19	0.20	0.08	0.20	0.42
Child gender	0.19	2.05	0.09	0.31	2.01	0.25	0.42	2.18	0.19
Household income	-0.02	0.24	-0.09	0.26	0.89	0.98	0.04	0.20	0.15
Parent-referent attributions									
Intercept	21.35	1.05	20.37*	19.50	1.11	17.56	21.38	1.01	21.07*
Parent gender	-0.46	0.61	-0.75	0.57	2.30	0.25	-1.32	0.62	-0.52
Severity of parent BAP	0.20	0.09	2.21**	0.09	0.04	2.42**	0.03	0.18	0.39
Severity child BP	0.85	0.20	4.26*	0.56	0.19	2.95*	0.10	0.03	2.22**
Attribution	1.16	0.87	1.36	1.70	0.53	3.36*	0.68	0.23	-3.26*
Couple level									
Child ID status (present vs absent)	2.35	1.86	1.26	1.76	1.77	1.0	1.89	1.79	1.05
No. child autism symptoms	0.27	0.12	2.23**	0.36	0.13	2.77*	0.39	0.13	2.15*
Child age	0.07	0.20	0.34	0.13	0.19	0.07	0.04	0.19	0.24
Child gender	0.62	2.19	0.28	0.71	2.07	0.34	0.52	2.21	0.08
Household income	0.04	0.05	0.17	0.22	0.56	0.12	0.05	0.08	0.05

df = 62. Parent gender: mothers = -1, fathers = 1. Child age coded in years. Interclass correlation for child-referent models: internal = 0.42; stable = 0.39, and control = 0.44. Interclass correlations for parent-referent models: internal = 0.45, stable = 0.38, and control = 0.39.

* $p < .01$.
 ** $p < .05$.

BP, behavior problem; Coeff, coefficient; SE, standard error.