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Parenting Self-Efficacy in Parents of Children with Autism Spectrum Disorders

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ABSTRACT

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Autism Spectrum Disorders

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Parenting self-efficacy is one factor identified as relevant to parent distress and child therapy outcomes. Theories for parenting self-efficacy suggest parents of children with autism spectrum disorders (ASD) may be at risk for lower parenting self-efficacy than other parents. Parents who have low parenting self-efficacy may then have higher risk for poor treatment outcomes. Previous researchers found inconsistent results related to parenting self-efficacy rates for parents of children with ASD. They suggested the results were due to sample sizes, measurement insensitivitiy, comparison groups, and the limited range of children's ages (Fields, 2006; Meirsschaut, Roeyers, and Warreyn, 2010; Palafox, 2004; and Rutgers et al., 2007).

In the current study, the researchers invited 598 parents to complete a series of questionnaires. Participants included the parents of children with ASD (n = 57), Down syndrome (n = 24), ASD and Down syndrome (n = 41), emotional and behavioral disorders (n = 287), and no identified diagnoses (n = 189). The parents who participated were 90.2% female and 84.9% Caucasian. Participants from the ASD, ASD with Down syndrome, and Down syndrome groups lived in higher income households (75.2% above $30,000 annually) than those in the emotional and behavioral disorder group (94.1% below $30,000 annually). The questionnaires asked parents to rate themselves regarding parenting self-efficacy, parent distress, parenting skills, social support, and answered demographic questions. Parents from the diagnostic groups also rated their child's behavior and symptom severity. Parents from the ASD, Down syndrome, and ASD with Down syndrome groups answered additional questions found to be relevant in Fields, 2007 (e.g. age of symptom onset, number of siblings, and parent's age).

Parents of children with ASD were found to have the lowest rates of parenting self-efficacy across the five groups. ANOVA rejected the null hypothesis that the groups would be the same (F = 8.24, df = 4, 595, $p < .01$, adjusted R^2 = .05). The effect size for the relationship between diagnosis and parenting self-efficacy was small to moderate, accounting for 5% of the variance of parenting self-efficacy scores. Pairwise comparisons between groups found parents of children with ASD to have significantly lower parenting self-efficacy than the Down syndrome (mean difference = -3.32, se = .81, 95% CI = -5.86, -.78), and community groups (mean difference = -2.89, se = .58, 95% CI = -4.47 to -1.31). Parents from the community group were also found to have higher parenting self-efficacy than the parents of children with emotional and behavioral disorders (mean difference = 1.43, se = .37, 95% CI = 1.31, 4.47). Parenting self-efficacy was also related to parent distress, social support, parenting skills, and child's age. Parenting self-efficacy may warrant monitoring in the treatment of ASD and may be an important point of intervention in therapy.

Keywords: parenting self-efficacy, autism, Down syndrome, emotional and behavioral disorders, parent distress, social support, parenting skills, child psychotherapy, symptom monitoring

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Introduction

Parents play a vital role in almost every type of therapy for their children. Generally, it is the parent who is responsible for seeking treatment, scheduling appointments, ensuring the attendance, and the payment of services. Parents help coordinate services between professionals, ensure continuity of care and follow up, and advocate for services (Kabot, Masi, & Segal, 2003). Additionally, parents play a primary or supportive role in child therapy (Kazdin, 2003). They may take active roles during a session and are often responsible for the implementation of treatment procedures at home. Many child therapy modalities assume parent participation; however, parents often enter the treatment process with no intention of actively participating (Nock & Kazdin, 2005). Active parent involvement is necessary for children therapy to be truly effective. Therefore, factors that influence parent involvement in therapy need to be addressed by professionals treating children.

One factor influencing parent involvement in child therapy is parenting self-efficacy. Parenting self-efficacy can be briefly defined as a parent's beliefs about their ability to parent successfully (Jones & Prinz, 2005). Parents with higher reported parenting self-efficacy are more likely to engage in treatment with their children (Trunzo, 2006). Parenting self-efficacy has also been found to be an important predictor of child therapy outcomes (Hoza et al., 2000). Parents who report positive parenting self-efficacy have children with higher levels of improvement during therapy (Warren, Brown, Layne, & Nelson, 2011). Parenting self-efficacy may need to be addressed in treatment to help improve child therapy outcomes and encourage parent engagement.

Parenting self-efficacy is developed through experience, perceived success, examples of others, and validation from others. Parents of children with autism spectrum disorders (ASD)

may be at particular risk for lower parenting self-efficacy due to specific symptoms associated with the disorder. Since children with ASD struggle with difficult and rigid behavior, parents may be more likely to experience failure and frustration with typical parenting strategies (Fields, 2006). Children with ASD often exhibit socially inappropriate behavior. Parents may feel socially pressured to have their child conform to public expectations and feel criticized and rejected when their child behaves counter to expectations (Ryan, 2010). Children with ASD are typically diagnosed after years of poor parenting experiences and parents may blame themselves and feel blamed by others for their child's behavior.

Parenting self-efficacy is important for positive treatment outcomes. Parents of children with ASD may be at risk for low parenting self-efficacy. It is important for therapists to be aware of this as a potential roadblock to success in therapy. Previous research into parenting self-efficacy for parents of children with ASD had contradictory and confusing results. The purpose of this study was to address limitations in the previous research and better understand how an ASD diagnosis may relate to parenting self-efficacy. More specifically this study sought to examine if having a child with an ASD diagnosis places parents at greater risk for having lower parenting self-efficacy than parents of children with other or no diagnoses. The study examined several factors previously found to be relevant to parenting self-efficacy. Child symptom severity, parent distress, social support, parenting skills, child age, and other demographic variables were included in the study.

Literature Review

Parenting Self-Efficacy

Albert Bandura (1977, 1982) defined the term self-efficacy as the perception of one's ability to competently perform a task. Bandura (1986) believed that self-efficacy would directly

affect behavior and individuals with high self-efficacy will be more likely to persist at difficult tasks. Bandura (1986) suggested self-efficacy was more predictive of future success and failure than the person's actual capability because a person's beliefs help determine what that individual does with their knowledge and skills.

Parenting self-efficacy is defined as the beliefs or judgments about one's ability to be successful in the role of a parent (Hess, Teti, & Hussey-Gardner, 2004). One way a person develops parenting self-efficacy is through perceived success or failure at a parenting task (Goodnow, 1988). Examples of successful parenting strategies, verbal acknowledgement of past success, and validation of the difficulty of the current challenge may help increase parenting self-efficacy (Coleman & Karraker, 1998). Parents also learn about parenting self-efficacy through their own childhood experiences with their parents (Grusec, Hastings, & Mammone, 1994; Deutsche, Ruble, Fleming, Brooks-Gun, & Stangor, 1988). Examples of successful parents and encouragement from other parents who have struggled in similar situations can help parents believe that they could also achieve the positive results in similar situations. Perceived social or partner support can influence parenting self-efficacy (Kersh, Hedvat, Hauser-Cram, & Warfield, 2006; Teti & Gelfand, 1991). Parents who feel they will have outside sources of help and encouragement may feel more capable of handling difficult parenting tasks because they do not have to do it alone.

Parent distress may have an interactive relationship with the development of parenting self-efficacy. Parents possessing low parenting self-efficacy tend to make more internal attributions of failure and manifest higher degrees of anxiety and depressive symptoms (Miller, Gordon, Daniele, & Diller, 1992). Lower parenting self-efficacy has been shown to be related to giving up more quickly, feeling anxious, depressed, frustrated, as well as reporting less perceived

social support, less spousal support, perceptions of futility, and higher levels of stress (Shumow & Lomax, 2002; Wells-Parker, Miller, & Topping, 1990). Meirsschaut, Roeyers, & Warreyn (2010) found mothers' symptoms of depression and stress strongly influenced their parenting experiences and beliefs about parenting. Low levels of parenting self-efficacy are related to parenting stress, dysfunctional family interaction patterns, parent physical and mental health problems, negative parental emotional arousal, and decreased quality of parent–child interactions (Gelfand, Teti, & Radin, 1992; Kwok & Wong, 2000; Scheel & Rieckmann, 1998; Webster-Stratton, 1990). Mothers who reported lower parenting self-efficacy reported psychological symptoms of maternal depression (Cutrona & Troutman, 1986; Teti & Gelfand, 1991). Parent depression and anxiety may increase attributions of parenting failure. In turn, failure at parenting may increase depression, anxiety, withdrawal, and helplessness. Parents who feel distress are likely to feel less capable and parents who feel less capable are more likely to feel distress.

The development of parenting self-efficacy is also influenced by the interaction between parents and their children. Parents are more likely to experience perceived failure in a parenting task if their children are more difficult to parent due to problem behavior or poor emotional regulation (Teti & Gelfand, 1991). This will contribute to their overall perceived parenting self-efficacy and affect their persistence in difficult parenting tasks. Parenting self-efficacy might also act as a mediator or moderator for parent distress and difficult child behavior. Parenting self-efficacy was found to mediate levels of depression and anxiety for mothers and levels of anxiety for fathers with a behaviorally difficult child (Hastings & Brown, 2002). Parenting self-efficacy was found to mediate parent characteristics and quality of parenting skills in children with behavioral and emotional disorders (Bondy & Mash, 1999; Scheel & Reickmann, 1998). Parenting self-efficacy was found to be a possible moderator of the effect of disability on

problem behavior (Woolfson, Taylor, & Mooney, 2011). Parents with high parenting self-efficacy, are more likely to persevere in the face of challenges and consistently apply parenting skills even in difficult circumstances. Therefore, high parenting self-efficacy is likely to be particularly advantageous for parents who have a behaviorally or temperamentally more difficult child where parents may need more patience or perseverance (Teti, O'Connell, & Reiner, 1996). Less persistence can lead to more real and perceived failure and increased problem child behavior. Failure reinforces the perception of low parenting self-efficacy. Low parenting self-efficacy contributes to frustration, helplessness, and poor parent–child interaction.

Parents who have higher parenting self-efficacy were more likely to consistently apply therapeutic parenting interventions and see greater improvement in their children participating in psychotherapy (Hastings & Brown, 2002). Parental competence and success in the face of difficult circumstances may increase parenting self-efficacy and serve as a protective factor against negative outcomes for children (Koeske & Koeske, 1991). In other words, parents who learn to adapt and persevere are likely to experience success, continue to persist in the application of good parenting strategies, follow through with treatment interventions, and may also adhere more to treatment attendance for their more difficult child. Their children will also experience more success in therapy. However, parents who feel that they are less capable in applying good parenting techniques will be less likely to persist in challenging situations and show inconsistent parenting intervention (Coleman & Karraker, 2000; Luster, 1986; Wells-Parker et al., 1990). This will make it more difficult for their child to learn what is expected and can have a negative impact on their child and themselves. They are likely to feel more frustration and fall back into patterns of less effective strategies which will continue the cycle they are trying to change. The children of parents who reported lower parenting self-efficacy

had less improvement in child psychotherapy (Teti & Gelfand, 1991; Warren et al., 2011). This can lead to increased frustration and hopelessness, which may contribute to feelings of depression and anxiety for parents who report lower parenting self-efficacy.

Overall, parents' evaluation of their ability to effectively carry out parenting tasks has important consequences for consistent parenting practices and child development. According to Bandura's model, parents who possess a high sense of parenting self-efficacy believe they have the skills and qualities necessary to have a positive influence on their children's behavior and development and will persist in difficult parenting situations. Parents with low parenting self-efficacy are at risk for experiencing anxiety, depression, stress, and have poorer outcomes for their children in therapy.

Parenting Children with Disabilities

Parents of children with disabilities may face unique challenges in regards to developing parenting self-efficacy (Hastings & Brown, 2002; Shapiro, 1983). Parenting a child with any type of disability adds additional challenges of expense, time, adaptations, and less time for other relationships (Fields, 2006). A child's disability impacts parents' level of stress and the entire family system (Holroyd & McArthur, 1976). Children with disabilities respond differently to typical parenting strategies and often exhibit difficult problem behavior (Fields, 2006). If children exhibit challenging behavior parents may experience more perceived failure and thus have lower parenting self-efficacy.

Children with disabilities may have unique characteristics that can negatively impact parenting self-efficacy. Children who have more difficult temperaments can negatively affect the parent–child attachment (Ainsworth, Blehar, Waters, & Wall, 1978). This in turn affects parenting and the development of parenting self-efficacy. Also, due to the heritability rate of

different disabilities, parents of children with certain disabilities may have their own difficulties and struggle even more with parenting (Clarke et al, 2001). Theories of self-efficacy suggest parents have lower parenting self-efficacy due to perceived parenting failures, difficult child temperament and behavior, and parents' own stress and emotional difficulties. Parents of children with disabilities are at a higher risk to experience these factors that lead to lower parenting self-efficacy (Tunali & Power, 1993; Shapiro 1983; Holroyd & McArthur, 1976). Different disabilities may have more impact than others on parents' stress and family dynamics (Hauser-Cram et al, 2000).

