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**The Role of Parental Involvement in the Social Development
of Children with Autism Spectrum Disorders**

A Dissertation Presented

by

Emile Christian Mulder

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The Graduate School

Emile Christian Mulder

We, the dissertation committee for the above candidate for the

Doctor of Philosophy degree, hereby recommend

acceptance of this dissertation.

Amy Smith Slep, Ph.D. – Dissertation Advisor
Research Professor of Clinical Psychology
Psychology

Richard Heyman, Ph.D. – Dissertation Advisor
Research Professor of Clinical Psychology
Psychology

Matthew Lerner, Ph.D. – Chairperson of Defense
Assistant Professor of Clinical Psychology
Psychology

Daniel Klein, Ph.D. – In-Area Committee Member
Professor of Clinical Psychology
Psychology

John Robinson, Ph.D. – Out-of-area Committee Member
Professor of Integrative Neuroscience
Psychology

Darlene Magito-McLaughlin, Ph.D., BCBA-D – Outside Committee Member
Director of Positive Behavior Support Consulting & Psychological Resources, P.C.

This dissertation is accepted by the Graduate School

Charles Taber
Dean of the Graduate School

Abstract of the Dissertation

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Autism spectrum disorders (ASD) are characterized by deficits in social interaction. Research with ASD children has dramatically underrepresented fathers, who have only recently been considered as targets for parenting interventions and research. Parenting research with typically developing (TD) children has found that parental involvement (of mothers and fathers) is associated with child social development. Extending such findings to the ASD field is important as social development is a primary concern within this population. The present study sought to do so through an internet questionnaire targeting mothers and fathers. Specifically, this study examined associations between mother involvement, father involvement and their interaction with child social skills in families of children with ASD using multilevel modeling in a multi-rater, multi-measure design. We proposed a model in which parental involvement may foster child social development, but also noted child that social skills may encourage or discourage parental involvement. Father, but not mother, involvement (quality) and engagement (time) were each found to significantly and positively predict child social skills in 101 families of children with ASD. Implications of these findings for research and intervention are discussed.

Dedication

This dissertation is dedicated to my late advisor, Dr. Edward Carr, who encouraged me to approach problems as he did; with a blend of skepticism, humanity and humor.



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List of Abbreviations

ASD	Autism Spectrum Disorder
IPI	Inventory of Parental Involvement
PIL	Parental Involvement Log
TD	Typically Developing
VABS-II	Vineland Adaptive Behavior Scale - II

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Introduction

Autism spectrum disorders (ASD) are a class of neurodevelopmental disorders characterized by social deficits, communicative deficits and repetitive or idiosyncratic behaviors (American Psychiatric Association, 2000). Due to these impairments, children with ASD often need intensive educational, therapeutic and medical support. According to one study, individuals with ASD incur a total cost in services and lost productivity of \$3.2 million over the course of a lifetime, with parents losing approximately \$40,000 per year in lost productivity due to the constraints on their time imposed by caring for a child with ASD (Ganz, 2007). Parents of children with ASD are forced to cope with a variety of challenges with indirect forms of childcare and may therefore be less directly involved with their children than parents of children without ASD (Konstantareas & Homatidis, 1992). Direct parental involvement (hereafter referred to as “involvement” unless otherwise specified) refers to both quality and quantity of direct forms of parenting (e.g., playing, supervising and teaching). There is limited empirical evidence linking parental involvement with outcomes in children with ASD, however research from TD families suggests that parental involvement may be linked to child social outcomes (Brenda L Volling & Belsky, 2012). In addition to deciding on a personal balance between indirect and direct forms of childcare, mothers and fathers of children with ASD must choose how to distribute direct and indirect childcare responsibilities between one another. For example, mothers and fathers may equitably distribute caregiving and earning responsibilities between each other, or have one parent specialize in caregiving and the other in earning. Although some researchers suggest that the former approach is preferable in families of children with developmental disabilities (e.g., Seligman & Darling, 2007), there is little evidence to support such a position. The present study therefore aims to extend, to the population of families of ASDs, research examining links between mother and father involvement, interaction effects of both parents’ involvement and child social skills.

Parental Involvement

Parental involvement is a construct that has largely been developed as a means of understanding the roles that fathers play in the lives of children (for review, see; Pleck, 2010). Although the term has been used to describe the presence or absence of a parent in a child’s life,

or the amount of time that parents spend with children (also known as engagement), fatherhood researchers have suggested expanding the term to include research-based indicators of good parenting. For this reason, Pleck suggests including warmth, responsiveness, control and engagement in modern definitions of direct involvement. Involvement is therefore a measure of both high quality parenting and high quantity of parenting, such that a highly involved parent is one who is frequently present, responsive to child needs and in control.

Challenges to parental involvement posed by social deficits in ASD

There is some evidence that parents of children with ASD are less engaged than other parents. For example, Konstantareas and Homatidis (1992) found that mothers and fathers of children with ASD spent less time with their children than did parents of children with other developmental disabilities or TD children. Furthermore, parents of children with ASD reported less time spent in fun and neutral activities than did parents in the other two groups and equivalent amounts of time spent in activities that were considered an imposition. Fathers in all groups were less engaged than mothers in all types of activities except play, in which mothers and fathers spent equivalent amounts of time. One potential interpretation of these findings is that the social and communicative deficits in ASD cause parents to be less involved than parents of TD children or children with other developmental disabilities.

The challenges associated with parenting a child with ASD may adversely affect involvement in a variety of ways. According to Hoover-Dempsey and Sandler's (1995) model, parental involvement is influenced by (a) encouragement from teachers and children, (b) parents' skill and knowledge and (c) parents' free time and energy demands from other sources. Social deficits and increased time demands associated with parenting a child with ASD may result in changes in each of these factors (i.e., less encouragement or reinforcement from their children, a different set of parent skills required, less free time for parents), ultimately resulting in lower levels of involvement that may vary with child social deficits.

Hoover-Dempsey and Sandler's model of involvement suggests that children can encourage parental involvement through their interactions with parents. However, the social and communicative deficits associated with ASD may reduce the degree that children make requests of their parents and subsequently reinforce involvement. Furthermore, whereas TD children may

respond to involvement with eye contact, smiles, laughs and other socially reinforcing stimuli, such responses are impaired or even absent in children with ASD. As a result, children with ASD may be less likely to initiate social interactions and less likely to positively reinforce parents in response to social interactions, ultimately leading to lower levels of involvement.

Parent skill and knowledge play a role in parental involvement; however, many types of interactions that are relatively easy for parents of TD children, such as playing or speaking with their child, may require expert skill when a child has ASD. Because of their social and communicative deficits, children with ASD may not independently learn to play or speak in the way that TD children do. In families of TD children, expertise is associated with engagement; for example, engagement with homework decreases with child age, as homework becomes more difficult and beyond the skills of the parent (Fan & Chen, 2001). A similar process may occur much earlier in families of children with ASD, due to the expert skills required to interact effectively with the child. In children with particularly poor social skills, parents may be discouraged from interacting with their children because they feel overwhelmed and do not know how to effectively engage their child. This may ultimately result in less involvement.

There is some evidence that parental involvement qualitatively differs between parents of children with ASD and parents of TD children. One study compared the use of high pitched speech, called “parentese,” in home videos for mothers and fathers of TD infants and infants who would later develop ASD (Cohen et al., 2013). This study found that fathers spoke more to the infants with ASD compared with TD infants, that parents of children with ASD used more parentese, and that infants with ASD responded less to speech from parents. This study suggests that child characteristics may serve to shape parenting behavior in infancy, even before a diagnosis has been rendered.

Parents of children with all developmental disabilities are required to spend a great deal of time engaged in indirect forms of parental involvement, such as planning and working to pay for expensive care and services. Accordingly, they report higher levels of daily hassles than parents of TD children (Bristol, Gallagher, & Schopler, 1988) as well as higher levels of stress (Baker et al., 2003). In accordance with Hoover-Dempsey and Sandler’s (1995) model, these forms of indirect care may result in parents having less time and energy to devote to direct involvement. Indeed some parents may believe that their time is best spent engaged in indirect

support, as doing so may result in their child receiving higher quality treatment (either by affording such care through increased income or acquiring and scheduling additional therapeutic services).

If the challenges associated with parenting a child with ASD do indeed cause parents to become less involved, then it is important to consider the impact that variations in involvement may have on important child characteristics, and to consider the benefits of targeting involvement for both parents when working with families of children with ASD.

Social benefits of parental involvement

The research concerning parental involvement in ASD has in some ways mirrored the parent involvement literature in TD populations, although it has largely focused on associations between parental involvement and other parental variables such as parental coping style and stress (e.g., Hastings et al., 2005; Pottie & Ingram, 2008). Despite such studies, the relationship between parental involvement and child variables has largely been ignored in families of children with ASD.

Early studies of parental involvement in ASD were directed towards supporting the influential “refrigerator mother” theory of autism (Kanner, 1943; Bettelheim, 1967). This theory posited that autism was caused by cold and distant parents. It was based largely in informal observations and resulted in harmful treatment approaches that included “parentectomies” or removing parents from the lives of children with ASD and placing the children in residential facilities, when such extreme measures were not otherwise warranted (for review, see Herbert & Sharp, 2003). Modern etiological models of ASD argue strongly for the importance of biological factors (such as genes and prenatal factors) in causing ASD and related disorders (e.g., Betancur, 2011). In light of these models, it is no longer reasonable to argue that cold and distant parents cause ASD. Yet the converse and inverse arguments may still be reasonable; social deficits associated with ASD may cause parents to become less involved, while parents who remain actively involved may help to counteract social deficits. The theoretical implications of such models on intervention research are similarly inverted; rather than parentectomies, such models would likely promote increased parental involvement as a clinical goal.

Although there is relatively little research about parental involvement in the ASD population, what is known about the relationship between parental involvement and social and behavioral outcomes in children with ASD comes from intervention studies, rather than associative population studies. For example intervention studies that target mother and father interactions with children with ASD have resulted in both higher levels of parental involvement as well as gains in child social skills and reductions in problem behavior (e.g., Elder, Valcante, Yarandi, White, & Elder, 2005; Moes & Frea, 2002; Seung, Ashwell, Elder, & Valcante, 2006; Solomon, Ono, Timmer, & Goodlin-Jones, 2008).

High parental involvement may benefit children with ASD by presenting a context for social interactions and social development. Evidence of this is seen in TD children, where high parental involvement is associated with greater social and communicative skills in young children from a variety of socio-economic and demographic backgrounds (e.g., Lyytinen et al., 1998; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004; Volling & Belsky, 1992). Additionally, a recent study of 101 children with developmental disabilities (including 72% children with an ASD diagnosis) found that child social skills were moderately and negatively associated with a measure of challenges to father involvement (Ly & Goldberg, 2014). These findings suggest that children with highly involved parents, compared with those with less involved parents, may have more opportunities to practice and develop social skills. Due to this practice, they may make social and communicative gains even if they had initial deficits due to an ASD.

Highly involved parents may also encourage social motivation in children with ASD by creating opportunities in which social interactions are tied to intrinsic rewards. For example, a parent who is highly engaged with and responsive to a child with ASD may encourage that child to request pushes on a swing by quickly responding to those requests with pushes. In this way, the child is directly reinforced for initiating communication and may develop socially much more than he or she might with a parent who is simply supervising his or her play. Indeed, several effective interventions for people with ASD actively target social motivation by encouraging caregivers to tie social interaction to positive natural consequences (e.g., Pivotal Response Training; Coolican et al., 2010; R. Koegel & Koegel, 1999). By offering opportunities

for such circumstances to occur naturally, highly involved parents may help to foster their child's social development, even in the absence of specialized training.