Parenting Children with Autism

Parents of children with Autism Spectrum Disorder (ASD) face unique challenges that can affect parenting self-efficacy and interfere with the effective treatment for their children. Parenting children with ASD is a considerably difficult task, often with negative consequences for parents, marriages, and siblings. Parents of children with ASD have higher levels of stress, anxiety, and depression (Bouma & Schweitzer, 1990; Dunn, Burbine, Bowers, & Tantlef-Dunn, 2001). Marriages are often strained and may result in divorce (Piven, Chase, Landa, & Wzorek, 1991; Rodrigue, Morgan, & Geffken, 1990). Siblings may be overlooked due to the attention demanded by parenting a child with ASD (Fields, 2006; Holroyd, Brown, Wikler, & Simmons, 1975). The stress caused on the family as a whole could have an interacting affect on parenting self-efficacy.

There are also difficulties in the parent–child relationship due to problem child behaviors, communication and language deficits, lack of emotional expression, and social disconnection (Siegal, 1997). It is often difficult for parents to form a strong parent–child attachment with their child with ASD due to a lack of social reciprocity and responsiveness that are characteristic of

the disorder (McDaniel, 2005). ASD is a pervasive and lifelong diagnosis that affects several aspects of a child's behavioral, emotional, and psychological functioning and is often resistant to treatment with poor developmental trajectories (Baghdadli et al, 2012: Howlin, Goode, Hutton, & Rutter, 2004). Part of the resistance to treatment may be due to rigid and inflexible behavior and mental processing that is often seen in ASD (Corbett, Constantine, Hendren, Rocke, Ozonoff, 2009). Parenting techniques that work with other children may not work with ASD and parents may feel more competent when parenting another child that does not have ASD (Fields, 2006). The failure of typical parenting strategies could lead to lower parenting self-efficacy.

Parents of children with ASD frequently experience social rejection and blame for their child's behavior. Unlike parents of a child with Down syndrome who receives understanding and sympathy if their child shows problem behavior (Fisman, Wolf, & Noh, 1989), parents of children with ASD are often blamed and criticized for their parenting directly or indirectly (Howlin, 1998; Ryan, 2010). Communities may reject a child with ASD for their anti-social behavior (Koegel et al., 1992). Their child's behavior may interfere with the social interaction of their parents (Bouma & Schwietzer, 1990; Dunn, Burbine, Bowers, & Tantlef-Dunn, 2001; Schuntermann, 2002). Due to heritability rates of symptoms of ASD, parents often have their own social skills difficulties like social phobia (Cohen & Tsiouris, 2006), that may interfere with receiving more support from the community. Parents of children with ASD also often have emotional difficulties that will interfere with successful parenting. Parents of children with ASD have higher rates of anxiety and depression than the general population (Sharpley, Bitsika, & Efremidis, 1997). Parents of children with ASD have higher incidence rates of depression even before the birth of their child (Cohen & Tsiouris, 2006). Parents of children with ASD frequently experience less social support, more anxiety, and more depression than other parents.

Overall, models explaining parenting self-efficacy indicate that parents of children with autism are at particularly high risk for lower levels of parenting self-efficacy. Higher levels of stress, depression, and a difficult parent–child bond seen in parents with a child with ASD also place them at higher risk. Lower levels of parenting self-efficacy may then exacerbate problems at home and interfere with their child's treatment. As mentioned previously, lower levels of self-efficacy also lead to more problems for parents with higher rates of anxiety, depression, and stress and for negative child outcomes in treatment. If parents of children with ASD are experiencing lower parenting self-efficacy, it is important to understand why and how professionals can help address parenting self-efficacy in treatment.

Parenting Children with Down Syndrome

It is common in research of ASD to use children with Down syndrome as a comparison group. It is therefore important to understand how parenting self-efficacy relates to Down syndrome. Parenting a child with Down syndrome can offer unique challenges that are not as common in other disorders. Down syndrome is a pervasive disability that is time consuming and stressful for parents and families (Tunali & Power, 1993; McGrath, Stransky, Cooley, & Moeschler, 2011). As a pervasive and life-long disability, several areas of functioning and development are affected. Parents worry about a range of physical symptoms as well as psychological, emotional, and behavioral functioning (Selikowitz, 1992; Turner, Sloper, Cunningham, & Knussen, 1990). Parents must learn to cope with several difficult challenges that can lead to significant stress, frustration, depression, feelings of isolation, and marital or family difficulties (Bouma & Schweitzer, 1990). These specific difficulties can lead to several problems, including, lower parenting self-efficacy for parents with a child with Down syndrome.

However, there are other factors that may help protect parents of children with Down syndrome from negative psychological outcomes and lower parenting self-efficacy. These factors may lead to what has been labeled the "Down syndrome advantage." Mothers of children with Down syndrome experience less anxiety and depression than mothers of children with other developmental delays (Fidler, Hodapp, & Dykens, 2000; Seltzer, Krauss, & Tsunematsu, 1993). Parents may have a stronger bond with their child and receive more social support (Luster, 1986; Holroyd & McArthur, 1976). Unlike other disabilities that affect psychological functioning, parents are frequently told that parenting a child with Down syndrome will be challenging but can be very "rewarding and joyous" (WebMD, n.d.). This may be due to the more affectionate and loving behavior seen in children with Down syndrome (Gibbs & Thorpe, 1983; Kasari & Hodapp 1996; Wishart & Johnson, 1991) that create a stronger attachment with parents and siblings (Hodapp & Urbano, 2007; Skotko, Levine, & Goldstein, 2011). In fact, Hodapp and Urbano (2007) suggest that having a child with Down syndrome may even strengthen families, as evidenced by the lower divorce rate seen in these families. Children with Down syndrome tend to have easier child temperaments, fewer behavioral problems, and more adaptive behavior compared to other children with development delays (Stoneman, 2007; Eisenhower, Baker, & Blacher, 2005; Blacher & McIntyre, 2006). Although it is important to note that due to comparison groups for the "Down syndrome advantage" other researchers suggest the results may in fact reflect an "Autism disadvantage" (Stoneman, 2007; Hodapp, Ricci, Ly, & Fidler, 2003) or that maternal age and socioeconomic factors contribute to the advantage (Corrice & Glidden, 2009).

Parenting children with Down syndrome is also different than other disabilities because of the genetics involved. Parents and siblings have fewer symptoms in common with the child

with Down syndrome (Patterson & Costa, 2005). Finally, parenting self-efficacy may be positively affected by the amount of social support available to parents of children with Down syndrome. There are strong community groups as well as sympathy and concern from neighbors. While parents of children with fewer obvious physical symptoms of a disability are often blamed for their children's difficult behavior, parents of children with Down syndrome elicit more understanding and patience in the community (Howlin, 1998). Also Down syndrome is typically identified at or even before birth. Other disorders are frequently identified after years of "failed" parenting of a difficult child (Rodrigue, Geffken, & Morgan, 1990). Although parenting a child with Down syndrome is very challenging for the intensity and pervasiveness of the disorder, parents may still have other protective factors that will help them develop higher parenting self-efficacy.

Parenting Children with Emotional or Behavioral Disorders

Children with emotional and behavioral disabilities, such as: depressive disorders, anxiety, bipolar disorders, or ADHD, present parents with difficult situations that challenge parents and may have a negative impact on their parenting self-efficacy. Children with emotional and behavioral disorder diagnoses often have difficulty with mood regulation, self-soothing behavior, and frustration tolerance (American Psychological Association, 2000). They may be impulsive and resistant to parenting interventions. They may have more frequent tantrums, be disrespectful to their parents, or struggle with aggressive behavior (Barkley, 2000). Emotional outbursts, disrespect, and aggression can increase parents' stress and frustration. Children with emotional or behavioral disabilities may present their parents with difficult situations where parents are more likely to experience failure. Many children with emotional and behavioral difficulties are perceived early on as having difficult child temperaments and can

negatively affect attachment and the parent–child bond early in development (Renken et al,1989; Erickson, Sroufe, & Egeland, 1985; O'Connor, 2012). As with other disabilities, parents and siblings may have similar issues due to heredity. For example, Clarke et al (2001) found that children were six times more likely to have an affective disorder if raised by a parent with depression. If parents also have their own emotional difficulties and have more than one child that is difficult to parent, this can further exacerbate problems at home and with parenting self-efficacy.

Parenting Self-Efficacy and ASD: Mixed Results

Parenting self-efficacy has been found to be an important construct for both parent and child well-being and has been identified as a possible predictor of change in child psychotherapy. Theories describing the development of parenting self-efficacy suggest that parents who have children with disabilities would be at risk for lower parenting self-efficacy and thus poorer treatment outcomes. Parents of children with ASD may be at particular risk of low parenting self-efficacy due to unique characteristics of the disorder. However, there have been inconsistent and confusing results for parenting self-efficacy in families with a child with ASD.

The following list of studies gives examples of some of the inconsistencies. Hastings and Brown (2002) found that in families with children diagnosed with ASD, parenting self-efficacy mediates the effect of problem child behavior on anxiety and depression in mothers and anxiety in fathers. However, Fields (2006) did not find a relationship between depression and parenting self-efficacy in parents of children with ASD. While Rodrigue, Geffken, Clark, Hunt, and Fishel (1994) found a relationship between lower parenting self-efficacy and negative child behavior. Bondy and Mash (1999) and Scheel and Reickmann (1998) found that parenting self-efficacy mediates problem child behavior and poor parent outcomes. However, Palafox (2004) found that

the severity of symptoms for ASD was *not* related to parents reported parenting self-efficacy. While Rodrigue, Morgan, and Geffken (1990) found that parenting self-efficacy was lower for parents of children with ASD than for Down syndrome. Belchic (1996) found that there was no difference for parenting self-efficacy between parents of children with ASD or parents of children with Down syndrome. Rutgers et al. (2007) was also unable to show a difference in parenting self-efficacy for parents of children with ASD compared to parents of children with intellectual disability, learning disability, or community sample. While, Meirsschaut et al. (2010) found that mothers of a child with ASD and a younger typically developing child felt more parenting self-efficacy towards their younger child(ren) without an ASD diagnosis. Fields (2006) did not find a significant difference in parents reported parenting self-efficacy for their children with or without a diagnosis of ASD. In fact, some parents in her study reported feeling more effective when parenting their child *with* ASD than their children without an ASD diagnosis.

Limitations of Past Research

While the theory of parenting self-efficacy suggests that parents of children with ASD should be at risk for lower parenting self-efficacy, the research has not always supported this theory. Some previous studies have had difficulty finding a relationship with child ASD diagnosis and lower parenting self-efficacy because they have not compared parents to other parents with typically developing children (Fields, 2006). Other researchers had null findings, possibly due to small sample size (Fields, 2006; Meirsschaut, Roeyers, and Warreyn, 2010; Rutgers et al., 2007). Some researchers questioned the ability of the questionnaires used to appropriately measure parenting self-efficacy in parents of children with ASD (Fields, 2006, Palafox, 2004). Palafox (2004) also suggested that the truncated range of symptom severity in

their study made it impossible to detect differences in parenting self-efficacy. Rutgers et al. (2007) suggested that their null finding may be due to the age of the children assessed (27-32 months), and that early assessment may not reflect how long term parenting stress could negatively impact parenting self-efficacy. Fields (2006) recommended the use of a community sample as a comparison group to explore if parents of children with a child with ASD may report *higher* than average parenting self-efficacy. Previous research has had mixed findings regarding the effect of problem child behavior. Some researchers may have had null findings between parenting self-efficacy and child diagnosis due to an interaction between parenting self-efficacy and other related variables.

Study Aims

The aim of this study was to help clarify some of the discrepancies in previous research regarding the effect of an ASD diagnosis on parenting self-efficacy by addressing these limitations. This study recruited a larger sample than used in previous research to increase statistical power, used more comparison groups, and used appropriate scales to evaluate parenting self-efficacy, parent distress, and child symptom behavior. The goal was that by addressing weaknesses in previous studies would lead to better understanding of parenting self-efficacy in parents of children with ASD. If parents of children with ASD have lower than average parenting self-efficacy, this may place them at higher risk for treatment failure, child behavior problems, and parent distress. It would be useful to know if parenting self-efficacy should be monitored in parents with a child with ASD in particular. If parents with a child with ASD are at higher risk for difficulty with parenting self-efficacy, parenting self-efficacy could be an important point of intervention in treatment of ASD.