Mother involvement by father involvement interactions

Although mother and father involvement may each contribute to a child's development, they do not occur in a vacuum. Indeed, the effects of one parent's involvement may be affected (positively or negatively) by another's high or low levels of involvement. Lamb (2010) proposes three mechanisms through which a father's involvement may interact with a mother's involvement to promote positive family outcomes: (a) parents who are both involved may have more freedom to individually pursue meaningful independent goals, (b) mutual involvement may promote social support between parents, and (c) the differences in social interaction styles offered by two involved parents may benefit children. Although there are some data to support each of these points for families of TD children, within the field of ASD research, there is some evidence to support the first two points, but not the latter point.

Although mothers of children with ASD tend to have higher levels of involvement than fathers (Bourke-Taylor et al., 2011; Trute, 1990), there are potential benefits when parents share in involvement and thereby free each parent to pursue independent goals beyond parenting. One study of parental involvement found that mothers and fathers of children with developmental disabilities who spent similar amounts of time in paid work showed higher levels of well-being than those with different amounts of time at work (Olsson & Hwang, 2006). Similarly, mothers of children with developmental disabilities who worked reported higher levels of quality of life than those that did not (Bourke-Taylor, Howie, & Law, 2011). In this way, parents may benefit by sharing involvement responsibilities, in that they both may have meaningful opportunities to explore individual goals and interact with other adults as opposed to requiring one parent to be the main caregiver.

Mutual involvement may also benefit parents by encouraging mutual emotional support. Consistent with this theory, father involvement is associated with relationship satisfaction between parents of children with developmental disabilities (Bourke-Taylor et al., 2011; Trute, 1990). Higher parent quality of life is not directly related to child social development; however, it may indirectly benefit children. To the extent that mutual involvement may foster positive

parent mental health, it may also promote better quality social interactions with children, thereby indirectly encouraging social development.

The different social interaction styles that mothers and fathers offer may encourage child social development by offering more varied opportunities for learning, thereby improving the generalization of skills to broader social environments. In arguing for increased father participation in therapy for ASD, Flippin and Crais (2011) postulated that fathers of children with ASD may serve as a bridge for language development. According to this model, children and their primary caregivers may develop unique and simplified forms of language. This teaches children the importance of functional communication, but their language skills may not generalize to other settings, where other words are used. Secondary caregivers may play the role of a bridge in communication to the outside world by presenting children with slightly varied patterns of communication. In so doing, children may learn to generalize the social skills acquired through interactions with one caregiver to another slightly different caregiver, and subsequently to broader social contexts. A similar model has been used to explain the associations between father involvement and father vocabulary with social development in TD children (Rondal, 1980; Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004).

Within ASD, opportunities for generalization of social skills are particularly important, as rigid, inflexible thinking is thought to be a core deficit (Rutter, 2005). Due to their communication deficits, children with ASD may also have a very limited vocabulary that may have been taught to them word-by-word in a discrete trial training program (e.g., Lovaas, 1987). Parents who participate in such programs learn a select vocabulary as their children do and may avoid using words that the child does not know. This facilitates communication in the moment, but does not necessarily foster learning of synonyms. A secondary caregiver with some knowledge of the child's vocabulary may serve as a bridge between the relatively easy learning context provided by the primary caregiver, and the much more challenging context provided by the outside world. In this way, high levels of mother and father involvement may each, uniquely contribute to social development, and may interact to optimally promote child social development.

Summary

High parental involvement may create opportunities to encourage social and behavioral development in children with ASD, and low involvement may create a context in which children with ASD stagnate or develop at a slower pace than they might otherwise develop. In this way, parents may contribute to a child's social skill development. Additionally, two highly involved parents may offer children opportunities to learn new social skills and to generalize those social skills to other people and contexts, resulting in more learning opportunities than may otherwise be possible with equivalent levels of single-parent involvement. In this way, mother and father involvement may interact to promote child social development.

In accordance with the Hoover-Dempsey model of parental involvement and the learning model presented above, it is possible that parental involvement in children with ASD may be negatively affected by their children's social deficits, thereby creating barriers that serve to reduce involvement. Although the focus of the present study is the effect that parents may have on child social skill development, it is possible that child social skill deficits may also play a causal role, and that the relationship between the two may be inverted from the model presented here or reciprocal (i.e. parental involvement causes improvements in child social skills which fosters further parental involvement).

The present study sought to extend research findings from parent involvement research into the field of ASD. The specific goals were to determine whether direct parental involvement is associated with positive child social outcomes, and whether mother and father involvement interact in promoting positive child social outcomes. we therefore hypothesized that (a) higher levels of direct mother involvement uniquely predict better social skills in children with ASD, (b) higher levels of direct father involvement uniquely predict better social skills in children with ASD and (c) mother and father involvement interact, such that the relationship between one parent's involvement and child social outcomes will be stronger at higher levels of his or her partner's involvement. In the interest of parsimony, and to control for the effects of the other variables, all hypotheses will be combined into one model (see Figure 1).

Methods

Participants

The present study recruited 121 mothers ($n=86$) and fathers ($n=35$) of children (aged 3-12; $M=8.65$, $SD=3.00$) with an ASD (according to parents: 63% Autistic Disorder, 16% Asperger Disorder, 16% PDD-NOS). Seventeen of the children were female and 84 were male, closely matching the 1:4 female to male ratio found in the population of people with ASD. Of the respondents, 20 were couples, describing the same child; in 91 cases, only one partner responded, making a total of 101 families represented. The respondents were 84% White, 3% African descent, 3% Native American, 9% Asian, 1% Pacific Islander; 9% reported being Hispanic (of any race). Mean annual family income was between \$50,000 and \$75,000. With regards to education, 1% of respondents did not complete high school, 9% completed high school, 19% completed some college, 6% had an Associates degree, 31% had a Bachelor's degree, and 32% completed graduate school. We recruited by advertising in online ASD parenting social networking resources. Websites included various forums targeting individuals with ASD and their parents. Additionally, social networking sites such as Facebook, Google + and Yahoo Groups were used to recruit participants, based on interests in ASD, parenting, and ASD-related topics (e.g., discrete trial training, early intensive behavioral intervention, mercury in vaccines, hyperbaric oxygen therapy). This recruitment method is similar to flyers and other convenience sample methods in that it advertises to a large and somewhat diverse group of people; however, by targeting parent social networks, it selectively recruited parents of children with ASD.

Consistent with Rivera's (1999) recommendation that studies of father involvement should control for mother involvement and not collect both involvement and outcome data from the same person, the present study employed a multi-rater design. Participants were asked to give contact information for their partners upon completing the study. Partners were then contacted via e-mail and via telephone to encourage their participation in the study. Parents who completed the questionnaire were offered a chance to win an iPad upon completion of the study.

Only English-speaking, cohabiting (for at least one year) parents living with their child with an ASD (age 3-12) were considered for inclusion in the present study. One same-sex couple

completed the questionnaire; however, to remain consistent in discussing mothers and fathers, their data were excluded from the analyses. Although the issues addressed within this study are certainly relevant to non-English speakers, non-cohabiting parents, single parents and same-sex couples, these situations presented additional logistical challenges that were beyond the scope of the present study.

Procedures

Parents who agreed to participate in the study followed a link to the study website where they read a consent form and completed the questionnaires listed below in an online format. After completing the questionnaire, they had the option to provide contact information for themselves and their partners. If contact information was provided, partners were e-mailed an invitation to the study. This email was then repeated three days afterwards (if they did not already complete the study) and followed with a telephone reminder. Contact information was kept separate from questionnaire data, and partners were matched with birthdays (their own birthday, partner's and child's) for the purpose of the dyadic analysis. These steps are intended to ensure as much participation from both parents as possible, while respecting the wishes of many participants to remain anonymous.

Measures

Demographic and descriptive variables. Parents were asked to indicate dates of birth for themselves, their partners and their children to determine ages and to link corresponding mother and father questionnaires. They were also asked to confirm that their child received a diagnosis of ASD from an educational or mental health professional, and to indicate any other diagnoses that the child may have. Family yearly income was assessed using a 7-point scale (under \$20,000, \$35,000, \$50,000, \$75,000, \$100,000, \$150,000 and over \$150,000). Respondent education was assessed as well (less than high school, high school, some college, Associates degree, Bachelor's degree, Graduate degree). Respondents also reported their race using a checklist and whether or not they were Hispanic.

Inventory of Parental Involvement (IPI). To assess parental involvement for mothers and fathers, a modified version of the Inventory of Father Involvement (Hawkins et al., 2002) was administered to each parent. The IPI is a 26-item questionnaire that assesses parental

involvement across nine factors: Discipline and Responsibility, School Engagement, Partner Support, Providing, Time and Talking Together, Praise and Affection, Developing Talents, Reading and Homework Support, and Attentiveness. Participants rate their participation in several specific aspects of childcare on a 7 point Likert scale (0=Very Poor, 6=Excellent). For example, a parent would be asked how good they see themselves and their partner at “Spending time just interacting with your child when he or she wants to interact.” Parents were also given the option to score an item as not applicable, which was often necessary, as some items may not be applicable depending on the age of the child and symptom severity (e.g., a child with severe ASD may never “want to interact”). The original measure was developed using a sample of 723 fathers and has adequate internal consistency, with Cronbach’s alpha scores ranging from .69 to .87 for the nine factors. The individual factors were each demonstrated to have good construct validity by correlating them with conceptually related measures. Additionally fathers reported that this measure captured their conceptualization of fatherhood to establish face validity. Given the potential for partner non-response, parents were asked to rate themselves and their partners for each item so that mothers and fathers each generated a score for mother and father involvement. This allowed the study to measure involvement for both partners even in the case of singleton responses. Because the present study is concerned primarily with direct forms of parental involvement, the factors that deal with indirect forms of parental involvement (Partner Support, Providing and School Engagement) were removed. All other items were averaged together (with not applicable responses excluded from the average) to form a self-report involvement and partner-report involvement score for each respondent with a possible range of 0–6 with high scores representing high quality involvement. These scores were then recoded by gender to form the mother involvement (the same as mother self-report involvement and father partner-report involvement) and father involvement scores for each respondent. For the present sample, these items had Cronbach’s alpha scores of .87 for mother involvement and .92 for father involvement.

Parental Involvement Log (PIL). The PIL is an adaptation of a questionnaire used by Konstantareas and Homatidis (1992) to measure parental engagement in several aspects of childcare. Parents were asked to report how many days a week they spend at work and how many days are spent at home. They were then asked to report the number of minutes that they spent engaged in different childcare activities on the last home day and work day. Scores for

these days were then multiplied by the number of days per week that the parent spent at home and work and combined to form an engagement score, an estimation of the total number of minutes spent in direct involvement during a week. The activities measured included dressing, feeding, and bathing/toileting, actively playing with the target child, teaching and supervising the child. This approach to measuring parental involvement is consistent with time-diary based measures (e.g., McBride & Mills, 1993), which have the advantage of being concrete and observable. They provide a quantitative measure of involvement without qualitative information. Only self-report ratings were collected, as this measure requires too much detail to report about partner engagement.

Vineland Adaptive Behavior Scale II (VABS-II) Parent/Caregiver Rating Form. The VABS-II – Parent/Caregiver Rating Form is a self-report measure of adaptive functioning in children and adolescents. The present study used the social subtests of the VABS to measure child social skills. This measure includes questions regarding specific social skills from simple; “looks at face of parent or caregiver” to more complex skills: “Starts conversations by talking about things that interest others (for example, says, “Tyrone tells me you like computers”; etc.)” The measure has been shown to have good test-retest reliability and adequate inter-rater agreement in a large representative sample of children and adolescents (de Bildt, Kraijer, Sytema, & Minderaa, 2005). It also has been shown to have high internal consistency in a large sample of children and adolescents with developmental disabilities, including a subsample with ASD, and was shown to have small to moderate correlations with measures of ASD symptomatology (de Bildt, Kraijer, Sytema, & Minderaa, 2005). Accordingly, the VABS was used successfully as an outcome measure in a recent study of Early Intensive Behavioral Intervention for ASD (Remington et al., 2007). Standardized scores (based on an age-normative sample of children, the majority of whom were TD) for the VABS-II were calculated for each child with a standard Mean of 100 and an *SD* of 15, with higher scores representing more social skills. In the present study, the mean score was 64.70 with an *SD* of 15.01, reflecting the social skills deficits of children with ASD. The scale in this sample had a Cronbach’s alpha score of .96.

Results

This study includes data from individual respondents (mothers and fathers) that were clustered within families. To account for the dependence of measures from partners, a two-level (respondent and family) random effects model was used. The Stata statistical software package (StataCorp, 2011) was used to conduct the analyses because it offers a random and mixed effect modeling solution (xtmixed) with maximum likelihood estimation. Examination of individual and family level effects in a null model (child social skills without predictors; see Table 3 for fit indices), indicated that both contribute significantly to variance. A likelihood ratio test indicated that this approach accounts for significantly more variance than simple regression ($\chi^2 = 11.82, p < .01$), as did equivalent tests in all models presented here. Means and standard deviations for each measure are described in Table 1, and correlations appear in Table 2. Although the correlations are presented by gender of the respondent, they should be interpreted with caution, as they do not take into account the dyadic nature of the data. As noted above, the likelihood ratio tests indicate that enough variance exists within families, that this grouping should not be ignored (as occurs in simple regression and correlation).

The three hypotheses — that mother involvement, father involvement and their interaction predict child social skills — were tested in several models. Each model included child age and family income as covariates, as they are commonly associated with involvement and child outcomes. Four separate models regressed child social skills on child age, income, and mother/father involvement/engagement to test if each of these variables had significant (not necessarily independent) associations. To test for independence of mother and father involvement variables, an independent effects model regressed child social skills on child age, income, mother involvement and father involvement. A full interaction model then regressed child social skills on child age, income, mother involvement, father involvement and their interaction term.

Missing Values and Outliers

There were 121 respondents (from 101 families) who completed the questionnaire. That is, 20 mother-father dyads participated, whereas the other 81 participants represent single respondents. Because the questionnaire was completed online, requested responses from partners

and allowed for individual items to be skipped there are three potential classes of missing data. Of the people who began the questionnaire, 82 did not complete it (8 of whom had partners who also participated), which accounted 38.42% of the total data that could have been collected had they and their partners completed the questionnaire (See consort diagram, Figure 2). For those who completed the questionnaire, 0.28% of the responses were left blank. Additionally many people completed the questionnaire, but their partner did not, which accounted for 22.90% missing data. Taken together, 61.61% of the possible data that could have been collected if everyone who began the questionnaire and their partner completed it, was missing. A missing values analysis was conducted to determine whether the 82 non-completed questionnaires could potentially serve as a confound in this study. Because demographic questions were asked first, demographic variables (race, child age, parent ages, parent education, income, number of children and type of ASD) were included in a multi-level model to predict missing values for involvement and social skills. Of these demographic variables, only child age was significantly and negatively associated with missingness, such that parents of younger children were less likely to complete the questionnaire ($z = -3.74, p < .05$). Incomplete responses, in which the dependent variable was not present, were excluded from the following analyses and individual item non-responses were treated as equivalent to a “not-applicable” response (i.e. they were left out of averages for the involvement variable, or treated as 0 minutes when factored into engagement). Families in which one partner completed the questionnaire and the other did not were retained for involvement analyses, with only one partner’s data contributing to the independent and dependent variables. The random effects model is robust to uneven data such as this, provided its assumptions (discussed below) are met (Tabachnick & Fidell, 2001)

The data were assessed for univariate outliers using histograms, box-plots and a criterion of 3 z-scores. Two high outliers were found in child social skills. Five low outliers were found in father involvement. Six high outlier mothers and 2 high outlier fathers were found in engagement. On closer examination, the participants appear to have made errors such as misunderstanding the miscellaneous supervision question and reporting that they spent 24 hours a day supervising their children, which when combined with time spent in other activities led to total engagement scores that were in excess of 24 hours per day. As a result, such scores were trimmed to reflect a more realistic maximum amount of involvement (i.e., 14 hours per day or 5880 minutes per week). Excluding most of these outliers did not affect the model assumptions

of any analyses presented, so they were retained as meaningful data points. However, two high outliers in child social skills (with social skills slightly above the mean level expected for TD children of that age) also adversely affected model assumptions (normality of error terms), but did not meaningfully affect model parameters. As a result, they were excluded from the following analyses.

Mother and father involvement

To test the effects of mother and father involvement (controlling for child age and income), we examined two separate multilevel models that regressed family level child social skills on mother involvement, child age and family income; and child social skills on father involvement, child social skills and family income (see Figure 3 for models and Table 4 for parameter estimates). Model fit indices are reported in Table 3 and are adequate for both models. When mother involvement ($\beta = 0.42$, $z = 0.28$, $p = .78$) and father involvement ($\beta = 1.64$, $z = 1.53$, $p = .13$) were considered in separate models, neither significantly predicted child social skills. Level 1 and 2 residuals for both models were normally distributed.

Mother and father engagement

Mother engagement (time) and father engagement were collected only as self-reports due to the necessary specificity of the measure. Unfortunately, proportionally few dyads responded, which made it necessary to examine mother and father engagement effects separately, as opposed to a full model examining independent effects and interactions (as we did for involvement). We employed a multilevel model that regressed child social skills on child age, family income, respondent gender, self-reported engagement and their interaction. We then repeated this model to determine engagement for mothers and fathers. Thus responses from both genders are included in the models for child social skills; however, only mother or father responses for engagement appear in each respective model. (see Figure 4 for models, and Table 4 for parameter estimates). Model fit indices are reported in Table 3 and are adequate for both. Within the models, neither father engagement ($\beta = 0.002$, $z = 1.27$, $p = .21$), nor mother engagement ($\beta = -0.001$, $z = -0.89$, $p = .37$) were significant predictors of child social skills.

Independent effects of mother and father involvement

To test whether mother and father involvement were associated with child social skills when controlling for each other, we included the two in a single model, without an interaction term. Specifically, the multilevel model regressed child social skills on child age, family income mother involvement and father involvement (see Table 3 for fit indices, Table 5 for parameter estimates and Figure 5 for model). Although the full model had good fit with the data, neither mother involvement ($\beta = -1.79, z = -0.91, p = .36$) nor father involvement ($\beta = 2.47, z = 1.74, p = .08$) significantly predicted child social skills when controlling for the other, although the association with father involvement was approaching cut-offs for significance.

Full model with interaction

The three primary hypotheses were that (a) higher mother involvement will predict higher child social skills, (b) higher father involvement will predict higher child social skills, and (c) mother and father involvement will interact to predict child social skills, such that higher levels of mother involvement will correspond to a stronger relationship between father involvement and child social skills (see Figure 1). These hypotheses can all be described in the following model where i represents family level responses, j represents individual respondents, ζ_i represents between family error and ϵ_{ij} represents within family error:

$$\text{Child Social Skills}_{ij} = \mu + \beta_1 \text{Child age}_{ij} + \beta_2 \text{Income}_{ij} + \beta_3 \text{Centered Father Involvement}_{ij} + \beta_4 \text{Centered Mother Involvement}_{ij} + \beta_5 (\text{Centered Father Involvement} \times \text{Centered Mother Involvement})_{ij} + \zeta_i + \epsilon_{ij}$$

Based on this model, we regressed child social skills on child age, family income, (grand mean) centered mother involvement, (grand mean) centered father involvement and their interaction term. Child age and family income, although not part of the stated hypotheses were included, as they represent important potential confounds; removing these covariates from the model did not change the results' significance or direction of relationship of the variables of interest.

After maximum likelihood estimation, the model had a log-likelihood of -473.30. A Wald comparison indicated that this model performed significantly better than a model with no predictor variables, $\chi^2(6, N = 119, n=100) = 49.48, p < .01$. Histograms and the Shapiro-Francia

tests for normality on level 1 ($z=1.07$, $p=.14$) and level 2 ($z=-0.67$, $p=.75$) residuals indicated that they did not differ significantly from a normal distribution (see also Table 3 for fit indices).

Table 6 shows the parameter estimates and relevant statistics for the full-model described above. Within this full model centered father involvement ($\beta = 2.02$, $z = 1.45$, $p = .15$) and centered mother involvement ($\beta = -2.02$, $z = -1.05$, $p = .29$) did not significantly predict child social skills. Child age significantly and negatively predicted child social skills ($\beta = -2.23$, $z = -5.75$, $p < .01$), as occurred in all models presented. Although child social skills scores are age-normed, this association likely reflects social developmental trajectories for children with ASD that are slower than age-normed TD peers. Interaction effects of child age and involvement variables were probed, but not significant predictors of child social skills. The interaction term between centered mother and centered father involvement significantly and negatively predicted child social skills ($\beta = -2.88$, $z = -2.26$, $p = .02$), indicating a moderator effect of mother involvement on the relationship between father involvement and child social skills. Specifically, as mother involvement decreases, the association between father involvement and child social skills becomes stronger.

Post-hoc analyses were conducted to better understand this interaction effect. We centered mother involvement at 1 *SD* above and below (see also Table 7 and 8 respectively) the grand mean and repeated the full model with interaction using these alternate variables. In the high mother involvement model, father involvement did not significantly predict child social skills ($\beta 0.01$, $z = 0.00$ $p = .99$), however in the low mother involvement model, father involvement was a positive and significant predictor of child social skills ($\beta 4.03$, $z = 2.59$ $p = .01$). This indicates that when mother involvement is 1 *SD* below the mean, father involvement is a significant predictor of child social skills, but the strength of this relationship diminishes as mother involvement increases.

Discussion

The hypotheses were partially supported by the results. Mother involvement moderated the relationship between father involvement and child social skills, such that father involvement significantly and positively predicted child social skills when mother involvement was low (1

standard deviation below the mean), but not when mother involvement was high, or centered at the mean. Neither mother involvement nor father involvement significantly predicted child social skills when controlling for the other, nor did they (or engagement) predict child social skills when modeled separately. Taken together, these findings suggest that the relationship between involvement and child social skills is complex, and strongest when mother involvement is low.

The moderator effects of mother involvement on the relationship between father involvement and child social skills suggests that fathers may serve a particularly important role when mother involvement is low. In these situations, fathers who are highly involved may benefit their children by supplementing the mother involvement. If this is the case, there may be diminishing returns for higher levels of total involvement. There may be a ceiling effect, such that there is a sufficient level of parental involvement. Above this level, marginal gains in involvement may have less or no effect on child social skills. As a result, when observing this phenomenon, we only see a relationship between father involvement and child social skills when mother involvement is low.