The current study used larger samples of parents with children from birth to age 19 with several comparison groups rather than just comparing ASD to Down syndrome, intellectual disability, or a community sample. Comparison groups included: ASD, Down syndrome, comorbid ASD and Down syndrome, emotional and behavioral disorders, and a non-clinical community sample. The current study used a scale for parenting self-efficacy that is sensitive with good validity. Child symptom severity as well as problem child behavior will be compared to parenting self-efficacy. Parent distress and social support were examined as a potential correlates with parenting self-efficacy.

The primary purpose of this study was to examine parenting self-efficacy in parents of children with ASD relative to other parents. Five different groups were used for comparison: parents of children with ASD, parents of children with Down syndrome, parents of children with both Down syndrome and ASD, parents with children with emotional and behavioral disorders, and parents of children from the community without identified disorders. The second purpose of the study was to compare levels of parenting self-efficacy across disorders in relation to other factors: child symptom severity, parent psychological distress, social support, and demographics. The third purpose of the study was to examine the interaction with parenting self-efficacy, parent distress, and child symptom severity to look for possible intervening or confounding variables that could help explain some of the previous mixed results.

Hypotheses

The study hypotheses were as follows: 1a) Parents of children with ASD will have lower rates of parenting self-efficacy compared to parents of children with Down syndrome, emotional and behavioral disorders, or community norms. 1b) Parents of children with Down syndrome will have lower parenting self-efficacy than community norms. 1c) Parents of children with

emotional and behavioral disorders will have lower parenting self-efficacy than community norms. As the data were collected, many parents reported that their children had both Down syndrome and ASD so another hypothesis was added: 1d) parents of children with ASD and Down syndrome will have lower parenting self-efficacy than the Down syndrome group, ASD group, or community group. 2a) Parents of children with more severe symptoms, specifically problem child behavior, will have lower rates of parenting self-efficacy across disorders. 2b) Parents with higher levels of current psychological distress will have lower reported parenting self-efficacy across disorders. 3) Parenting self-efficacy will play a mediating role between problem child behavior and parents current psychological distress.

Method

Participants

There were 598 total participants. Participants (Table 1) were categorized in five different groups: parents of children with autism spectrum disorders (ASD, *n* = 58), parents of children with Down syndrome (DS, *n* = 24), parents of children with both ASD and Down syndrome (ASDDS, *n* = 40), parents of children with emotional or behavioral disorders (EB, *n* = 287), and parents of children from the community (CM, *n* = 189). The primary diagnoses of children included in the EB group were: adjustment disorders (24%); trauma, abuse, or neglect (15%); anxiety disorders (14%); ADHD (14%); mood and bipolar disorders (10%), conduct or oppositional defiant disorder (10%); depressive disorders (9%); and obsessive-compulsive disorder (2%). The remaining (2%) of children received a primary diagnosis of parent-child relational problems, reactive attachment disorder, or pyromania. There was a high rate of comorbidity with 74% of the EB group participants having multiple diagnoses. Parents identified their ethnicity as: 84.9% Caucasian, 4.7% African American, 3.9% American Indian,

Table 1

Parent Demographics

		ASD		ASDDS		DS		EB		CM		Total	
		n	%	N	%	n	%	n	%	n	%	n	%
Sex	Male	1	1.7	1	2.6	1	4.2	24	9.7	24	13.0	51	9.2
	Female	59	98.3	38	97.4	23	95.8	224	90.3	161	87.0	505	90.8
Ethnicity	Caucasian	56	93.3	35	92.1	20	83.3	222	78.4	169	90.9	502	84.9
	African American							23	8.1	5	2.7	28	4.7
	Native American					1	4.2	17	6.0	5	2.7	23	3.9
	Pacific Islander					1	4.2	10	3.5	3	1.6	14	2.4
	Hispanic	3	5.0			1	4.2	5	1.8	2	1.1	11	1.9
	Asian			2	5.3			3	1.1			5	.8
	Mixed	1	1.7	1	2.6			3	1.1	2	1.1	7	1.2
	Other					1	4.2					1	.2
Annual Income	Rather not say	5	8.5	3	7.7			119	41.3			127	30.7
	Under $10,000	2	3.4	2	5.1	2	8.3	100	34.7			106	25.7
	$10,000 - 19,999	3	5.1	3	7.7	1	4.2	40	13.9			47	11.4
	$20,000 - 29,999	2	3.4	5	12.8	3	12.5	12	4.2			22	5.3
	$30,000 - 39,999	7	11.9	3	7.7	2	8.3	7	2.4			19	4.6
	$40,000 - 49,999	6	10.2	8	20.5	7	29.2	7	2.4			28	6.8
	$50,000 - 74,999	15	25.4	7	17.9	2	8.3	1	.3			25	6.1
	$75,000 - 99,999	13	22.0	6	15.4	6	25.0	1	.3			26	6.3
	$100,000 - 149,999	6	10.2	2	5.1	1	4.2	1	.3			10	2.4
	Over $150,000			3	7.7							3	.7

Note. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group, and Total = totals across groups.

2.4%, Pacific Islander, 1.9% Hispanic, 1.2% mixed ethnicity, 0.8% Asian, and 0.2% other. Parent participants were 90.2% female and 9.8% male. Participants from the ASD, ASDDS, and DS groups lived in higher income households (75.2% above $30,000 annually) than those in the EB group (94.1% below $30,000 annually). More detailed demographic data was collected from the ASD, ASDDS, and DS groups regarding: marital status, education, employment, occupation, number of children at home, number of children with diagnoses at home, age of child symptom onset, and age of diagnosis (Table 2).

Table 2

Child Age Differences Across Groups

	Group	Range			*m*	*sd*	*n*
Child Age	ASD	3	To	20	10.31	4.99	58
	ASDDS	6 mo	To	19	7.00	4.92	39
	DS	1 mo	To	19	5.32	5.53	24
	EB	4	To	18	9.83	3.97	287
	CM	3	To	17	11.45	3.84	189
Age Symptom Onset	ASD	18 mo	To	11	2.39	2.08	58
	ASDDS	birth	To	1	.21	.25	39
	DS	in utero	To	birth	--	--	24
Age Diagnosed	ASD	18 mo	To	17	5.24	3.79	58
	ASDDS	birth	To	8	.69	.78	39
	DS	in utero	To	birth	--	--	24

Note. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group, mo = months. Age in years unless otherwise specified.

There were notable demographic differences between the ASD and DS groups regarding child age at onset of symptoms and age at time of diagnosis. Children in the DS group were significantly younger across the all age categories with most children diagnosed at birth or within the first few months. Children in the ASD group were diagnosed on average at around age 5 (*m*

= 5.24, *sd* = 3.79) with symptoms of a developmental delay first noticeable around age 2 (*m* = 2.39, *sd* = 2.08).

Measures

Treatment Support Measure. Parenting self-efficacy, parenting skills, parent distress, and social support were measured using the Treatment Support Measure (TSM; Warren & Lambert, 2012). The TSM was designed for the primary caregivers of children and adolescents as a clinical support tool. The TSM was developed to be particularly useful for improving child psychotherapy outcomes through monitoring important parent variables related to treatment deterioration. The TSM has subscales for parenting self-efficacy, social support, parenting skills, parent distress, and therapeutic alliance. The TSM subscale for therapeutic alliance was not included in the current study. The TSM uses a five point Likert scale rating each item from 1 (strongly disagree) to 5 (strongly agree). Items are scored within subscales so that higher scores indicate more positive attributes like higher parenting self-efficacy and lower distress. The TSM had good reliability across the four subscales (α = .80 to .90).

Outcome Questionnaire. The Outcome Questionnaire (OQ-45.2) was also used to assess parents' current level of psychological distress in the ASD,DS, ASDDS groups. The OQ-45.2 is a norm-referenced, 45-item self-report instrument used to assess the severity of parents' own psychopathology and distress. Specifically, the OQ-45.2 is designed to assess three domains of functioning: symptoms of psychological disturbance (particularly anxiety and depression), interpersonal problems (conflict with others or family problems), and social role functioning (work satisfaction or feeling competent; Lambert, Gregersen, & Burlingame, 2004). It consists of a total score and three subscale scores and may be used with a wide range of adults, ages 17-80. The OQ-45.2 may be used for a number of different purposes, including to screen

clients, assist in making initial treatment decisions and recommendations, and monitor overall client progress. Higher scores indicate more distress. Clinical cutoffs indicating symptoms of clinical significance are 36 for the symptom distress score, 15 for interpersonal relations, 12 for social role, and 63 for the total score. Total administration time typically ranges from 3 to 15 minutes, with most clients completing it in 5 minutes. It uses a 0 (never) to 4 (almost always) five point Likert scale (Lambert, Gregerson, & Burlingame, 2004). Estimates of internal consistency ranged from .70 to .93 (Mueller, Lambert, & Burlingame, 1998). Test-retest reliability estimates over a 3-week period ranged from .78 to .84. Standard error of measurement (SEM), a common method of estimating the reliability of a given respondent's test score, is reported to be .93 (Lambert et al, 1996). The OQ-45.2 was used in the current study to give a broader range of symptoms of parent distress and psychopathology and to strengthen the use of the TSM parent distress subscale (TSM PD). Correlations between the OQ-45.2 total score and TSM PD in the current study were high (Table 3, $r = -.70$, $p < .01$). This suggests that the TSM PD has good concurrent validity with the OQ-45.2 and the TSM PD gives a good brief estimate of parents' psychological and emotional distress and allows for comparisons across all of the groups.

Table 3

TSM Parent Distress and OQ-45.2 Concurrent Validity

Scale		OQ tot	OQ sd	OQ sr	OQ ir
TSM PD	*r*	-.70	-.68	-.58	-.60
	p	<.01**	<.01**	<.01**	<.01**

Note. **Correlation is significant at the 0.01 level (2-tailed). $n = 114$. OQ tot = OQ-45 total score. OQ sd = OQ-45 symptom distress. OQ sr = OQ-45 social role. OQ ir = OQ-45 interpersonal relations.

Youth Outcome Questionnaire. The Youth Outcome Questionnaire (Y-OQ; Burlingame et al., 1996) was one measurement of child symptom severity. The Y-OQ is a parent-report measure of child symptom severity and treatment progress for children and adolescents (ages 4-17) that assesses the occurrence of observed behavior change (Burlingame, Wells, Lambert, & Cox, 2004). The Y-OQ is a 64-item questionnaire that includes six separate subscales to tap several behavioral domains of children and adolescents experiencing behavioral difficulties. In addition, some items are reverse-scored to describe elements of adaptive behavior. The Y-OQ uses a five-point Likert scale and is designed to be administered at intake to establish a severity baseline and can be used on a session-by-session basis to track the child's progress (Burlingame et al., 2001).

Burlingame et al. (2001) reported high internal consistency for the Y-OQ total score (r = .97) across four samples consisting of elementary school students (N = 423), a community normative sample (N = 681), outpatient N = 342) and inpatient (N = 174) and a clinical normative sample (N = 490). Test-retest reliability scores are also above .70, indicating moderately high temporal stability. High correlations exist between the Y-OQ total and subscale scores, and other frequently used assessment instruments (Wells, Burlingame, Hoag, Hope, & Lambert, 1996) such as the Child Behavior Checklist (Achenbach, 1991).

Developmental Behavior Checklist. The 24-item Parent Report version of the Developmental Behavior Checklist (DBC-24; Einfeld & Tonge, 1995) was used as another measure of child symptom severity for the ASD and Down syndrome groups. This measure is intended to be sensitive to symptoms related to pervasive developmental issues such as autism spectrum disorders and Down syndrome. The DBC-24 was developed as a parent-report tool for assessing behavioral and emotional functioning of individuals with intellectual disability, aged 4

to 18. It has 96 items based on a 3 point Likert scale (0-not true as far as the informant knows, 1-somewhat or sometimes true, and 2-very true or often true). The parent report takes approximately 5 minutes to complete.

The DBC-24 shows good psychometric properties (Einfeld & Tonge, 1992, 2002). The internal consistency reliability for the total score is excellent (.94) and moderate to excellent (.73 to .91) for the subscales, with the exception of the slightly lower reliability in the Anxiety domain (.67). The test-retest reliability coefficients for parents good (.80). Concurrent validity with Adaptive Behavior Scales: Maladaptive Behavior section (ABS; Nihira, Foster, Shellhaas, & Leland, 1975) and Scales of Independent Behavior: Problem Behavior Section (SIB; Bruininks et al., 1984) were .86 and .70 respectively. Concurrent validity with clinician ratings were also good (.81) and the area under the Receiver Operating Characteristics (ROC) curve was 0.92, suggesting good sensitivity and specificity for detecting caseness and non-caseness. Overall, the DBC-24 has excellent psychometric properties and is appropriate for use with parents of children with developmental delays.