Although the models presented in this study examine involvement as a predictor variable, it is possible that child social deficits may affect involvement. The VABS-II was chosen to measure social skills specifically because it measures social skills, and not merely the deficits caused by ASD. This makes the measure better suited as an outcome measure, and more sensitive to change than measures that target ASD symptomatology. However the two concepts are related and it is quite possible that child social deficits caused by ASD, may cause VABS-II scores to be lower, and may also cause parents to be less involved. It is therefore important, given the correlational nature of this study, to consider the possible causal role of children in promoting or inhibiting parental involvement. In this case, low levels of both mother and father involvement (as shown in the interaction) may be an effect of severe social deficits. At other levels, the distribution of mother and father involvement may be more haphazard; however, when child social skills are low, it may cause both parents to be less involved. This would potentially explain the significant moderator effect of mother involvement and the significant association between father involvement and child social skills only at low levels of mother involvement. Children who are more socially adept may cause their mothers and/or fathers to become more highly involved in their care and those social deficits may directly and indirectly

discourage father involvement. In the Hoover-Dempsey and Sandler (1995) model of involvement, involvement may be affected by external encouragement (from children, teachers, etc.), parental skill, and competing time demands. It is possible that these may affect mothers and fathers in families of children with ASDs. For example, a child with severe social deficits may offer less social encouragement to his or her parents when they go to play with him, may require increased indirect care, and high levels of skill to engage. The fact that two parents are not highly involved with a child may therefore indicate that all of these factors are present, and that the child has severe social deficits.

Strengths and Limitations

Amato and Rivera (1999) suggest that many prior studies of father involvement are limited by single-subject reporting methods. In obtaining father involvement and child outcomes from the same source (e.g., father report, mother report or child report), such studies may capitalize on shared method variance. To avoid such issues, the present study combined reports from mothers and fathers for independent and dependent variables. Although father reports represent a small portion of this sample, they still contribute to variance at each level. In this way, shared reporter variance is modeled separately, allowing for a more pure representation of the relationships between involvement and child social skills. With some account taken of the potential bias of mother-only reports. As in other studies on this topic, attempting to recruit both parents presented challenges, as implied by the missing values analysis. It should be noted that although many families only had singleton responses, which results in the appearance that a great deal of potential data are missing, this is still an improvement over single respondent designs. It also highlights a primary reason that such designs are so prominent: it is logistically very difficult to encourage two partners to respond to a single questionnaire. The present study describes in detail the missing data, whereas single respondent designs may present the appearance that the dataset is complete, although 100% of partner responses are missing because they were left out of the study design. Attempting to capture and model mother and father perspectives and the variance between the two, therefore represents a relative strength of the present study, despite the challenges and limitations involved in this approach.

A similar challenge is presented by the internet format of the study. Although this format is essentially a computerized equivalent to recruitment through flyers, there is an important

difference in that the barrier to enter the study is low (click on link), but the study still costs the participant time. The result is that there were many participants who clicked on the link, and then decided not to complete the study after one page. This is equivalent to participants in a flyer based study who write the phone number down but never call, or who call and make an appointment but never arrive. The difference is that in the present study, these patterns of giving minimal investment of time and effort but not enough to complete the study are recorded, whereas in a flyer based study, they are ignored. It is therefore important to acknowledge that by describing and attempting to model missingness that is common but unmentioned in other types of studies, this study goes farther towards understanding the phenomena observed, and its own limitations than many analogous studies.

This study is further limited by potential sampling issues due to the fact that data were collected in an online format and the variable of involvement, and the way that it may affect sample characteristics. Uninvolved parents may be less likely to respond to the questionnaire, which may result in a restricted range of involvement and limits the generalizability of this study. Additionally, it is possible that parents seeking social support via internet support groups may represent a limited range of parents of children with ASDs, in that they may be lacking social support (perhaps from their partners) and have problems that they need help with (presumably involving their children). Although this likely does not represent all participants in online support communities (for example, some parents like to offer advice to other parents), it still may result in a biased sample, particularly given the questions asked in this study. Such issues are unavoidable in a study of this nature, but may perhaps be addressed to some extent in further studies that examine absentee parents, or study different samples.

As noted above, parental involvement is a potentially complex construct. To assess quantitative and qualitative elements of this construct, we have examined both the qualitative construct of involvement and the quantitative construct of engagement with mother and father self reports. This has the advantage of representing a more complete conceptualization of involvement and engagement and the different ways that they each relate to child social skills. However researchers have only recently begun to develop customized measures of parental involvement for families of children with developmental disabilities (e.g., Ly & Goldberg, 2014). Such measures are necessary to capture nuances that are specific to parenting a child with

an ASD or other developmental disability. For example, many parents may not do homework with a child with ASD, but may spend hours teaching them through discrete trial training, or may attempt to show physical affection to their child, but feel that the interaction is never wanted and so rate their involvement as poor or not applicable. Assessment measures designed for TD children may potentially ignore the nuances and variation that distinguish parenting a child with an ASD from parenting a TD child.

The present study, due to its cross-sectional design, is not able to discern whether the associations observed are due exclusively to parental influence on child outcomes, to reciprocal effects from children, or alternative causes. Indeed, each type of effect is possible, as indicated by Hoover-Dempsey and Sandler's model of parental involvement (1995), discussed above. To address this issue, future studies must either employ longitudinal designs, or attempt to establish causation by manipulating parental involvement (e.g., through interventions that target involvement).

Implications

To the extent that these results reflect the positive influence that parents have on children (as opposed to the influence of children on parents), they suggest that parents may play an important role in families of children with ASD. If indeed they can improve child social skills, then ensuring that at least one parent is sufficiently involved may be an important early clinical goal when dealing with families of children with ASD. Further studies in this area may do well to explore the effects that parent training has on engagement and involvement, and comparative effects of interventions that focus exclusively on one parent, both parents, or each parent individually.

The current findings may also be interpreted as representing the effects that children have on parents. To the extent that this is the case, it may serve as a partial explanation for findings that parenting a child with ASD may contribute to decreased family functioning and quality of life for both parents (e.g., Benson & Karlof, 2009; Davis & Carter, 2008). For example, if ASD symptom severity limits parent involvement, this may partially explain the well-documented increased rates of marital discord and divorce in families of children with ASD (e.g., Risdal & Singer, 2004; Walsh & O'Leary, 2013). Indeed, marital satisfaction has been shown to be

positively associated with father involvement and engagement in TD families (Feldman, 2000) and families of children with developmental disabilities (Simmerman & Blacher, 2001). Further research into the specific role of parental involvement and engagement in this regard may lead to advancements aimed at protecting families of children with ASD from suffering such deleterious effects. For example, it is possible that targeting involvement early may reduce the risk for marital discord and divorce.

The importance of parental involvement for children is a fundamental assumption of many interventions for children with ASD; however, prior research has failed to test this assumption, or has operated under the assumption that the involvement provided by fathers is relatively unimportant. A growing body of research on fathers of children with ASD makes this an appropriate time to address this issue, by seeking to understand to what extent mothers and fathers each contribute to their child's social development. The present study is an important initial step towards this goal, with findings that tentatively support basic assumptions of clinical research; namely that fathers are important in the lives of their children. These findings also have clinical implications, in that they highlight the potential benefits of targeting parental involvement in children with ASD, either as a means for fostering the child's social development, or as a proactive strategy to avoid reductions in father involvement and associated reductions in family functioning and quality of life.

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Tables and Figures

Table 1. *Summary Statistics*

Measure	Minimum	Maximum	Mean	SD
Child social skills	31	106	64.69	15.04
Mother involvement	2.69	6	4.64	0.71
Father involvement	0.38	6	4.17	1.00
Mother engagement	35	5880	2249.80	1438.84
Father engagement	790	5290	1944.73	997.11
Child age	3.05	12.98	8.15	3.00
Family income	0	7	4.04	1.83

Table 2. *Correlations by reporter*

Measure	1	2	3	4	5	6
1. Child age	-	-.01	.55*	-.15	-.04	-.05
2. Family income	-.14	-	.16	-.04	-.08	.05
3. Child social skills	-.40*	.25	-	-.05	.02	.06
4. Engagement	.31	.15	.06	-	.06	.05
5. Mother involvement	-.07	-.07	-.06	.19	-	.69*
6. Father involvement	-.21	.04	.26	.10	.52*	-

Note: Father reports are below the diagonal, mother reports are above

* $p < .05$

Table 3. *Model fit indices for each presented multilevel model*

Model	<i>N</i> (families)	<i>n</i> (response)	Log Likelihood	Wald Comparison X^2	<i>p</i>	<i>ICC</i>
Null model	100	119	-478.33			.70
Mother involvement	100	119	-460.84	41.41	<.01	.62
Father involvement	100	119	-459.75	44.04	<.01	.64
Mother/father engagement	78	87	-342.74	26.01	<.01	.57
Independent effects	100	119	-459.34	45.30	<.01	.63
Full model with interaction	100	119	-457.01	53.22	<.01	.56

Note: Model 0 is a null model (child social skills with no predictors), with the full possible *N*. Each model's Wald comparison compares it to a null model with the same *N*.

Table 4. *Parameter estimates for key variables in models with individual variables*

Model and Effect	Parameter Estimate	Std. Error	Wald Z	<i>p</i> (2-tailed)	95% Confidence Interval	
					Lower	Upper
Mother involvement	0.42	1.51	0.28	.78	-2.54	3.38
Father involvement	1.64	1.07	1.53	.13	-0.46	3.75
Mother engagement	-0.001	0.001	-0.89	.37	-0.003	0.001
Father engagement	0.002	0.002	1.27	.21	-0.001	0.005

Note: each model regressed child social skills on the respective variable, child age and family income.

Table 5. *Mother and father involvement, independent effects*

Model 1 Effects	Parameter Estimate	Std. Error	Wald Z	p (2-tailed)	95% Confidence Interval	
					Lower	Upper
Child age	-2.35	0.39	-5.90	<.01	-3.12	-1.57
Family income	1.12	0.66	1.71	.09	-0.16	2.41
Mother involvement	-1.79	1.97	-0.91	.36	-5.65	2.07
Father involvement	2.47	1.42	1.74	.08	-.31	5.24
Intercept	78.06	8.74	8.93	<.01	60.93	95.20
Level 2 (family) error	9.50	1.21			7.40	12.21
Level 1 (respondent) error	7.26	1.10			5.40	9.77

Note: because mother and father involvement are included in one model, the effects described represent each variable controlling for the other (i.e. independent effects).

Table 6. *Parameter estimates for all variables in full model with interaction term*

Model 1 Effects	Parameter Estimate	Std. Error	Wald Z	p (2-tailed)	95% Confidence Interval	
					Lower	Upper
Child age	-2.23	0.39	-5.75	<.01	-2.99	-1.47
Family income	0.84	0.65	1.30	.19	-0.42	2.11
Centered mother involvement	-2.03	1.93	-1.05	.29	-5.81	1.75
Centered father involvement	2.02	1.39	1.45	.15	-0.71	4.75
Mother X Father involvement	-2.88	1.27	-2.26	.02	-5.38	-0.38
Intercept	81.37	4.63	17.59	<.01	72.30	90.44
Level 2 (family) error	8.68	1.33			6.44	11.71
Level 1 (respondent) error	7.70	1.16			5.73	10.34

Table 7. *Father effects when mother involvement is 1 SD above mean*

Model 1 Effects	Parameter Estimate	Std. Error	Wald Z	p (2-tailed)	95% Confidence Interval	
					Lower	Upper
Child age	-2.23	0.39	-5.75	<.01	-2.99	-1.47
Family income	0.84	0.65	1.30	.19	-0.42	2.11
High mother involvement	-2.03	1.93	-1.05	.29	-5.81	1.75
Centered father involvement	0.01	1.75	0.00	.99	-3.41	3.43
High mother X Centered father involvement	-2.88	1.27	-2.26	.02	-5.38	-0.38
Intercept	81.37	4.63	17.59	<.01	72.30	90.44
Level 2 (family) error	8.68	1.33			6.44	11.71
Level 1 (respondent) error	7.70	1.16			5.73	10.34

Note: father involvement represents the association between father involvement and child social skills when mother involvement is one *SD* above the mean, all other values are identical to the full model with interaction.

Table 8. *Father effects when mother involvement is 1 SD below mean*

Model 1 Effects	Parameter Estimate	Std. Error	Wald Z	p (2-tailed)	95% Confidence Interval	
					Lower	Upper
Child age	-2.23	0.39	-5.75	<.01	-2.99	-1.47
Family income	0.84	0.65	1.30	.19	-0.42	2.11
Centered mother involvement	-2.03	1.93	-1.05	.29	-5.81	1.75
Centered father involvement	4.03	1.56	2.59	.01	0.98	7.09
Low mother X Centered father involvement	-2.88	1.27	-2.26	.02	-5.38	-0.38
Intercept	81.37	4.63	17.59	<.01	72.30	90.44
Level 2 (family) error	8.68	1.33			6.44	11.71
Level 1 (respondent) error	7.70	1.16			5.73	10.34

Note: father involvement represents the association between father involvement and child social skills when mother involvement is one *SD* below the mean, all other values are identical to the full model with interaction.

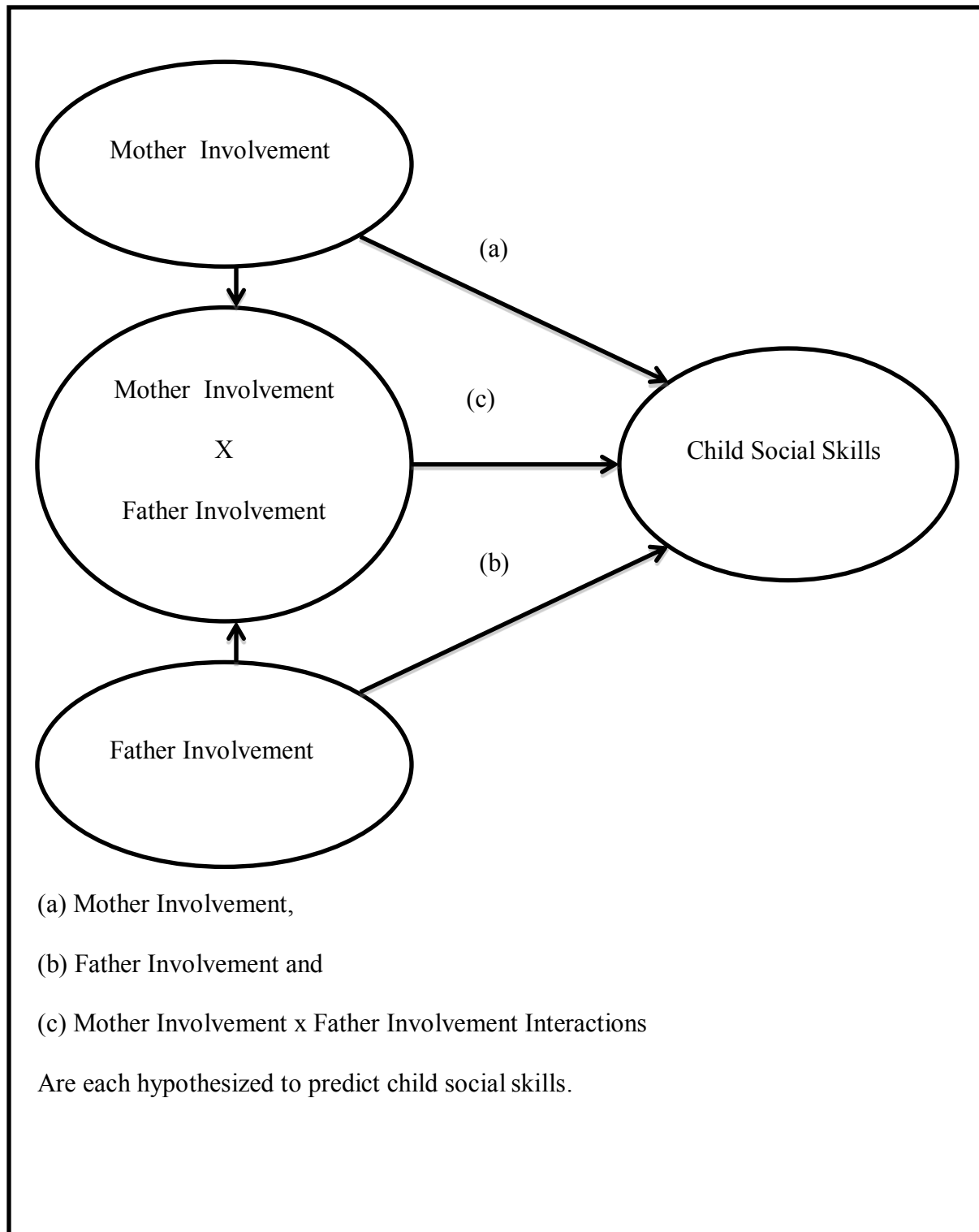


Figure 1. *Hypothesized relationships between parental involvement variables and child social skills.*

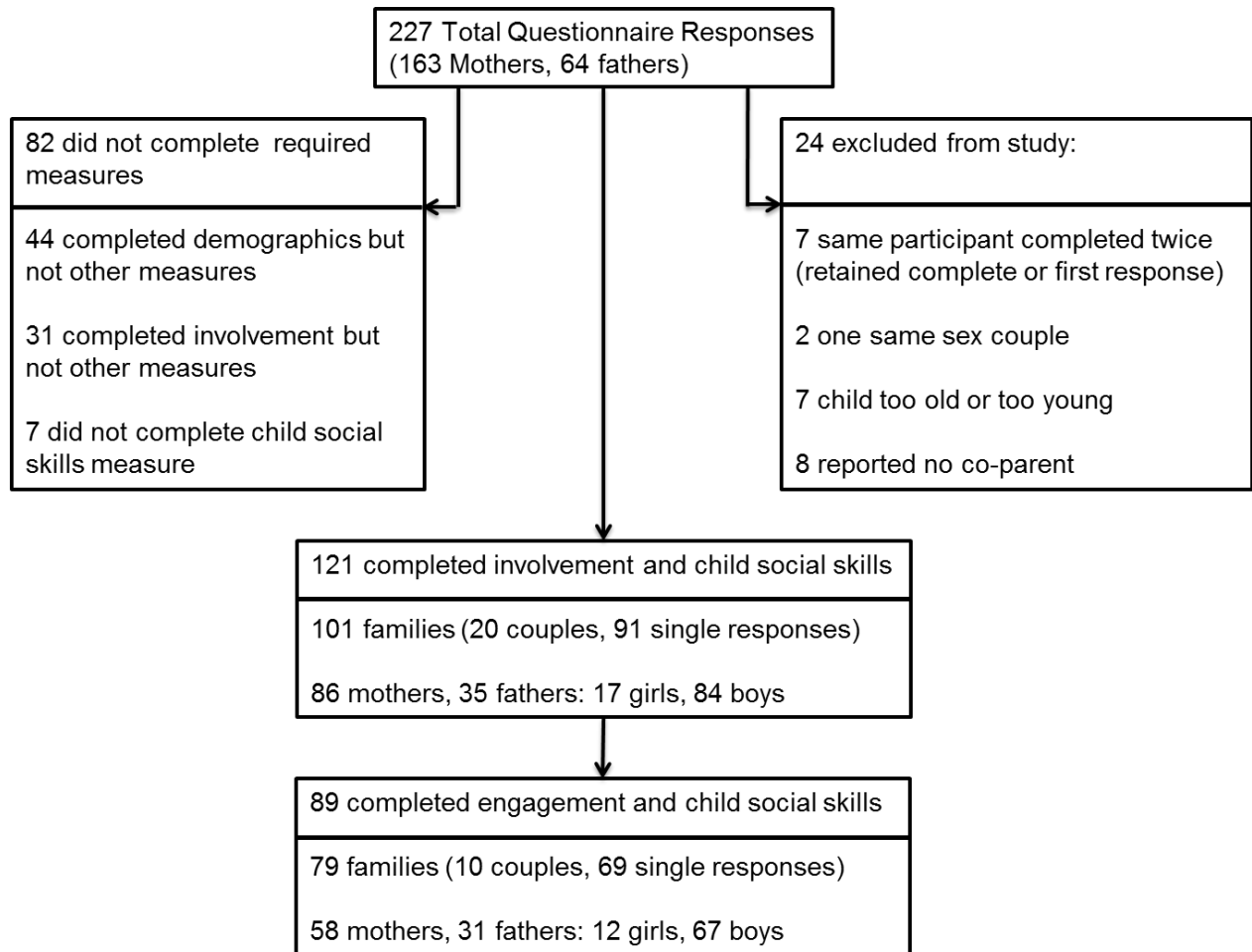


Figure 2. Consort diagram of all participants recruited and excluded from analyses

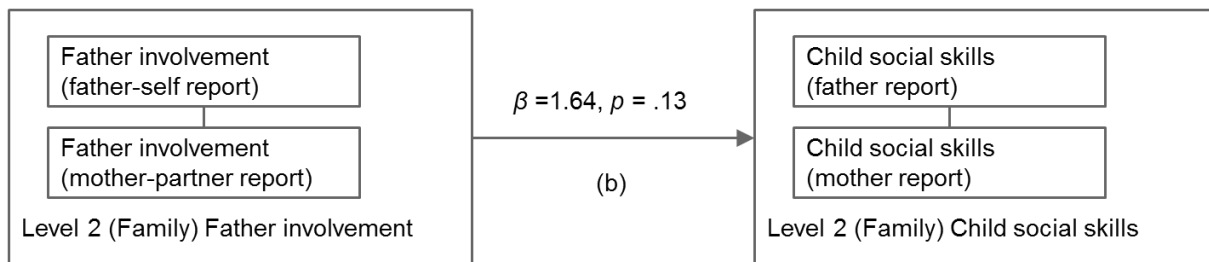
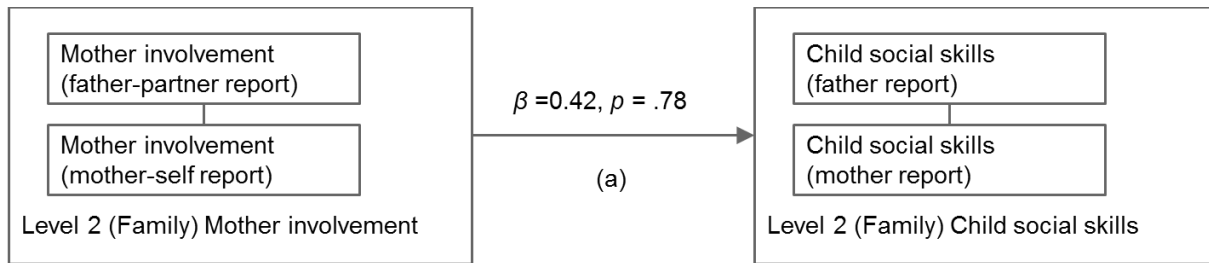


Figure 3. *Child social skills regressed on mother involvement and father involvement in two separate multilevel models.*