In the current study, the DBC-24 was compared to the Y-OQ total and subscale scores to evaluate how well the Y-OQ evaluates symptom severity for developmental disorders and to evaluate if certain subscales have higher levels of correlation with the DBC-24 than others. All scales on the Y-OQ correlate to the DBC-24 (Table 4) with the highest correlations between DBC-24 and Y-OQ behavior problems subscale ($r = -.70$, $p < .01$) and Y-OQ total score ($r = -.67$, $p < .01$). This shows the DBC-24 has good concurrent validity with the Y-OQ. The Y-OQ shows the sensitivity to problem behavior in children with developmental disability and also has other subscales for social skills, interpersonal relationships, and psychological distress that can give a broader spectrum of behavior and emotional functioning than the DBC-24. Therefore, the

Y-OQ is a good instrument for the purposes of this study and allows for a comparison of child symptom severity across the different groups.

Table 4

Concurrent Validity of Y-OQ and DBC-24

Scale		YOQ tot	YOQ ip	YOQ so	YOQ ir	YOQ bd	YOQ sp	YOQ ci
DBC-24	*r*	.67	.51	.34	.49	.70	.52	.63
	p	<.01**	<.01**	<.01**	<.01**	<.01**	<.01**	<.01**

Note. YOQ tot = Y-OQ total score, YOQ ip = Y-OQ Intrapersonal Distress, Y-OQ so = Y-OQ Somatic Symptoms, YOQ ir = Y-OQ Interpersonal Relations, YOQ bd = Y-OQ Behavior Dysfunction, YOQ sp = Y-OQ Social Problems, and YOQ ci = Y-OQ Critical Items. Correlations are 2-tailed. *n* = 92.
**Correlation is significant at the 0.01 level.

Autism Spectrum Quotient. The Autism Spectrum Quotient (AQ-10) and Quantitative Checklist for Autism in Toddlers (Q-CHAT-10) are short 10 item autism screening tools for children ages 18 months to 18 years (Allison, Auyeung, Baron-Cohen, 2012). This short screening tool was used to help identify potential overlap between the ASD and Down syndrome groups as well as add support to parents' self-identification as having a child with ASD. The AQ-10 and Q-CHAT-10 are parent report measures that take only a few minutes to complete. The Q-CHAT contains yes/no questions such as: "Does your child look at you when you call his/her name?" The AQ-10 child and adolescent versions contain statements such as: "S/he finds it hard to make new friends." These statements are evaluated on a 4-point Likert scale (definitely agree, slightly agree, slightly disagree, and definitely disagree).

At a cut-point of 6 on the AQ-10 adolescent, sensitivity was 0.93, specificity was 0.95, and positive predictive value was 0.86. At a cut-point of 6 on the AQ-10 child, sensitivity was 0.95, specificity was 0.97, and positive predictive value was 0.94. At a cut-point of 3 on the Q-CHAT-10, sensitivity was 0.91, specificity was 0.89, and positive predictive value was 0.58.

The internal consistency was 0.85 for all measures. The AQ-10 and Q-CHAT-10 were selected due to their good psychometric properties and ease of use.

Procedures

This study utilized a cross sectional design that examined levels of parenting self-efficacy across five different groups. It is related to a larger series of research projects examining how a number of parent and youth variables are related to child psychotherapy outcomes in community mental health (Warren et al, 2011). The researcher received approval to conduct the study with human participants from the Brigham Young University Institutional Review Board.

Parents and primary caregivers of children with ASD and Down syndrome were recruited via email, on-line requests through disorder-specific community support groups, and verbal announcements at support group meetings. Parent support groups including the Utah Down Syndrome Foundation, the United Angels Foundation, the Utah Autism Coalition, and the Utah Parent Center were contacted and asked to include a research announcement in their weekly and monthly emails to parents regarding upcoming events, conferences, legislation, and research. One group (Dads Appreciating Down Syndrome) invited the researcher to attend a chapter meeting to distribute announcements and directly invite group members to participate. Only two parents or primary caregivers per household were invited to participate. Participants who did not complete the questionnaire for PSE were excluded from final analyses. Parents of children who did not have a child with ASD, Down syndrome, or both ASD and Down syndrome were excluded. Parents were also excluded if their child with ASD, DS, or ASD and DS was older than 20. During the initial round of recruitment, parents who completed the survey were offered the chance to enter a drawing for $50. However, early response rates were fairly low (53

responses over 3 months). Therefore, the incentive was changed with Institutional Review Board approval to $15 per participant and 92 more parents participated over 3 weeks.

Parents were categorized into the three diagnostic groups based on parent-reported diagnoses and symptoms of ASD. The AQ-10 and Q-CHAT-10 were used to help categorize the three ASD, Down syndrome, and Down syndrome with ASD groups. Parents who reported that their child had Down syndrome and had scores at or above the AQ-10 and Q-CHAT cutoffs were assigned to the ASDDS (Down syndrome with ASD) group. Parents who reported that their child had an ASD diagnosis and had scores at or above the AQ-10 and Q-CHAT cutoffs were assigned to the ASD group. Parents who reported that their child had a Down syndrome diagnosis and had scores two or more points below the AQ-10 and Q-CHAT cutoffs were assigned to the DS group. Parents who reported that their child had ASD but had scores one point below the AQ-10 or Q-CHAT cutoffs were initially placed in a pervasive developmental delay (pdd) or Down syndrome with developmental delay (DSpdd) group. However, the pdd group (N=9) was merged with the ASD group and the DSpdd (N= 9) group was merged with ASDDS due to similar mean scores on parenting self-efficacy and parent distress. Tukey's HSD was used to determine which groups to merge based on PSE and parent distress group differences (Table 5). The groups that had the least amount of differences in PSE or parent distress were combined. ANOVA confirmed that merging the groups did not interfere with obtaining significant results for between group differences on all of the TSM subscales (Table 6).

Archival data from Warren et al. (2011) were used for the parents and primary caregivers of children with emotional and behavioral diagnoses. This previous study recruited parents through a community-based mental health clinic in the Intermountain West. Data were collected from parents before or during their child's scheduled psychotherapy sessions at the mental health

Table 5

Tukey HSD of TSM PSE and TSM PD for pdd and DSpdd groups

Dependent Variable: TSM PSE					95% Confidence Interval	
(I) group	(J) group	(I-J) Mean Difference	Std. Error	*p*	Lower Bound	Upper Bound
DSpdd	ASD	3.44	1.436	.202	-.81	7.69
	ASDDS	2.37	1.512	.703	-2.10	6.84
	DS	.07	1.544	1.000	-4.50	4.64
	EB	1.93	1.351	.786	-2.07	5.93
	pdd	3.11	1.882	.648	-2.46	8.68
	CM	.50	1.362	1.000	-3.53	4.53
pdd	ASD	.33	1.436	1.000	-3.92	4.57
	ASDDS	-.74	1.512	.999	-5.21	3.73
	DS	-3.04	1.544	.436	-7.61	1.53
	DSpdd	-3.11	1.882	.648	-8.68	2.46
	EB	-1.18	1.351	.976	-5.18	2.82
	CM	-2.61	1.362	.471	-6.64	1.42
Dependent Variable: TSM_PD						
DSpdd	ASD	3.16	2.43	.85	-4.05	10.37
	ASDDS	1.75	2.56	.99	-5.85	9.34
	DS	-4.53	2.62	.59	-12.29	3.23
	EB	-1.04	2.29	.99	-7.83	5.75
	pdd	4.00	3.19	.87	-5.45	13.45
	CM	-6.59	2.31	.06	-13.43	.26
pdd	ASD	-.84	2.43	1.00	-8.05	6.37
	ASDDS	-2.25	2.56	.97	-9.85	5.34
	DS	-8.53*	2.62	.02	-16.29	-.77
	DSpdd	-4.00	3.19	.87	-13.45	5.45
	EB	-5.04	2.29	.29	-11.83	1.75
	CM	-10.59*	2.31	.00	-17.43	-3.74

Note: Mean Square (Error) = 45.95. *The mean difference is significant at the .05 level. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group, DSpdd = Down syndrome with autism symptoms below cutoffs, pdd = autism symptoms below cutoffs.

Table 6

Diagnostic Group Effects on TSM Subscales in ANOVA after Merging Groups

Dependant Variable	*df*	*F*	*p*	Adjusted R^2	Effect Size f^2	Observed Power α = .05
PSE	4, 593	9.10	<.01**	.05	.06	.99
PD	4, 593	44.74	<.01**	.23	.30	1.00
SS	4, 593	11.01	<.01**	.06	.07	1.00
PS	4, 593	17.58	<.01**	.10	.12	1.00

Note: PSE = parenting self-efficacy. PD = parent distress. SS = social skills. PS = parenting skills. **Significant at the $p = .01$ level. f^2 = Cohen's standardized effect size for regression.

clinic where they were seeking services. This data included information about PSE, parenting skills, parent social support and parent distress (TSM); child symptom severity (Y-OQ); child diagnoses, and demographics. The original sample for the study included parents or primary caretakers seeking treatment for their child aged 4 to 17 due to emotional and behavioral concerns. Clinicians interviewed and diagnosed up to four disorders. Parents of children who received a diagnosis of autism, a pervasive developmental disorder, or Asperger's syndrome were not included in the analyses of the current study. Participants who did not complete the measure for PSE (TSM) were also excluded.

Data for the community sample was also archival (Warren & Lambert, 2012). Participants for the community sample were contacted by phone using a random sample of phone numbers from phone books of cities within 30 miles of the community mental health clinic. These parents were invited to complete the TSM survey regarding PSE, social support, parent distress, parenting skills, and also demographic information. Survey packets were sent to them and they were given incentives after returning the completed surveys. Participants who did not complete the measure for PSE on the TSM were excluded.

The TSM was the only measure used across all five groups to assess PSE, social support, parenting skills, and parent distress. Parents from the ASD, Down syndrome, and emotional behavioral disorder groups were invited to complete the Y-OQ regarding child symptom severity. However, many did not complete this measure and were excluded from analyses that required the Y-OQ (n = 318). The OQ-45.2 (n = 114) and the DBC-24 (n = 116) were administered only to the ASD, ASD with Down syndrome, and Down syndrome groups to gather more information regarding parent and child symptom severity. Data entry errors and missing data on the TSM were estimated using a process in SPSS to estimate substitutes. There were 34 total estimates for missing items (31 missing, 3 data entry errors) across the 598 participants who completed the TSM. These estimates were used due to the statistical program AMOS requirement for no missing data in structural equation modeling.

Results

Preliminary Analyses

ANOVA was used to evaluate the impact of categorical demographic variables (i.e., parent's sex, parent's education, household income) on PSE (Table 7). Pearson's correlations were used to look for correlations between PSE and continuous variables (i.e., child age, age of symptom onset, age of diagnosis; Table 8). ANOVA and ANCOVA were used to follow up on whether or not significant correlations between PSE and continuous variables were potential confounds and accounted for more or all of the variance in PSE attributed to diagnostic group. Significant relationships with PSE were found for the child's age: current age (r = -.19, p < .01), age of onset of symptoms (r = -.19, p = .05), and age of diagnosis (r = -.23 , p = .02). Parents reported lower PSE if their children were older, presented symptoms later, or were diagnosed later. Note that only parents with children with ASD or Down syndrome were asked about age

Table 7

PSE Differences Across Dichotomous Demographic Variables

Dichotomous Variable	*df*	*F*	*p*	Adjusted R^2	Effect Size f^2	Observed Power α = .05	Groups
Parent Sex	1, 305	4.00	.05	.01	.01	.51	ASD, DS, ASDDS,EB
Relation to Child	6, 467	1.78	.10	.02	.02	.67	EB, CM
Parent Ethnicity	7, 529	.80	.58	.01	.01	.35	ALL
Parent Primary Language	1,131	.28	.60	<.01	<.01	.08	ASD, DS, ASDDS
Parent Age Category	4,122	.02	.99	<.01	<.01	.05	ASD, DS, ASDDS
Education	7,124	1.65	.13	.09	.10	.66	ASD, DS, ASDDS
Income Category	1, 357	.59	.81	.02	.02	.29	ASD, DS, ASDDS, EB
Occupation	7, 125	.43	.88	.02	.02	.18	ASD, DS, ASDDS
Employment Status	5, 127	.66	.65	.03	.03	.24	ASD, DS, ASDDS
Marital Status	3, 129	.53	.66	.12	.14	.16	ASD, DS, ASDDS
Child Sex	1, 287	<.01	.97	< .01	< .01	.05	EB
Child Ethnicity	6, 459	.47	.83	< .01	< .01	.19	ASD, DS, ASDDS, EB
Comorbid disorders	1, 131	.95	.33	< .01	< .01	.16	ASD, DS, ASDDS
Number children at home	6, 126	1.50	.18	.07	.07	.56	ASD, DS, ASDDS
Other children with diagnoses	1, 131	2.29	.13	.10	.20	.32	ASD, DS, ASDDS

Note. *Significant at .05 level. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group.

of onset and diagnosis. Also note that the average age of children was significantly lower for the Down syndrome group (m = 5.31, sd = 5.54) than the ASD (m = 9.95, sd = 4.55), emotional and behavioral disorder (m = 10.03, sd = 4.00), and community groups (m = 11.45, sd = 3.84). The mean differences for child age between the Down syndrome group and ASD was statistically significant using Tukey HSD (mean difference = 4.64, se = 1.00, CI = 1.90 to 7.38). Pearson's correlations found a significant relationship between PSE and TSM subscale for social support (r = $p < .01$) and between PSE and the TSM subscale for parenting skills (r = .57, p < .01). Low social support was related to low parenting self-efficacy and low parenting skills were related to low parenting self-efficacy.

Table 8

PSE Correlations with Continuous Demographic Variables

Continuous Variable	*r*	*p*	*n*	r^2	Groups
Annual Income	-.13*	.04	236	.02	EB
Number of children at home	< .01	.98	133	< .01	ASD, DS, ASDDS
Age of Child	-.11**	<.01	597	.01	ALL
Age of symptom onset	-.19*	.05	112	.04	ASD, DS, ASDDS
Age of diagnosis	-.23*	.02	112	.05	ASD, DS, ASDDS

Note: ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group.
*significant at .05 level **significant at .01 level.

Hypotheses Testing

General linear modeling in SPSS 22 was used to run ANOVA to compare PSE means across all five groups. The effect of diagnostic group on PSE was found to be significant, $F(4,593) = 9.10$, $p < .01$. Table 9 lists the average scores each group of parents had on the TSM

subscales. Tukey's HSD was used to run pairwise comparisons of the different group means for group differences in PSE (Table 10).

Table 9

Group TSM Subscale Average Scores

		PSE		PD		SS		PS	
Group	*n*	*m*	*sd*	*m*	*sd*	*m*	*sd*	*m*	*sd*
ASD	57	29.49	3.44	28.58	7.22	25.47	7.32	45.33	6.93
ASDDS	41	31.34	3.48	30.34	7.53	27.56	6.76	49.54	5.42
DS	24	33.21	3.32	35.58	8.37	29.00	6.33	51.33	5.90
EB	287	31.11	4.65	32.71	6.76	28.02	6.99	46.00	6.72
CM	189	32.60	3.06	39.53	6.70	30.97	4.65	50.17	5.52

Note. PSE = Parenting Self-Efficacy. PD = Parent Distress. SS = Social Support. PS = Parenting Skills. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group.

ANOVA results had a moderate effect size of Cohens $f^2 = .06$ and had an adjusted R^2 value of .05, indicating that 5% of the variance in PSE scores for this study is related to the diagnosis of the child. Tukey's HSD found that parents of children with ASD had the lowest scores of PSE ($m = 29.49$, $sd = 3.44$) and that these were significantly lower than the community scores (mean difference = -3.11, $se = .60$, $p < .01$, 95% CI = -4.75, -1.47), the scores of parents of children with Down syndrome (mean difference = -3.72, $se = .97$, $p < .01$, 95% CI = -6.36, -1.08), and the scores of parents of children with emotional or behavioral disorder diagnoses (mean difference = -1.62, $se = .58$, $p = .04$, 95% CI = -3.19, -.04). Although the data collected did not yield enough statistical power to detect statistically significant differences between PSE scores for the ASD and ASDDS groups, the mean difference between these groups is in the expected direction with the ASD group having lower PSE scores than the ASDDS group. Also, the observed difference of 1.85 points is actually larger than the difference between the ASD and

Table 10

Group differences for TSM PSE using Tukey's HSD

					95% Confidence Interval	
(I) group	(J) group	Mean Difference (I-J)	Std. Error	*p*	Lower Limit	Upper Limit
ASD	ASDDS	-1.85	.81	.15	-4.07	.37
	DS	-3.72	.97	<.01**	-6.36	-1.08
	EB	-1.62	.58	.04*	-3.19	-.04
	CM	-3.11	.60	<.01**	-4.75	-1.47
ASDDS	ASD	1.85	.81	.15	-.37	4.07
	DS	-1.87	1.02	.36	-4.52	.92
	EB	.23	.66	1.00	-1.75	2.05
	CM	-1.26	.68	.35	-3.24	.61
DS	ASD	3.72	.97	<.01**	1.08	6.36
	ASDDS	1.87	1.02	.36	-.92	4.66
	EB	2.10	.84	.09	-.21	4.41
	CM	.61	.86	.95	-1.74	2.96
EB	ASD	1.62	.58	.04*	.04	3.19
	ASDDS	-.23	.66	1.00	-2.05	1.58
	DS	-2.10	.84	.09	-4.41	.21
	CM	-1.49	.37	<.01**	-2.51	-.47
CM	ASD	3.11	.60	<.01**	1.47	4.75
	ASDDS	1.26	.68	.35	-.61	3.13
	DS	-.61	.86	.95	-2.96	1.74
	EB	1.49	.37	<.01**	.47	2.51

Note: The error term is Mean Square (Error) = 15.95. **The mean difference is significant at the .01 level. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group.

EB groups of 1.62 points. This suggests that even small differences would be statistically significant if a larger sample was collected. The mean difference between the community sample and the parents of children with emotional and behavioral diagnoses was also significant with the EB group having lower scores than the community (mean difference = 1.49, *se*, = .37, $p < .01$, 95% CI = .47 to 2.51).

It was hypothesized that parents of children with more severe symptoms, specifically problem child behavior (such as aggression or defiance), would have lower rates of parenting self-efficacy across disorders. Pearson's correlations run in SPSS found significant correlations between child behavior as measured by the Y-OQ and DBC-24 and PSE as measured by the TSM. Significant correlations were found across all subscales of the Y-OQ and the DBC-24 (Table 4). In order to determine whether or not child behavior was a potential confound for the relationship between diagnostic group and PSE scores, between group differences were analyzed. Children with different diagnoses showed significant variance in their symptom severity. Children with ASD had the highest Y-OQ and DBC scores while children with DS had the lowest scores (Table 11).

ANCOVA was used to evaluate the relationship between PSE and problem behavior across diagnostic groups using Y-OQ subscales as covariates with diagnostic group as the fixed factor to evaluate if the variance in PSE attributed to diagnostic group was better explained by symptom severity. Three of the Y-OQ subscales (behavior dysfunction, critical items, and intrapersonal distress) and the Y-OQ total score showed significant effects on PSE while the main effect of diagnostic group on PSE was no longer statistically significant (Table 12). The main effect on PSE by the other three subscales of the Y-OQ (social problems, somatic, and interpersonal relations) did not eliminate the significance of the main effect of group on PSE

scores. It is important to note that only a small number of participants in the DS group completed the Y-OQ (n = 9) and this contributed to small statistical power to detect significance.

Table 11

Child Symptom Severity Averages by Group

	ASD			ASDDS			DS			EB		
	m	*sd*	*n*	*m*	*sd*	*n*	*m*	*sd*	*n*	*m*	*sd*	*n*
YOQ ip	26.49	11.30	51	12.47	11.88	30	3.22	4.47	9	23.78	11.71	228
YOQ so	8.04	5.91	51	7.13	3.93	30	5.11	2.93	9	6.78	4.65	228
YOQ ir	8.00	6.25	51	5.27	6.40	30	.44	2.74	9	8.46	7.10	228
YOQ sp	3.73	2.82	51	3.93	3.11	30	1.56	2.30	9	5.10	4.93	228
YOQ bd	21.47	8.71	51	18.17	8.16	30	7.00	6.78	9	17.40	9.29	228
YOQ ci	7.47	4.02	51	4.17	3.88	30	1.44	1.33	9	7.71	4.57	228
YOQ tot	75.04	30.44	51	53.57	31.13	30	18.89	15.16	9	68.22	33.91	228
DBC	19.96	6.82	56	14.71	8.52	41	12.53	8.21	19			

Note. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group. YOQ tot = Y-OQ total score, YOQ ip = Y-OQ Intrapersonal Distress, Y-OQ so = Y-OQ Somatic Symptoms, YOQ ir = Y-OQ Interpersonal Relations, YOQ bd = Y-OQ Behavior Dysfunction, YOQ sp = Y-OQ Social Problems, and YOQ ci = Y-OQ Critical Items.

When the DS group was removed from the analysis, ANCOVA showed significant main effects for the other diagnostic groups (ASD, ASDDS, and EB) and all of the Y-OQ scales. Therefore, it is assumed that the failure to find main effects for diagnostic group on PSE when accounting for child symptom severity was due to the small sample in the DS group. No interactions between diagnostic group and the Y-OQ subscales in ANCOVA showed significant effects on PSE.

ANCOVA was also used to evaluate the main effect of the DBC-24 on PSE scores while controlling for group differences. The DBC-24 and diagnostic group showed main effects on

PSE when both variables are included in the model (Table 12). Please note that more parents from the DS group completed the DBC-24 (n = 19) than completed the Y-OQ (n = 9).

Table 12

ANCOVA with PSE as DV and Diagnostic Group Fixed

Scale	Covariate					Group				
	df	*F*	*p*	η_p^2	f^2	*df*	*F*	*p*	η_p^2	f^2
YOQ-tot	1, 313	52.69	<.01**	.14	.16	3, 313	1.56	.20	.02	.02
YOQ-bd	1, 313	17.49	<.01**	.05	.05	3, 313	1.73	.16	.02	.02
YOQ-ci	1, 313	39.12	<.01**	.11	.12	3, 313	1.96	.12	.02	.02
YOQ-ip	1, 313	41.85	<.01**	.12	.14	3, 313	1.93	.13	.02	.02
YOQ-sp	1, 313	51.20	<.01**	.14	.16	3, 313	4.63	<.01**	.04	.04
YOQ-so	1, 313	6.90	<.01**	.01	.01	3, 313	2.99	.03*	.03	.03
YOQ-ir	1, 313	12.95	<.01**	.16	.19	3, 313	5.71	<.01**	.07	.08
OQ-tot	1, 110	18.78	<.01**	.15	.18	2, 110	3.49	.03*	.06	.06
OQ-sd	1, 110	79.32	<.01**	.42	.72	2, 110	.79	.46	.01	.01
OQ-sr	1, 110	45.38	<.01**	.29	.41	2, 110	1.83	.16	.03	.03
OQ-ir	1, 110	12.95	<.01**	.11	.12	2, 110	5.71	<.01**	.09	.10
DBC-24	1, 112	5.51	.02*	.02	.02	2, 112	4.33	.02*	.02	.02

Note: YOQ tot = Y-OQ total score, YOQ ip = Y-OQ Intrapersonal Distress, Y-OQ so = Y-OQ Somatic Symptoms, YOQ ir = Y-OQ Interpersonal Relations, YOQ bd = Y-OQ Behavior Dysfunction, YOQ sp = Y-OQ Social Problems, and YOQ ci = Y-OQ Critical Items. OQ tot = OQ-45 total score. OQ sd = OQ-45 symptom distress. OQ sr = OQ-45 social role. OQ ir = OQ-45 interpersonal relations. *Significant at the p = .05 level. **Significant at the p = .01 level. f^2 = effect size for regression. η_p^2 = partial eta squared; variance accounted for in PSE.

The DBC-24 sample was large enough to detect statistical significance for the group variable. This adds further support to the assumption that the lack of statistical significance found for some of the Y-OQ subscales was due to small sample size. There were no significant interaction effects between DBC-24 and diagnostic group on PSE scores. Overall, correlations between child behavior variables and PSE supported the hypothesis that as negative child behavior increases PSE decreases. Furthermore, child behavior did not account for all of the same variation in PSE as diagnostic group in ANCOVA. This supported the hypothesis that both diagnosis and child behavior impact PSE. However, effect sizes for child behavior were larger than effect sizes for diagnostic group on PSE overall (Table 12). This may be due in part to the heterogeneity of symptom severity within some of the groups. For example, the EB group has a lot of variance in types of diagnoses, symptoms, and comorbidity, making comparisons between EB and other groups more difficult to detect. Therefore, even small differences in PSE by group could be clinically significant.

Table 13

PSE Correlations with Parent Distress

	OQ-tot	OQ-sd	OQ-sr	OQ-ip	TSM PD
Pearson *r*	-.47	-.51	-.31	-.39	.47
p	<.01**	<.01**	<.01**	<.01**	<.01**

Note: YOQ tot = Y-OQ total score, YOQ ip = Y-OQ Intrapersonal Distress, Y-OQ so = Y-OQ Somatic Symptoms, YOQ ir = Y-OQ Interpersonal Relations, YOQ bd = Y-OQ Behavior Dysfunction, YOQ sp = Y-OQ Social Problems, and YOQ ci = Y-OQ Critical Items. $n = 90$. **Significant at the $p = .01$ level.