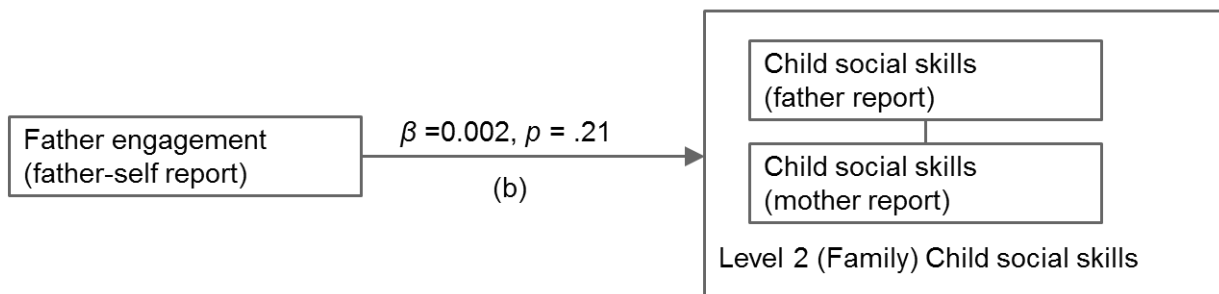
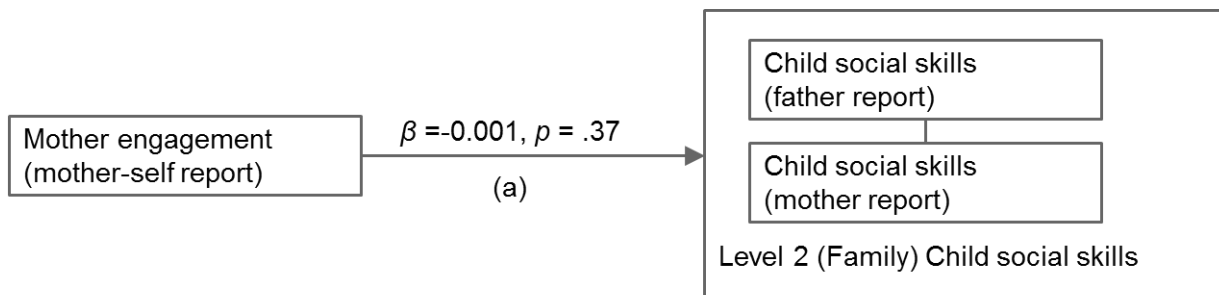


Figure 4. *Child social skills regressed on mother engagement and father engagement in two separate multilevel models.*

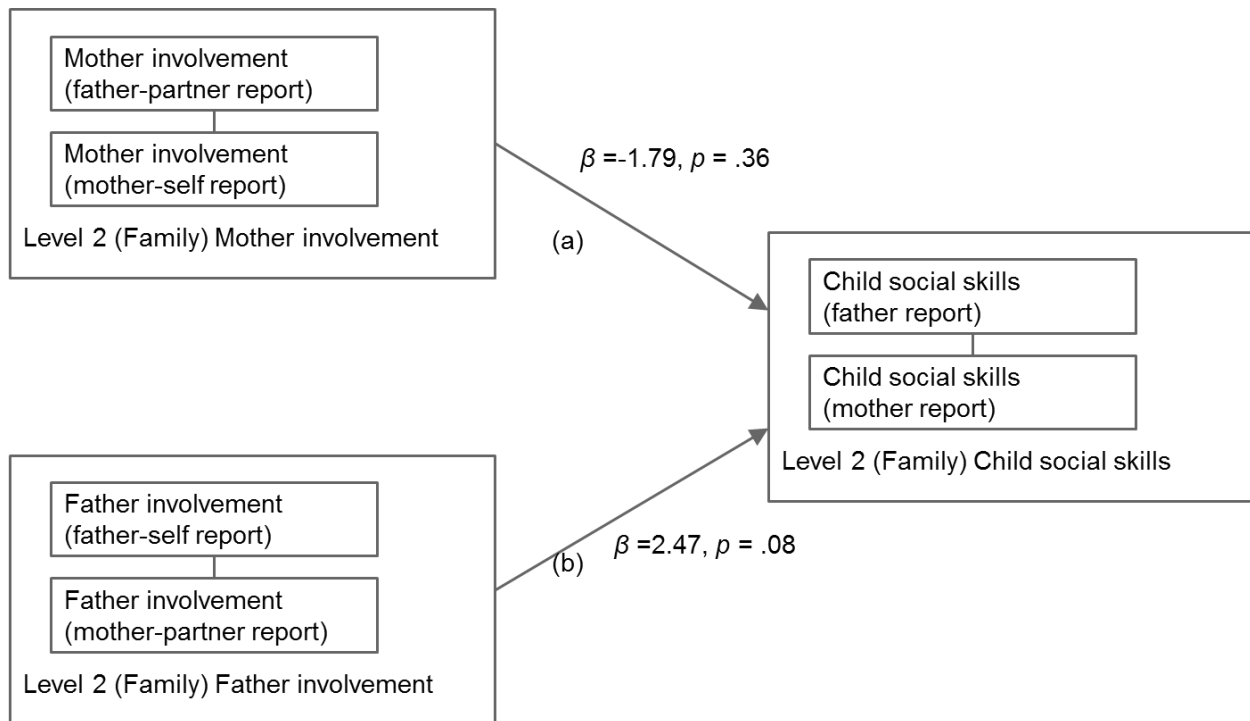


Figure 5. Independent effects of mother and father involvement: Multilevel model of mother and father responses (level 1) within Family (Level 2). Child social skills are regressed on mother and father involvement (as well as child age and family income).

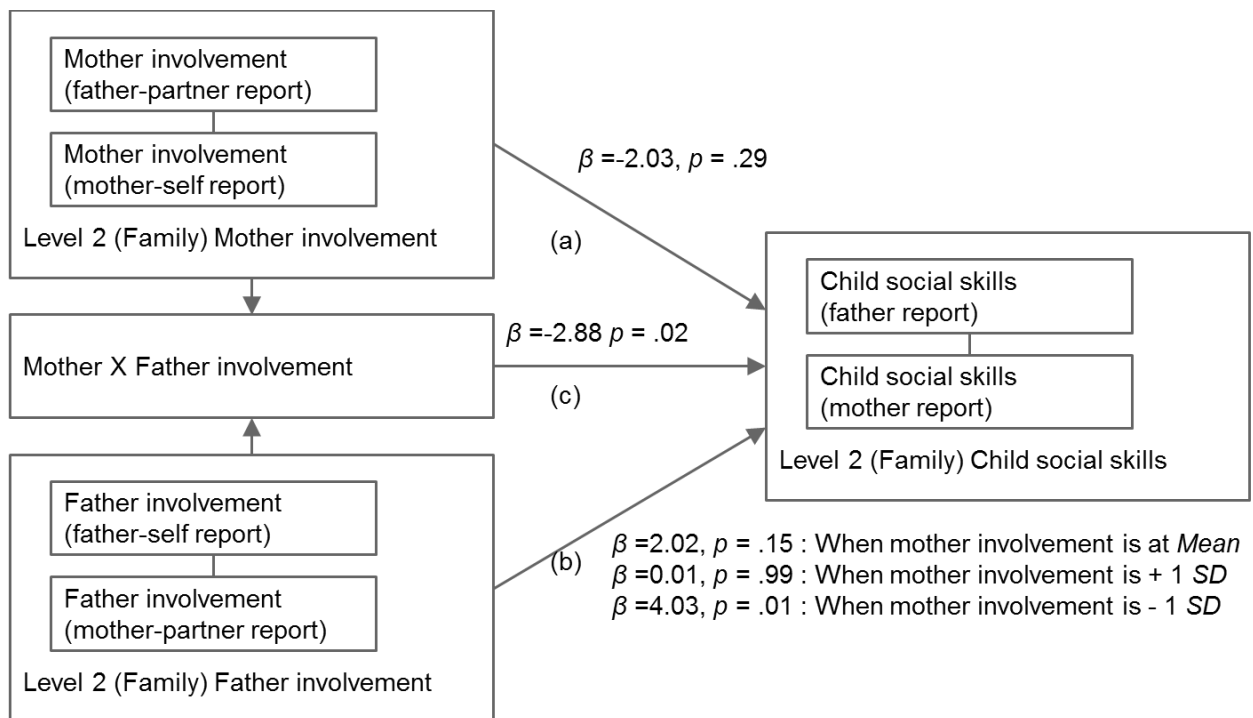


Figure 6. Full model with interaction term: Multilevel model of mother and father responses (level 1) within Family (Level 2). Child social skills are regressed on mother and father involvement and their interaction (with mother involvement centered at different levels).

Appendix – Full Online Questionnaire

Social Skills in Autism

Exit this survey

For all questions, please note:

your child - refers specifically to your child with an ASD (if you have multiple children with ASDs, select one for the entire questionnaire).

your partner - refers to your child's other parent who lives with the both of you (this may be a step-parent, or a boyfriend or girlfriend who is like a parent to your child).

* 1. Ages (please make sure that your child is 3-12 before continuing)

MM DD YYYY

When were you born? / /

When was your partner born? / /

When was your child born? / /

2. What is your gender?

- Male
- Female

3. What is your child's gender?

- Male
- Female

4. What is the highest level of school you have completed or the highest degree you have received?

- Less than high school degree
- High school degree or equivalent (e.g., GED)
- Some college but no degree
- Associate degree
- Bachelor degree
- Graduate degree

5. What is your race/ethnicity (check all that apply)?

- White
- Black or African-American
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific Islander
- Hispanic

Other (please specify)

6. Are you now married, widowed, divorced, separated, or never married?

- Married
- Widowed
- Divorced
- Separated
- Never married

7. How much total combined money did all members of your HOUSEHOLD earn in 2012? This includes money from jobs; net income from business, farm, or rent; pensions; dividends; interest; social security payments; and any other money income received by members of your HOUSEHOLD that are EIGHTEEN (18) years of age or older. Please report the total amount of money earned - do not subtract the amount you paid in taxes or any deductions listed on your tax return.

- Less than \$20,000
- \$20,000 to \$34,999
- \$35,000 to \$49,999
- \$50,000 to \$74,999
- \$75,000 to \$99,999
- \$100,000 to \$149,999
- \$150,000 or More

8. How many children age 17 or younger live in your household?

9. What is your relationship to your child with an ASD?

- Biological Parent
- Adoptive Parent
- Step-Parent
- Girl/Boyfriend of Parent

Other (please specify)

10. Which diagnoses has your child received from a medical or mental health professional?

- Autistic Disorder
- Asperger Syndrome
- Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS)
- No Developmental Disability

Other (please specify)

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11. The following questions refer to your child with autism and her/his behavior in the last 3 months. Please answer yes or no to each question, even if you are not sure whether she/he exhibited the behavior recently.

	yes	no
1. Is she/he now able to talk using short phrases or sentences? (if no, skip to question 8)	<input type="radio"/>	<input type="radio"/>
2. Do you have a to and fro "conversation" with her/him that involves taking turns or building on what you have said?	<input type="radio"/>	<input type="radio"/>
3. Does she/he ever use odd phrases or say the same thing over and over in almost exactly the same way (either phrases that she/he hears other people use or ones that she/he makes up)?	<input type="radio"/>	<input type="radio"/>
4. Does she/he ever use socially inappropriate questions or statements? For example, does she/he ever regularly ask personal questions or make personal comments at awkward times?	<input type="radio"/>	<input type="radio"/>
5. Does she/he ever get her/his pronouns mixed up (e.g., saying you or she/he for I)?	<input type="radio"/>	<input type="radio"/>
6. Does she/he ever use words that she/he seems to have invented or made up her/himself; put things in odd, indirect ways; or use metaphorical ways of saying things (e.g., saying hot rain for steam)?	<input type="radio"/>	<input type="radio"/>
7. Does she/he ever say the same thing over and over in exactly the same way or insist that you say the same thing over and over again?	<input type="radio"/>	<input type="radio"/>
8. Does she/he ever have things that she/he seems to have to do in a very particular way or order or rituals that she/he insists that you go through?	<input type="radio"/>	<input type="radio"/>
9. Does her/his facial expression usually seem appropriate to the particular situation, as far as you can tell?	<input type="radio"/>	<input type="radio"/>
10. Does she/he ever use your hand like a tool or as if it were part of her/his own body (e.g., pointing with your finger or putting your hand on a doorknob to get you to open the door)?	<input type="radio"/>	<input type="radio"/>
11. Does she/he ever have any interests that preoccupy her/him and might seem odd to other people (e.g., traffic lights, drainpipes, or timetables)?	<input type="radio"/>	<input type="radio"/>
12. Does she/he ever seem to be more interested in parts of a toy or an object (e.g., spinning the wheels of a car), rather than in using the object as it was intended?	<input type="radio"/>	<input type="radio"/>
13. Does she/he ever have any special interests that are unusual in their intensity but otherwise appropriate for her/his age and peer group (e.g., trains or dinosaurs)?	<input type="radio"/>	<input type="radio"/>
14. Does she/he ever seem to be unusually interested in the sight, feel, sound, taste, or smell of things or people?	<input type="radio"/>	<input type="radio"/>
15. Does she/he ever have any mannerisms or odd ways of moving her/his hands or fingers, such as flapping or moving her/his fingers in front of her/his eyes?	<input type="radio"/>	<input type="radio"/>
16. Does she/he ever have any complicated movements of her/his whole body, such as	<input type="radio"/>	<input type="radio"/>

spinning or repeatedly bouncing up and down?