It was hypothesized that parents with higher levels of current psychological distress would have lower reported parenting self-efficacy across disorders. SPSS was used to bivariate correlations and found significant relationships between PSE and parent distress as measured by the OQ-45 and TSM parent distress scale (TSM PD; Table 13). Low scores for PSE (low

parenting self-efficacy) were related to low scores for parent distress (more distress) for the TSM subscales. High scores on the OQ-45 (more distress) were related to low PSE scores. ANCOVA was then used to evaluate the relationship between PSE and parent distress across diagnostic groups in order to evaluate whether or not differences in parent distress accounted for the variance attributed to group differences. Two of the OQ-45 subscales (social role and interpersonal relations) and the OQ-45 total score showed significant main effects on PSE while the main effect of diagnostic group on PSE remained statistically significant (Table 12). However, the OQ-45 symptom distress scale (η_p^2 = .17) and the TSM parent distress scale (η_p^2 = .19) appear to account for the variance PSE scores attributed to group. The main effect of diagnostic group on PSE scores is no longer significant when these measures of parent distress are included in the model. It appears that some specific symptoms of parent distress may be more strongly correlated with PSE than others. When symptoms of parent distress are accounted for, diagnostic group may no longer show significant effects on PSE scores.

It was hypothesized that parenting self-efficacy would play a mediating role between problem child behavior and parents' current psychological distress. A series of regression analyses was run by using structural equation modeling following the steps of mediation analysis suggested by Baron and Kenny (1986) and Holmbeck (2002): the first regression analysis examines the relationship between the predictor and the criterion; the second regression analysis examines the relationship between the predictor and the potential mediator; the third regression analysis examines the relationship between the potential mediator and the criterion; the fourth regression analysis examines the effect of the predictor and the potential mediator on the criterion. Structural equation modeling in AMOS condenses these steps as multiple regressions can be run simultaneously. The first model showed a direct effect of child behavior using the Y-

OQ total score on parent distress as measured by the TSM (β = .44, $p < .01$). The second model included PSE as a potential mediating variable (Figure 1). This model showed a direct effect of child behavior on PSE (β = -.39, $p < .01$) and a direct effect of PSE on parent distress (β = .36, $p < .01$). The effect of child behavior on parent distress decreased when PSE was included as a mediating variable (β = -.28, $p < .01$). A Sobel test was used to see if the mediation path had a significant impact on parent distress. The two-tailed Sobel coefficient of -8.90 had a regression weight of β = -.14 and was significant at the .01 level of probability. The mediation path was small but statistically significant and the direct path between child behavior and parent distress was also significant. This analysis shows a partial mediation effect of PSE between child behavior and parent distress.

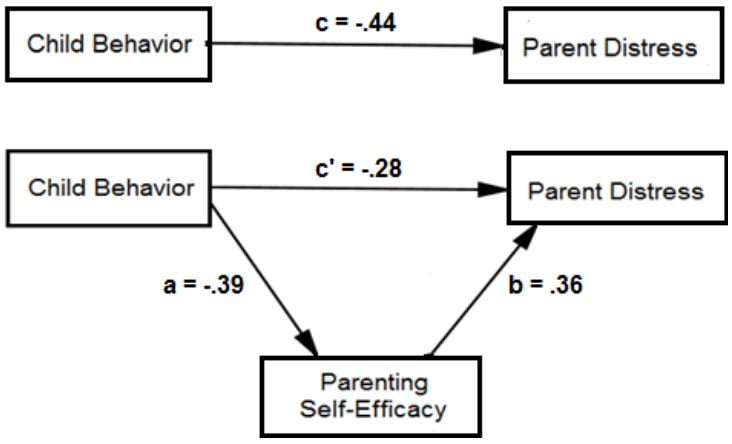

Figure 1. Path Diagram for PSE as Mediator

It is also possible that another variable may better explain the complex relationships between PSE, child behavior, and parent distress. Since self-efficacy is shown to affect behavior (Bandura, 1986), PSE is likely to impact parenting skills and may indirectly affect child behavior. Although not a hypothesis of the current study, post-hoc SEM found interesting alternative models that included parenting skills as important in understanding the relationship between PSE, parent distress, and child behavior (Figure 2). PSE had a significant effect on

parenting skills ($\beta = .59$, $p < .01$). Parenting skills had a significant effect on child behavior ($\beta = -.41$, $p < .01$). Child behavior had a significant effect on parent distress ($\beta = -.23$, $p < .01$). Parenting skills and PSE also had a significant effects on parent distress ($\beta = -.31$, $p < .01$). Part of the partial mediation effect of PSE between child behavior and parent distress may also be explained through parenting skills.

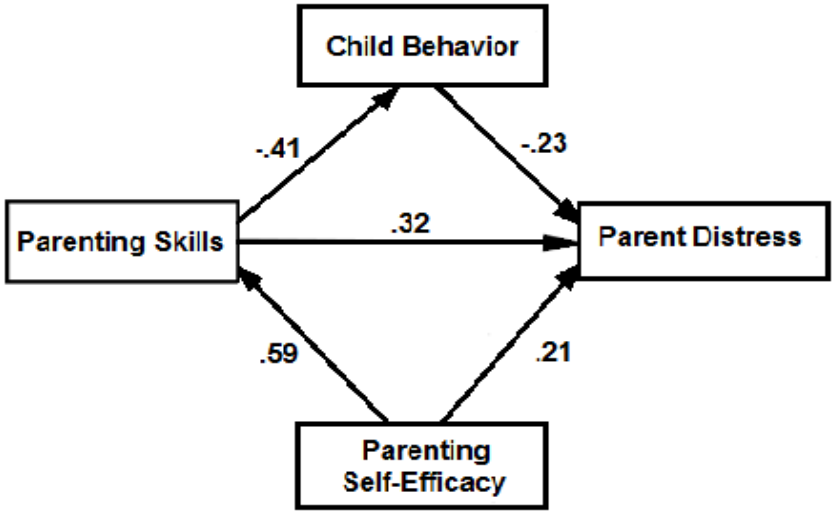

Figure 2. Path Diagram with Parenting Skills as Potential Mediator

Discussion

The construct of parenting self-efficacy seems particularly important in the treatment of children and their families. It has been related to treatment outcomes (Teti & Gelfand, 1991; Warren et al., 2011), parent distress (Hastings & Brown, 2002; Scheel & Rieckmann, 1998; Shumow & Lomax, 2002), parenting skills (Bondy & Mash, 1999; Coleman & Karraker, 2000; Scheel & Reickmann, 1998), and child behavior (Teti, O'Connell, & Reiner, 1996; Woolfson, Taylor, & Mooney, 2011). Parents of children with ASD may be at particular risk for low PSE. However, previous research has failed to consistently find this relationship. Some studies had difficulty due to poor comparison groups and small sample size (Fields, 2006; Meirsschaut, Roeyers, and Warreyn, 2010; Rutgers et al., 2007). Some researchers questioned the ability of

the questionnaires used to accurately measure parenting self-efficacy in parents of children with ASD (Fields, 2006, Palafox, 2004). Palafox (2004) also suggested that the truncated range of symptom severity in their study made it impossible to detect differences in parenting self-efficacy. Rutgers et al. (2007) suggested that their null finding may be due to the age of the children assessed. The aim of this study was to help clarify some of the discrepancies in previous research regarding the effect of an ASD diagnosis on PSE by addressing these limitations and expanding the understanding of how PSE interacts with other variables frequently associated with PSE.

PSE Differences between Diagnostic Groups

This study found that PSE scores are different across different child diagnostic categories with a small to moderate effect size (adjusted $R^2 = .05$; Cohen's $f^2 = .06$). Parents of children with ASD had the lowest PSE scores among the five diagnostic groups in this study and these scores were significantly different from the Down syndrome, emotional behavioral disorder, and community groups. Parents of children with Down syndrome and parents from the community sample had had the highest PSE scores. Parents with children who had both ASD and Down syndrome and parents of children with emotional and behavioral disorder diagnoses had PSE scores lower than the DS and CM groups but higher than the ASD group. Due to the unanticipated addition of the ASD with Down syndrome group, all three ASD and DS groups were smaller than planned. This led to less power to detect significant differences between the ASDDS group and the DS or ASD groups. However, the size of the community group and emotional and behavioral disorders groups allowed for enough power to detect a small but significant difference in PSE scores between those two groups. It is likely that if ASD, DS, and ASDDS groups had been larger, the similar small difference between ASDDS group and the

ASD and DS groups. Although the difference was not statistically significant, it contributes to a pattern of lower parenting self-efficacy for parents who have a child with ASD. Even though the size of the effect of diagnostic group on PSE was small, this has clinical significance. Due to the heterogeneity of the diagnostic groups regarding symptom severity and comorbidity, finding small effects can be clinically relevant. If the diagnostic groups had been larger and more distinct, differences in PSE may have been easier to identify.

Previous studies have discussed the "Down syndrome advantage" and the "autism disadvantage" (Fidler, Hodapp, & Dykens, 2000; Stoneman, 2007). A child with DS may have protective features like increased warmth and parental validation while a child with ASD can be less emotionally demonstrative and socially validating toward their family. The difference in parenting self-efficacy across diagnostic groups suggest that both concepts may be true. Parents who have a child with ASD may be at a particular disadvantage regarding parenting self-efficacy while parents who have a child with Down syndrome may have an advantage. Parents who have a child with both ASD and Down syndrome may experience both the advantage of the one and disadvantage of the other, resulting in a parenting self-efficacy score in between the two. The difference in PSE between the ASD, DS, and ASDDS groups remained significant even after accounting for symptom severity. As hypothesized, parents of children with ASD had the lowest PSE scores. This fits the theory that several factors related to developing parenting self-efficacy place parents of children with ASD at risk, such as; delayed diagnosis, social blaming of parents, severe problem behavior, and less social support.

Parents of a child with emotional and behavioral disorders had lower parenting self-efficacy scores compared to the community sample or the Down syndrome group. The difference between the community sample and EB group fits with the previous literature

regarding parenting self-efficacy and poor emotional regulation and problem behavior in children with psychological diagnoses (Teti & Gelfand, 1991). However, there was no specific hypothesis about differences between DS and the EB groups and the lack of difference between DS and the CM groups was surprising. Several of the previously identified covariates with parenting self-efficacy were also found to be relevant in this study. The DS group was unique from the other diagnostic groups due to the younger age of the children and the severity of child behavior reported. Differences in parent distress and parenting skills were also found to be relevant to levels of PSE.

Role of Child Behavior in PSE

Parents of children with more severe emotional and behavioral problems were found to have lower parenting self-efficacy. All subscales of the Y-OQ and the DBC-24 were correlated with PSE. DBC-24 scores and Y-OQ scores were also highly correlated. This is consistent with previous research that found child symptom severity, and particularly problem behavior, to correlate with parenting self-efficacy (Teti & Gelfand, 1991). Overall, child behavior showed larger effect sizes than diagnostic group on PSE. When Y-OQ scores were included as a covariate in ANCOVA, group effects on PSE became statistically non significant. This may have been due to the small sample of parents in the DS group who completed the Y-OQ ($n = 9$) since DBC-24 and group effects were significant in ANCOVA and Y-OQ and group effects were significant when the DS group was excluded from ANCOVA. It may also be due to certain developmental problem behaviors that the Y-OQ does not evaluate, such as repetitive stimulation seeking behavior, have more impact on PSE.

PSE and Parent Distress

Parent distress was also found to correlate with parenting self-efficacy across all subscales of the OQ-45 and the TSM PD scale. Parent distress showed larger effect sizes on PSE than group in ANCOVA. TSM PD had a partial eta squared value of .19 while group effects were no longersignificant. These results are consistent with the reviewed literature. Cutrona and Troutman (1986) and Teti and Gelfand (1991) found that lower parenting self-efficacy was related to depression in mothers. Hastings and Brown (2002) found an additional relationship between parenting self-efficacy and anxiety in fathers. Miller et al (1992) went a step further in explaining the relationship between parenting self-efficacy and parent distress by looking at cognitive processes to explain higher levels of anxiety and depression. They found that parents possessing low parenting self-efficacy tend to make more internal attributions of failure. While none of these studies can show directionality, theories of distress and self-efficacy suggest a bidirectional, interactive relationship where anxiety and depression lead to negative attributions of parenting self-efficacy. Low parenting self-efficacy leads to poor parenting such as; lack of persistence and inconsistent parenting practices. This leads to failure, distress, and affirmation of the perception of low parenting ability.

Child Age and PSE

Across all five groups, child age showed significant variance with parenting self-efficacy. Parents of older children had lower parenting self-efficacy. Amongst the ASD, DS, and ASDDS groups, significant effects were also found for the age of a child when symptoms first presented and the age of the child when they were diagnosed. However, it is important to note that there is a significant difference in the average ages of the groups. Children with Down syndrome had the youngest average age and were typically diagnosed at birth. The variance

between age and parenting self-efficacy seemed due to the large difference in average age between the five groups.

Social Support and PSE

A significant relationship was found between social support and parenting self-efficacy. Parents who felt more supported by their family, friends, and community reported higher levels of parenting self-efficacy. This is consistent with previous literature. Teti and Gelfand (1991) found that perceived support from a partner, family, or close friends influenced parenting self-efficacy. Kersh, Hedvat, Hauser-Cram, and Warfield (2006) found that marital support for mothers and social support for fathers was related to increased parenting self-efficacy. ANCOVA was used to evaluate whether or not reported social support would better explain PSE scores in diagnostic groups and found that effects for diagnostic groups on PSE remained relevant when including social support in the analyses.

Parenting Skills and PSE

Parents who reported lower parenting self-efficacy also reported lower parenting skills: such as consistent discipline, praise, and quality time with their child. ANCOVA was used to evaluate whether or not reported parenting skills would better explain parenting self-efficacy scores in ASD and found that effects for diagnostic groups on parenting self-efficacy remained significant when including parenting skills in the analyses. Parenting self-efficacy was found to mediate parent characteristics and quality of parenting skills in children with behavioral and emotional disorders (Bondy & Mash, 1999; Scheel & Reickmann, 1998). Parents with high parenting self-efficacy, are more likely to persevere in the face of challenges and consistently apply parenting skills even in difficult circumstances. Therefore, high parenting self-efficacy is likely to be particularly advantageous for parents who have a behaviorally or temperamentally

more difficult child where parents may need more patience or perseverance (Teti, O'Connell, & Reiner, 1996). However, parents who feel that they are less capable in applying good parenting techniques will be less likely to persist in challenging situations and show inconsistent parenting intervention (Coleman & Karraker, 2000; Luster, 1986; Wells-Parker, Miller, & Topping, 1990).

SEM and PSE

Structural equation modeling was used to look for relationships and path analysis between the above mentioned correlates and covariates. Previous studies found that parenting self-efficacy mediated depression and anxiety for mothers and anxiety for fathers with a behaviorally difficult child (Hastings & Brown, 2002). Woolfson, Taylor, and Mooney, (2011) found that parenting self-efficacy was a possible moderator of the effect of child disability on problem behavior. Several interesting relationships were discovered that suggest complicated interactions that contribute to the overall variance in parenting self-efficacy scores (Figure 3). However, these interactions did not eliminate the effect of an ASD diagnosis on parenting self-efficacy.

The effect of diagnostic group on PSE was no longer significant when measures of parent distress were included in ANCOVA. This suggests that the small group effects may only be significant within the framework of variables with larger effect sizes. SEM also suggests that PSE may mediate some of the effects of other variables. Models that included PSE, child behavior, and parent distress found that PSE plays an important role in the path between child behavior and parent distress as a partial mediator. Additionally, post hoc analyses suggest PSE may also mediate other variables' effect on parent distress. Parenting skills in particular may be an important factor related to parent distress, child behavior, and PSE.

Overall, this study supports the hypothesis that parents of children with ASD are at risk for low parenting self-efficacy compared to parents of children with other developmental and psychological disorders and the community. This study also showed significant parent distress, less consistent parenting practices, and less social support for parents who have low parenting self-efficacy. The effect of PSE on parent distress appears be indirect as a mediator of other variables. Previous research has also found a relationship between low parenting self-efficacy and poor treatment involvement and outcomes (Warren et al., 2011). This supports the conclusion that parents and children with ASD would benefit from having parenting self-efficacy monitored in treatment. One possible means for monitoring parenting self-efficacy in treatment is to use the TSM. The TSM was used in this study has good psychometric properties and application for monitoring parenting self-efficacy, social support, parenting skills, and parent distress in a treatment setting.

Study Limitations and Future Directions

The recruitment of parents for this study inherently selects parents who have certain resources (time and internet access) and are associated with community groups related to their child's diagnosis. This has implications for education level, social support, SES, and possibly symptom severity. Large effect sizes may be harder to find if recruitment procedures select participants with more time and less distress. Another difficulty in finding meaningful results was the smaller sample sizes for the Down syndrome groups and the small observed differences of only a few points on the TSM. A larger sample that showed the same distribution of scores would have led to higher statistical power to detect significant differences between the smaller groups. An important limitation that likely affected the size of effect of diagnostic group on PSE was the heterogeneity of the diagnostic groups. This was reflected in the range of clinical

diagnoses and comorbidity in the EB group and the range of child symptom severity within the ASD groups. The ASD groups also likely had comorbidity with other clinical diagnoses. This is a difficult limitation to address without more accurate means of assessing clinical diagnoses. Another limitation to this study was that it was cross sectional and not experimental or longitudinal. Ultimately, correlations and regression cannot indicate causal relationships. Future research could focus on using parenting self-efficacy as an intervention point in treatment for groups where it is likely to have the most affect and evaluate whether or not other variables improve as would be expected with a mediating variable and evaluating parenting self-efficacy over time. Longitudinal data would also help to examine how PSE changes over time as children and parent interactions develop and change with intervention. It would be interesting to see how intervention targeting parenting self-efficacy, parenting skills, or both parenting self-efficacy and skills impacted child behavior and parent distress over time. Glatz and Buchanan (2015) found that parenting self-efficacy, parenting practices, and adolescent behavior changed in their interactions and how they affected each other at different ages. It would be interesting to see if certain interventions were more impactful at different child ages.

Overall, our study suggests that parents of children with ASD are at higher risk for low parenting self-efficacy. This is important due to the impact that parenting self-efficacy has been shown to have on both parents and their children: increased parent distress, poorer child therapy outcomes, poorer parenting skills, and treatment drop out. Parents of children with ASD could be monitored for low parenting self-efficacy. This could in turn be used as an intervention point in child psychotherapy. Parenting self-efficacy was not the only variable associated with parent and child symptoms. Parenting skills in particular was also an interesting variable related to parent distress and problem child behavior. The effect of parenting skills on child behavior and

parent distress was observed to be stronger than that of parenting self-efficacy. However, parenting self-efficacy and parenting skills were highly correlated and may have a strong interaction with each. It would be interesting to see if one or the other was a more effective point of intervention in a treatment setting. It would likely be beneficial to assess both specific parenting skills and parenting self-efficacy in child psychotherapy.

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Appendix A

DEMOGRAPHIC QUESTIONNAIRE

Please answer the following questions about yourself and your family.

How old are you? (Check one).

☐ 18-24 ☐ 25-34 ☐ 35-44 ☐ 45-54 ☐ 55-64 ☐ 65 or older

What is your gender? ☐ Male ☐ Female ☐ Other

What is your marital status?

☐ Single ☐ Married ☐ Divorced
☐ Widowed ☐ Cohabitating ☐ Separated

Which of the following best describes your ethnicity?

☐ Caucasian/White ☐ African American ☐ Hispanic ☐ Asian
☐ Pacific Islander ☐ Native American ☐ Other (specify)_____

What language do you speak most of the time?

☐ English ☐ Spanish ☐ Chinese ☐ French
☐ German ☐ Dutch ☐ Japanese ☐ Hebrew
☐ Swedish ☐ Other (specify)_____

Please indicate the highest level of education you have completed.

☐ Grammar School ☐ High School or equivalent ☐ Vocational/Technical School (2 year)
☐ Some College ☐ College Graduate (4 year) ☐ Master's Degree (MS)
☐ Doctoral Degree (PhD) ☐ Professional Degree (MD, JD, etc.) ☐ Other

What is your employment status?

☐ Unemployed ☐ Part time ☐ Full time ☐ Temporary ☐ Retired

Which of the following best describes your current occupation?

☐ Management, Professional, and Related	☐ Service	☐ Sales and Office
☐ Construction, extraction, and maintenance	☐ Production, Transportation, and Material Moving	☐ Education and Research
☐ Self-employed/Partner	☐ Homemaker	☐ Clerical, Office, or Administrative Support
☐ Farming, Fishing, and Forestry	☐ Government and Military	☐ Other(specify)

Please indicate your current annual household income in U.S. dollars.

☐ Rather not say	☐ Under $10,000	☐ $10,000 - $19,999	☐ $20,000 - $29,999
☐ $30,000 - $39,999	☐ $40,000 - $49,999	☐ $50,000-$74,999	☐ $75,000-$99,999
☐ $100,000-$150,000	☐ Over $150,000		

How old is your child with Down syndrome or ASD?_____

How old was your child when you first became aware that they may have a developmental delay or disability?_____

How old was your child when he/she was first officially diagnosed?_____

Do they have other psychological or physical concerns? ☐ Yes ☐ No

If yes, what are they?_____

Do you have other children in your home? ☐ Yes ☐ No

What are their ages?_____

Do they have psychological or physical disability diagnoses? ☐ Yes ☐ No

If yes, what are their ages and diagnoses?_____

Appendix B: Manuscript

ABSTRACT

Parenting Self-Efficacy in Parents of Children with
Autism Spectrum Disorders

Parenting self-efficacy (PSE) is related to parent distress and child therapy outcomes. Parents of children with autism spectrum (ASD) may have lower PSE than other parents. Parents with low PSE may have higher risk for poor treatment outcomes. Previous researchers found inconsistent results related to PSE rates for parents of children with ASD. In the current study, 598 parents and primary caregivers completed a series of questionnaires. Participants included the parents of children (aged 0 to 20) with ASD (n = 57), Down syndrome (n = 24), ASD and Down syndrome (n = 41), emotional and behavioral disorders (n = 287), and no identified diagnoses (n = 189). The parents were 90.2% female and 84.9% Caucasian. Parents rated themselves regarding PSE, parent distress, parenting skills, social support, and answered demographic questions. Parents from the diagnostic groups also rated their child's behavior and symptom severity. The groups' mean PSE scores were not the same (F [4, 595]= 9.10, $p < .01$, adjusted $R^2 = .05$). Pairwise comparisons found parents of children with ASD to have significantly lower PSE than the Down syndrome (mean difference = -3.72, $se = .97$, $p < .01$, 95% CI = -6.36, -1.08) emotional and behavioral disorder (mean difference = -1.62, $se = .58$, $p = .04$, 95% CI = -3.19, -.04), and community groups (mean difference = -3.11, $se = .60$, $p < .01$, 95% CI = -4.75, -1.47). Parents from the community group had higher PSE than the parents of children with emotional and behavioral disorders (mean difference = 1.49, $se = .37$, $p < .01$, 95% CI = .47, 2.51). PSE was also related to parent distress, social support, parenting skills, and child's age. PSE may warrant monitoring in the treatment of ASD and may be an important point of intervention in therapy.

Keywords: parenting self-efficacy, autism, Down syndrome, emotional and behavioral disorders, parent distress, social support, parenting skills, child psychotherapy, symptom monitoring

Parents play a vital role in almost every type of therapy for their children. Generally, it is the parent who is responsible for seeking treatment, scheduling appointments, ensuring the attendance, and the payment of services. Parents help coordinate services between professionals, ensure continuity of care and follow up, and advocate for services (Kabot, Masi, & Segal, 2003). Additionally, parents play a primary or supportive role in child therapy (Kazdin, 2003). They may take active roles during a session and are often responsible for the implementation of treatment procedures at home. Many child therapy modalities assume parent participation; however, parents often enter the treatment process with no intention of actively participating (Nock & Kazdin, 2005). Active parent involvement is necessary for children therapy to be truly effective. Therefore, factors that influence parent involvement in therapy need to be addressed by professionals treating children. One factor influencing parent involvement in child therapy is parenting self-efficacy (PSE). Parents with higher reported parenting self-efficacy are more likely to engage in treatment with their children (Trunzo, 2006). Parents who report positive parenting self-efficacy have children with higher levels of improvement during therapy (Warren, Brown, Layne, & Nelson, 2011). Parenting self-efficacy has also been found to be an important predictor of child therapy outcomes (Hoza et al., 2000). Parents who have higher parenting self-efficacy are more likely to consistently apply therapeutic parenting interventions and see greater improvement in their children participating in therapy (Hastings & Brown, 2002). Low PSE is also related to parents own distress. Mothers who reported lower parenting self-efficacy reported psychological symptoms of maternal depression (Cutrona & Troutman, 1986; Teti & Gelfand, 1991). Low levels of parenting self-efficacy are related to parenting stress, dysfunctional family interaction patterns, parent physical and mental health problems, negative parental emotional

arousal, and decreased quality of parent–child interactions (Gelfand, Teti, & Radin, 1992; Kwok & Wong, 2000; Scheel & Rieckmann, 1998; Webster-Stratton, 1990).