17. Does she/he ever injure her/himself deliberately, such as by biting her/his arm or banging her/his head?

12. (continued)

	yes	no
18. Does she/he ever have any objects (other than a soft toy or comfort blanket) that she/he has to carry around?	<input type="radio"/>	<input type="radio"/>
19. Does she/he have any particular friends or a best friend?	<input type="radio"/>	<input type="radio"/>
20. Does she/he ever talk with you just to be friendly (rather than to get something)?	<input type="radio"/>	<input type="radio"/>
21. Does she/he ever spontaneously copy you (or other people) or what you are doing (such as vacuuming, gardening, or mending things)?	<input type="radio"/>	<input type="radio"/>
22. Does she/he ever spontaneously point at things around her/him just to show you things (not because she/he wants them)?	<input type="radio"/>	<input type="radio"/>
23. Does she/he ever use gestures, other than pointing or pulling your hand, to let you know what she/he wants?	<input type="radio"/>	<input type="radio"/>
24. Does she/he nod her/his head to indicate yes?	<input type="radio"/>	<input type="radio"/>
25. Does she/he shake her/his head to indicate no?	<input type="radio"/>	<input type="radio"/>
26. Does she/he usually look at you directly in the face when doing things with you or talking with you?	<input type="radio"/>	<input type="radio"/>
27. Does she/he smile back if someone smiles at her/him?	<input type="radio"/>	<input type="radio"/>
28. Does she/he ever show you things that interest her/him to engage your attention?	<input type="radio"/>	<input type="radio"/>
29. Does she/he ever offer to share things other than food with you?	<input type="radio"/>	<input type="radio"/>
30. Does she/he ever seem to want you to join in her/his enjoyment of something?	<input type="radio"/>	<input type="radio"/>
31. Does she/he ever try to comfort you if you are sad or hurt?	<input type="radio"/>	<input type="radio"/>
32. If she/he wants something or wants help, does she/he look at you and use gestures with sounds or words to get your attention?	<input type="radio"/>	<input type="radio"/>
33. Does she/he show a normal range of facial expressions?	<input type="radio"/>	<input type="radio"/>
34. Does she/he ever spontaneously join in and try to copy the actions in social games, such as the Mulberry Bush or London Bridge is Falling Down?	<input type="radio"/>	<input type="radio"/>
35. Does she/he play any pretend or make-believe games?	<input type="radio"/>	<input type="radio"/>
36. Does she/he seem interested in other children of approximately the same age whom she/he does not know?	<input type="radio"/>	<input type="radio"/>
37. Does she/he respond positively when another child approaches her/him?	<input type="radio"/>	<input type="radio"/>

38. If you come into a room and start talking to her/him without calling her/his name, does she/he usually look up and pay attention to you?
39. Does she/he ever play imaginative games with another child in such a way that you can tell that each child understands what the other is pretending?
40. Does she/he play cooperatively in games that need some form of joining in with a group of other children such as hide-and-seek or ball games?

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13. Instructions: Think of your experience as a parent as well as your child’s other parent over the past week. Please rate how good a job you think you and your partner did on each of the items listed below. If an item is not applicable to your situation, circle “NA” for not applicable. Please include your own ratings under “Self” and your rating for you co-parent’s under “Partner”

	Self	Partner
Disciplining your children.	1 Very Poor ▼	▼
Encouraging your children to do their chores.	2 Poor ▼	▼
Setting rules and limits for your children’s behavior.	3 Below Average ▼	▼
Encouraging your children to succeed in school.	4 Average ▼	▼
Encouraging your children to do their homework.	5 Above Average ▼	▼
Teaching your children to follow rules at school.	6 Good ▼	▼
Giving your Partner encouragement and emotional support.	7 Excellent ▼	▼
Letting your child know that your Partner is an important and special person.	Not Applicable ▼	▼
Cooperating with your Partner in the rearing of your children.	▼	▼
Providing your child’s basic needs (food, clothing, shelter, and health care).	▼	▼
Accepting responsibility for the financial support of your child.	▼	▼
Being a pal or a friend to your child.	▼	▼
Spending time just interacting with your child when he or she wants to interact.	▼	▼
Spending time with your child doing things he or she likes to do.	▼	▼
Praising your children for being good or doing the right thing.	▼	▼
Telling your children that you love them	▼	▼
Showing physical affection to your children (touching, hugging, kissing).	▼	▼
Encouraging your child to develop his or her talents.	▼	▼
Encouraging your child to become more independent.	▼	▼
Planning for your child’s future (education, training, work and housing).	▼	▼
Reading to your child.	▼	▼

Helping your child with his or her homework.	<input type="text"/>	<input type="text"/>
Attending events your children participate in (sports, school, church events).	<input type="text"/>	<input type="text"/>
Being involved in the daily or regular routine of taking care of your children's basic needs or activities (feeding, driving them places, etc.).	<input type="text"/>	<input type="text"/>
Knowing where your children go and what they do with their friends and family.	<input type="text"/>	<input type="text"/>

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14. For this section, we need to know how your weekly schedule works.

How many days of the week did you spend mostly at work? (for example, a typical job would be 5 days/week)

How many days of the week do you spend mostly at home? (for example, a typical job would be 2 days/week)

15. All of the questions in this section refer to the last complete work-day and home-day.

What day of the week was your last work-day? (for example Friday)

What day of the week was your last home-day? (for example Sunday)

Instructions: For each question, think about your last work-day and your last home-day (that you answered above), and list how many minutes you spent engaged in each activity with your child.

16. Dressing

How many minutes did you spend: completely dressing your child or helping your child dress him/herself or supervising your child as he or she dressed?

Last work-day

Last home-day

17. Feeding

How many minutes did you spend: Feeding your child or helping your child with his/her food, or simply having a meal together with child?

Last work-day

Last home-day

18. Bathing / Toileting

How many minutes did you spend: Changing diapers or being mindful of your child's toileting needs or observing your child take his or her bath?

Last work-day

Last home-day

19. Active Playing / Recreation

How many minutes did you spend: Actively playing with your child, for example with toys, board games, sports or outdoor activities?

Last work-day

Last home-day

20. Teaching / Education

How many minutes did you spend: Actively engaging your child with the aim of teaching him or her a pre-academic or academic skill.

Last work-day

Last home-day

21. Miscellaneous Supervision

How many minutes did you spend: With your child, but not actively engaged with him or her? For example, attending church, watching him or her play, watching TV together or driving in the car with your child.

Last work-day

Last home-day

22. Indirect Support

How many minutes did you spend: taking care of family responsibilities, but not actively engaged with your child? For example, cooking, cleaning, or running errands.

Last work-day

Last home-day

23. Financial Support / Breadwinning

How many minutes did you spend: providing financial support for your family? For example, spending time at work, budgeting family finances, or paying bills.

Last work-day

Last home-day

Socialization - Interpersonal Relationships

If your child used to do something appropriately, but has outgrown it, you may still answer affirmatively.

Note: if you score four or more zero's in a row on this page, you can skip to the next page.

24. How often does your child with an ASD:

2=Usually 1=Sometimes/Partially 0=Never DK=Don't Know

	2	1	0	DK
1) Looks at face of parent or caregiver.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) Watches (that is, follows with eyes) someone moving by crib or bed for 5 seconds or more.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) Shows two or more emotions (for example, laughs, cries, screams, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) Smiles or makes sounds when approached by a familiar person.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) Makes or tries to make social contact (for example, smiles, makes noises, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) Reaches for familiar person when person holds out arms to him or her.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) Shows preference for certain people and objects (for example, smiles, reaches for or moves toward person or object, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) Shows affection to familiar persons (for example, touches, hugs, kisses, cuddles, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9) Imitates or tries to imitate parent's or caregiver's facial expressions (for example, smiles, frowns, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10) Moves about looking for parent or caregiver or other familiar person nearby.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11) Shows interest in children the same age, other than brothers or sisters (for example, watches them, smiles at them, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12) Imitates simple movements (for example, claps hands, waves good-bye, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13) Uses actions to show happiness or concern for others (for example, hugs, pats arm, holds hands, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14) Shows desire to please others (for example, shares a snack or toy, tries to help even if not capable, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15) Demonstrates friendship-seeking behavior with others the same age (for example, says, "Do you want to play?" or takes another child by the hand, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16) Imitates relatively complex actions as they are being performed by another person (for example, shaving, putting on makeup, hammering nails, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17) Answers when familiar adults make small talk (for example, if asked, "How are you?")	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

says, "I'm fine"; if told, "You look nice," says, "Thank you"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18) Repeats phrases heard spoken before by an adult (for example, "Honey, I'm home"; "No dessert until you clean your plate"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19) Uses words to express own emotions (for example, "I'm happy"; "I'm scared"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20) Has best friend or shows preference for certain friends (of either sex) over others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21) Imitates relatively complex actions several hours after watching someone else perform them (for example, shaving, putting on makeup, hammering nails, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22) Uses words to express happiness or concern for others (for example, says, "Yeah! You won"; "Are you all right?"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23) Acts when another person needs a helping hand (for example, holds door open, picks up dropped items, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24) Recognizes the likes and dislikes of others (for example, says, "Chow likes soccer"; "Susie doesn't eat pizza"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25) Shows same level of emotion as others around him or her (for example, does not downplay or overdramatize a situation, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26) Keeps comfortable distance between self and others in social situations (for example, does not get too close to another person when talking, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27) Talks with others about shared interests (for example, sports, TV shows, summer plans, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28) Starts small talk when meets people he or she knows (for example, says, "How are you?"; "What's up?"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29) Meets with friends regularly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30) Chooses not to say embarrassing or mean things or ask rude questions in public.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31) Places reasonable demands on friendship (for example, does not expect to be a person's only friend or to have the friend always available, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32) Understands that others do not know his or her thoughts unless he or she says them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33) Is careful when talking about personal things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34) Cooperates with others to plan or be part of an activity (for example, a birthday party, sports event, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35) Demonstrates understanding of hints or indirect cues in conversation (for example, knows that yawns may mean, "I'm bored," or a quick change of subject may mean, "I don't want to talk about that"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36) Starts conversations by talking about things that interest others (for example, says, "Tyrone tells me you like computers"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37) Goes on group dates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38) Goes on single dates.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Socialization - Play and Leisure

Note: if you score four or more zero's in a row on this page, you can skip to the next page.

25. How often does your child with an ASD:

2=Usually 1=Sometimes/Partially 0=Never DK=Don't Know

	2	1	0	DK
1) Responds when parent or caregiver is playful (for example, smiles, laughs, claps hands, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) Shows interest in where he or she is (for example, looks or moves around, touches objects or people, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) Plays simple interaction games with others (for example, peekaboo, patty-cake, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) Plays near another child, each doing different things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) Chooses to play with other children (for example, does not stay on the edge of a group or avoid others).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) Plays cooperatively with one or more children for up to 5 minutes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) Plays cooperatively with more than one child for more than 6 minutes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) Continues playing with another child with little fussing when parent or caregiver leaves.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9) Shares toys or possessions when asked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10) Plays with others with minimal supervision.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11) Uses common household objects or other objects for make-believe activities (for example, pretends a block is a car, a box is a house, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12) Protects self by moving away from those who destroy things or cause injury (for example, those who bite, hit, throw things, pull hair, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13) Plays simple make-believe activities with others (for example, plays dress-up, pretends to be superheroes, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14) Seeks out others for play or companionship (for example, invites others home, goes to another's home, plays with others on the playground, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15) Takes turns when asked while playing games or sports.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16) Plays informal, outdoor group games (for example, tag, jump rope, catch, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17) Shares toys or possessions without being asked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18) Follows rules in simple games (relay races, spelling bees, electronic games, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19) Takes turns without being asked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20) Plays simple card or board game based only on chance (for example, Go Fish, Crazy Eights, Sorry, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21) Goes places with friends during the day with adult supervision (for example, to a shopping mall, park, community center, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22) Asks permission before using objects belonging to or being used by another.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23) Refrains from entering group when nonverbal cues indicate that he or she is not welcome.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24) Plays simple games that require keeping score (for example, kickball, pickup basketball, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25) Shows good sportsmanship (that is, follows rules, is not overly aggressive, congratulates other team on winning, and does not get mad when losing).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26) Plays more than one board, card, or electronic game requiring skill and decision making (for example, Monopoly, Cribbage, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27) Goes places with friends in evening with adult supervision (for example, to a concert, lecture, sporting event, movie, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28) Follows rules in complex games or sports (for example, football, soccer, volleyball, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29) Goes places with friends during the day without adult supervision (for example, to a shopping mall, park, community center, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30) Plans fun activities with more than two things to be arranged (for example, a trip to a beach or park that requires planning transportation, food, recreational items, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31) Goes places with friends in evening without adult supervision (for example, to a concert, lecture, sporting event, movie, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Socialization - Coping Skills

Note: if you score four or more zero's in a row on this page, you can skip to the next page.

**26. How often does your child with an ASD:
2=Usually 1=Sometimes/Partially 0=Never DK=Don't Know**

	2	1	0	DK
1) Changes easily from on at-home activity to another.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) Says "thank you" when given something.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) Changes behavior depending on how well he or she knows another person (for example, acts differently with family member than with stranger, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) Chews with mouth closed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) Says "please" when asking for something.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) Ends conversations appropriately (for example, says, "Good-bye"; "See you later"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) Cleans or wipes face and hands during and/or after meals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) Responds appropriately to reasonable changes in routine (for example, regains from complaining, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9) Says that he or she is sorry for unintended mistakes (for example, bumping into someone, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10) Chooses not to taunt, tease, or bully.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11) Acts appropriately when introduced to strangers (for example, nods, smiles, shakes hands, greets them, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12) Changes voice level depending on location or situation (for example, in a library, during a movie or play, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13) Says he or she is sorry after hurting another's feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14) Refrains from talking with food in mouth.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15) Talks with others without interrupting or being rude.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16) Accepts helpful suggestions or solution from others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17) Controls anger or hurt feelings when plans change for reason(s) that cannot be helped (for example, bad weather, car trouble, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18) Keeps secrets or confidences for longer than one day.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19) Says he or she is sorry after making unintentional mistakes or errors in judgment (for	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- example, when unintentionally leaving someone out of a game, etc.).
- 20) Shows understanding that gentle teasing with family and friends can be a form of humor or affection.
- 21) Tells parent or caregiver about his or her plans (for example, what time he or she is leaving and returning, where he or she is going, etc.).
- 22) Chooses to avoid dangerous or risky activities (for example, jumping off high paces, picking up a hitchhiker, driving recklessly, etc.).
- 23) Controls anger or hurt feelings when he or she does not get his or her way (for example, when not allowed to watch television or attend a party; when suggestion is rejected by friend or supervisor; etc.).
- 24) Follows through with arrangements (for example, if promises to meet someone, meets that person; etc.).
- 25) Stops or stays away from relationships or situations that are hurtful or dangerous (for example, being bullied or made fun of, being taken advantage of sexually or financially, etc.).
- 26) Controls anger or hurt feelings due to constructive criticism (for example, correction of misbehavior, discussion of test score or grade, performance review, etc.).
- 27) Keeps secrets or confidences for as long as needed.
- 28) Thinks about what could happen before making decisions (for example, refrains from acting impulsively, thinks about important information, etc.).
- 29) Is aware of potential danger and uses caution when encountering risky social situations (for example, binge drinking parties, internet chat rooms, personal ads, etc.).
- 30) Shows respect for co-workers (for example, does not distract or interrupt others who are working, is on time for meetings, etc.).

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Communication - Receptive

Note: if you score four or more zero's in a row on this page, you can skip to the next page.

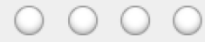
27. How often does your child with an ASD:
2=Usually 1=Sometimes/Partially 0=Never DK=Don't Know

	2	1	0	DK
1) Turn eyes and head toward sound.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) Looks toward parent or caregiver when hearing parent's or caregiver's voice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) Responds to his or her name spoken (for example turns toward speaker, smiles, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) Demonstrates understanding of the meaning of no, or word or gesture with the same meaning (for example, stops current activity briefly).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) Demonstrates understanding of the meaning of yes, or word or gesture with the same meaning (for example, continues activity, smiles, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) Listens to story for at least 5 minutes (that is, remains relatively still and directs attention to the storyteller or reader).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) Points to at least three major body parts when asked (for example, nose, mouth, hands, feet, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) Points to common objects in a book or magazine as they are named (for example, dog, car, cup, key, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9) Listens to instructions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10) Follows instructions with one action and one object (for example, "Bring me the book"; "Close the door"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11) Points to at least five minor body parts when asked (for example, fingers elbows, teeth, toes, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12) Follows instructions with two actions or an action and two objects (for example, "Bring me the crayons and the paper"; "Sit down and eat your lunch"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13) Follows instructions in "if-then" form (for example, "if you want to play outside, then put your things away"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14) Listens to a story for at least 15 minutes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15) Listens to a story for at least 30 minutes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16) Follows three-part instructions (for example, "Brush your teeth, get dressed, and make your bed"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17) Follows instructions or directions heard 5 minutes before.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18) Understands sayings that are not meant to be taken word for word (for example,				

"Button your lip"; "Hit the road"; etc.).



19) Listens to an informational talk for at least 15 minutes.



20) Listens to an informational talk for at least 30 minutes.



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Communication - Expressive

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**28. How often does your child with an ASD:
2=Usually 1=Sometimes/Partially 0=Never DK=Don't Know**

	2	1	0	DK
1) Cries or fusses when hungry or wet.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2) Smiles when you smile at him or her.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3) Makes sounds of pleasure (for example, coos, laughs, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4) Makes non-word baby sounds (that is, babbles).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5) Makes sounds or gestures (for example, waves arms) to get parent's or caregiver's attention.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6) Makes sounds or gestures (for example, shakes head) if he or she wants an activity to stop or keep going.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7) Waves good-bye when another person waves or parent or caregiver tells him or her to wave.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8) Says "Da-da," "Ma-ma," or another name for parents or caregivers (including parent's or caregivers first name or nickname).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9) Points to object he or she wants that is out of reach.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10) Points or gestures to indicate preference when offered a choice (for example, "Do you want this one or that one?" etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11) Repeats or tries to repeat common words immediately upon hearing them (for example, ball, car, go, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12) Names at least three objects (for example, bottle, dog, favorite toy, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13) Says one-word requests (for example, up, more, out, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14) Uses first names or nicknames of brothers, sisters or friends, or says their names when asked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15) Answers or tries to answer with words when asked a question.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16) Names at least 10 objects.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17) States own first name or nickname (for example, Latesha, Little Sister, etc.) when asked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18) Uses phrases with a noun and a verb (for example, "Katie stay"; "Go home"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19) Asks questions by changing inflection of words or simple phrases (for example,	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

"Mine?"; "Me go?"; etc.); grammar is not important.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20) Says at least 50 recognizable words.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21) Uses simple words to describe things (for example dirty, pretty, big, loud, etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22) Asks questions beginning with what or where (for example, "What's that?"; "Where doggie go?"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23) Uses negatives in sentences (for example, "Me no go"; "I won't drink it"; etc.); grammar is not important.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24) Tells about experiences in simple sentences (for example "Ginger and I play"; Dan read me a book"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25) Says correct age when asked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26) Says at least 100 recognizable words.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27) Uses in, on, or under in phrases or sentences (for example, "Ball go under chair"; "Put it on the table"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28) Uses and in phrases or sentences (for example, "Mom and Dad"; "I want ice cream and cake"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29) Says first and last name when asked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30) Identifies and names most common colors (that is, red, blue, green, yellow, orange, purple, brown, and black).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31) Asks questions beginning with who or why (for example "Who's that?"; "Why do I have to go?"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32) Uses present tense verbs ending in ing (for example "Is singing"; "Is playing"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33) Uses possessives in phrases or sentences (for example, "That's her book"; "Is playing"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
34) Uses pronouns in phrases or sentences; must use correct gender and form of the pronoun, but sentences need to be grammatically correct (for example, "He done it"; "They went"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
35) Asks questions beginning with when (for example, "When is dinner?"; When can we go home?"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
36) Uses regular past tense verbs (for example, walked, baked, etc.). May use irregular past tense verbs ungrammatically (for example, "I runned away"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
37) Uses behind or in front of in phrases or sentences (for example, "I walked in front of her"; "Terrell is behind you"; etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
38) Pronounces words clearly without sound substitutions (for example, does not say "wabbit" for "rabbit," "Thally" for "Sally," etc.).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
39) Tells basic parts of a story, fairy tale, or television show plot; does not need to include great detail or recount in perfect order.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
40) Says month and day of birthday when asked.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- 41) Modulates tone of voice, volume, and rhythm appropriately (for example, does not consistently speak too loudly, too softly, or in a monotone, etc.).
- 42) Tells about experiences in detail (for example, tells who was involved, where activity took place, etc.).
- 43) Gives simple directions (for example on how to play a game or how to make something).
- 44) Uses prepositions in phrases or sentences (for example, "The ball went between the cars"; etc.).
- 45) Says own telephone number when asked.
- 46) Easily moves from one topic to another in conversation.
- 47) Stays on topic in conversations; does not go off on tangents.
- 48) Explains ideas in more than one way (for example, "This was a good book. It was exciting and fun to read"; etc.).
- 49) Has conversations that last 10 minutes (for example, relates experiences, contributes ideas, shares feelings, etc.).
- 50) Uses irregular plurals correctly (for example, children, geese, mice, women, etc.).
- 51) Says complete home address (that is, street or rural route, apartment number, city, and state), with or without zip code, when asked.
- 52) Describes a short-term goal and what he or she needs to do to reach it (for example, says, "I want to get an A on my test, so I'm going to study hard"; etc.).
- 53) Gives complex directions to others (for example to a distant location, for recipe with many ingredients or steps, etc.).
- 54) Describes a realistic long-range goal that can be done in 6 months or more (for example, says "I want to buy a bike, so I'll babysit and run errands to earn enough money to buy it"; etc.).

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