Albert Bandura (1977, 1982) defined the term *self-efficacy* as the perception of one's ability to competently perform a task. Bandura (1986) believed that self-efficacy would directly affect behavior and individuals with high self-efficacy will be more likely to persist at difficult tasks. Bandura (1986) suggested self-efficacy was more predictive of future success and failure than the person's actual capability because a person's beliefs help determine what that individual does with their knowledge and skills. *Parenting self-efficacy* (PSE) is defined as the beliefs or judgments about one's ability to be successful in the role of a parent (Hess, Teti, & Hussey-Gardner, 2004; Jones & Prinz, 2005). PSE is developed through experience, perceived success (Goodnow, 1988), examples and validation from others (Coleman & Karraker, 1998). Parents also learn about PSE through their own childhood experiences with their parents (Grusec, Hastings, & Mammone, 1994; Deutsche, Ruble, Fleming, Brooks-Gun, & Stangor, 1988). Social or partner support can influence parenting self-efficacy (Kersh, Hedvat, Hauser-Cram, & Warfield, 2006; Teti & Gelfand, 1991). Parents who feel they will have outside sources of help and encouragement may feel more capable of handling difficult parenting tasks.

Parent distress and child behavior may have interactive relationships with the development of parenting self-efficacy. Meirsschaut, Roeyers, & Warreyn (2010) found mothers' symptoms of depression and stress strongly influenced their parenting experiences and beliefs about parenting. Parents possessing low parenting self-efficacy tend to make more internal attributions of failure and manifest higher degrees of anxiety and depressive symptoms (Miller, Gordon, Daniele, & Diller, 1992). Lower parenting self-efficacy has been shown to be related to giving up more quickly, feeling anxious, depressed, frustrated, as well as reporting less

perceived social support, less spousal support, perceptions of futility, and higher levels of stress (Shumow & Lomax, 2002; Wells-Parker, Miller, & Topping, 1990). Parent depression and anxiety may increase attributions of parenting failure. In turn, failure at parenting may increase depression, anxiety, withdrawal, and helplessness. The development of parenting self-efficacy is also influenced by the interaction between parents and their children. Parents are more likely to experience perceived failure in a parenting task if their children are more difficult to parent due to problem behavior or poor emotional regulation (Teti & Gelfand, 1991). This will contribute to their overall perceived parenting self-efficacy and affect their persistence in difficult parenting tasks. Therefore, high parenting self-efficacy is likely to be particularly advantageous for parents who have a behaviorally or temperamentally more difficult child where parents may need more patience or perseverance (Teti, O'Connell, & Reiner, 1996). Less persistence can lead to more real and perceived failure and increased problem child behavior. Failure reinforces the perception of low parenting self-efficacy.

Overall, parents' evaluation of their ability to effectively carry out parenting tasks has important consequences for consistent parenting practices and child development. According to Bandura's model, parents who possess a high sense of parenting self-efficacy believe they have the skills and qualities necessary to have a positive influence on their children's behavior and development and will persist in difficult parenting situations. Parents with low parenting self-efficacy are at risk for experiencing anxiety, depression, stress, and have poorer outcomes for their children in therapy.

Parents of children with disabilities may face unique challenges in regards to developing parenting self-efficacy (Hastings & Brown, 2002; Shapiro, 1983). Children with disabilities respond differently to typical parenting strategies and often exhibit difficult problem behavior

(Fields, 2006). Also, due to the heritability rate of different disabilities, parents of children with certain disabilities may have their own difficulties and struggle even more with parenting (Clarke et al, 2001). Theories of self-efficacy suggest parents have lower parenting self-efficacy due to perceived parenting failures, difficult child temperament and behavior, and parents' own stress and emotional difficulties. Parents of children with disabilities are at a higher risk to experience these factors that lead to lower parenting self-efficacy (Tunali & Power, 1993; Shapiro 1983; Holroyd & McArthur, 1976). Different disabilities may have more impact than others on parents and family dynamics (Hauser-Cram et al, 2000). If children exhibit challenging behavior parents may experience more perceived failure and thus have lower parenting self-efficacy.

Parents of children with autism spectrum disorders (ASD) may be at particular risk for lower parenting self-efficacy due to specific symptoms associated with the disorder. Parenting children with ASD is a considerably difficult task, often with negative consequences for parents, marriages, and siblings. Parents of children with ASD have higher levels of stress, anxiety, and depression than other parents (Bouma & Schweitzer, 1990; Dunn, Burbine, Bowers, & Tantlef-Dunn, 2001). Marriages are often strained and may result in divorce (Piven, Chase, Landa, & Wzorek, 1991; Rodrigue, Morgan, & Geffken, 1990). Siblings may be overlooked due to the attention demanded by parenting a child with ASD (Fields, 2006; Holroyd, Brown, Wikler, & Simmons, 1975). There are also difficulties in the parent–child relationship due to problem child behaviors, communication and language deficits, lack of emotional expression, and social disconnection (Siegal, 1997). Rigid and inflexible behavior and mental processing is often seen in ASD (Corbett, Constantine, Hendren, Rocke, Ozonoff, 2009). Parenting techniques that work with other children may not work with ASD. Parents may be more likely to experience failure and frustration with typical parenting strategies (Fields, 2006).The failure of typical parenting

strategies could lead to lower parenting self-efficacy. Children with ASD often exhibit socially inappropriate behavior. Parents may feel socially pressured to have their child conform to public expectations and feel criticized and rejected when their child behaves counter to expectations (Ryan, 2010). Parents of children with ASD are often blamed and criticized for their parenting directly or indirectly (Howlin, 1998; Ryan, 2010). Children with ASD are typically diagnosed after years of poor parenting experiences and parents may blame themselves and feel blamed by others for their child's behavior. Their child's behavior may interfere with the social interaction of their parents (Bouma & Schwietzer, 1990; Dunn, Burbine, Bowers, & Tantlef-Dunn, 2001; Schuntermann, 2002). Due to heritability rates of symptoms of ASD, parents often have their own social skills difficulties (Cohen & Tsiouris, 2006), that may also interfere with receiving social support. Parents of children with ASD also have higher rates of anxiety and depression than the general population (Sharpley, Bitsika, & Efremidis, 1997). Some parents have higher rates of depression before the birth of their child (Cohen & Tsiouris, 2006).

Although theories describing the development of parenting self-efficacy suggest that parents who have children with ASD may be at particular risk of low parenting self-efficacy, there have been inconsistent results. Hastings and Brown (2002) found that in families with children diagnosed with ASD, parenting self-efficacy mediates the effect of problem child behavior on anxiety and depression in mothers and anxiety in fathers. However, Fields (2006) did *not* find a relationship between depression and parenting self-efficacy in parents of children with ASD. Bondy and Mash (1999) and Scheel and Reickmann (1998) found that parenting self-efficacy mediates problem child behavior and poor parent outcomes. However, Palafox (2004) found that the severity of symptoms for ASD was *not* related to parents reported parenting self-efficacy. While Rodrigue, Morgan, and Geffken (1990) found that parenting self-efficacy was

lower for parents of children with ASD than for Down syndrome. Belchic (1996) found that there was no difference for parenting self-efficacy between parents of children with ASD or parents of children with Down syndrome. Rutgers et al. (2007) was also unable to show a difference in parenting self-efficacy for parents of children with ASD compared to parents of children with intellectual disability, learning disability, or a community sample.

Some of these studies have had difficulty finding a relationship with child ASD diagnosis and lower parenting self-efficacy because they have not compared parents to other parents with typically developing children (Fields, 2006). Other researchers had null findings, possibly due to small sample size (Fields, 2006; Meirsschaut, Roeyers, and Warreyn, 2010; Rutgers et al., 2007). Some researchers questioned the ability of the questionnaires used to appropriately measure parenting self-efficacy in parents of children with ASD (Fields, 2006, Palafox, 2004). Palafox (2004) also suggested that the truncated range of symptom severity in their study made it impossible to detect differences in parenting self-efficacy. Rutgers et al. (2007) suggested that their null finding may be due to the age of the children assessed (27-32 months), and that early assessment may not reflect how long term parenting stress could negatively impact parenting self-efficacy. Fields (2006) recommended the use of a community sample as a comparison group to explore if parents of children with a child with ASD may report *higher* than average parenting self-efficacy. It is also possible that null results were due to other related variables that were not controlled or measured or to the complicated interaction between several related variables. PSE was found to mediate levels of depression and anxiety for mothers and levels of anxiety for fathers (Hastings & Brown, 2002) and to mediate parent characteristics and quality of parenting skills (Bondy & Mash, 1999; Scheel & Reickmann, 1998). PSE was also found to be a possible

moderator of the effect of disability on problem behavior (Woolfson, Taylor, & Mooney, 2011). PSE may play an indirect role as a mediator or moderator between other variables.

Study Aims

The aim of this study is to help clarify some of the discrepancies in previous research regarding the effect of an ASD diagnosis on parenting self-efficacy by addressing these limitations. The current study used larger samples of parents with children from birth to age 20 with several comparison groups rather than just comparing ASD to Down syndrome, intellectual disability, or a community sample. The primary purpose of this study was to examine parenting self-efficacy in parents of children with ASD relative to other parents. Five different groups were used for comparison: parents of children with ASD, parents of children with Down syndrome, parents of children with both Down syndrome and ASD, parents with children with emotional and behavioral disorders, and parents of children from the community without identified disorders. The second purpose of the study was to compare levels of parenting self-efficacy across disorders in relation to other factors: child symptom severity, parent psychological distress, social support, and demographics. The third purpose of the study was to examine the interaction with parenting self-efficacy, parent distress, and child symptom severity to look for possible intervening or confounding variables that could help explain some of the previous mixed results.

Hypotheses

The study hypotheses were as follows: 1a) Parents of children with ASD will have lower rates of parenting self-efficacy compared to parents of children with Down syndrome, emotional and behavioral disorders, or community norms. 1b) Parents of children with Down syndrome will have lower parenting self-efficacy than community norms. 1c) Parents of children with

emotional and behavioral disorders will have lower parenting self-efficacy than community norms. As the data were collected, many parents reported that their children had both Down syndrome and ASD so another hypothesis was added: 1d) parents of children with ASD and Down syndrome will have lower parenting self-efficacy than the Down syndrome group, ASD group, or community group. 2a) Parents of children with more severe symptoms, specifically problem child behavior, will have lower rates of parenting self-efficacy across disorders. 2b) Parents with higher levels of current psychological distress will have lower reported parenting self-efficacy across disorders. 3) Parenting self-efficacy will play a mediating role between problem child behavior and parents current psychological distress.

Method

Participants

There were 598 total participants. Participants (Table 1) were categorized in five different groups: parents of children with autism spectrum disorders (ASD, *n* = 58), parents of children with Down syndrome (DS, *n* = 24), parents of children with both ASD and Down syndrome (ASDDS, *n* = 40), parents of children with emotional or behavioral disorders (EB, *n* = 287), and parents of children from the community (CM, *n* = 189). The primary diagnoses of children included in the EB group were: adjustment disorders (24%); trauma, abuse, or neglect (15%); anxiety disorders (14%); ADHD (14%); mood and bipolar disorders (10%), conduct or oppositional defiant disorder (10%); depressive disorders (9%); and obsessive-compulsive disorder (2%). The remaining (2%) of children received a primary diagnosis of parent-child relational problems, reactive attachment disorder, or pyromania. There was a high rate of comorbidity with 74% of the EB group participants having multiple diagnoses. The ethnicity and gender of the parents was collected across all five groups. Participants identified their

ethnicity as: 84.9% Caucasian, 4.7% African American, 3.9% American Indian, and 2.4%, Pacific Islander, 1.9% Hispanic, 1.2% mixed ethnicity, 0.8% Asian, and 0.2% other. Parent participants were 90.2% female and 9.8% male. Participants from the ASD, ASDDS, and DS groups lived in higher income households (75.2% above $30,000 annually) than those in the EB group (94.1% below $30,000 annually). More detailed demographic data was collected from the ASD, ASDDS, and DS groups regarding: marital status, education, employment, occupation, number of children at home, number of children with diagnoses at home, age of child symptom onset, and age of diagnosis (Table 2). There were notable demographic differences between the ASD and DS groups regarding child age at onset of symptoms and age at time of diagnosis. Children in the DS group were significantly younger across the all age categories with most children diagnosed at birth or within the first few months. Children in the ASD group were diagnosed on average at around age 5 (m = 5.24, sd = 3.79) with symptoms of a developmental delay first noticeable around age 2 (m = 2.39, sd = 2.08).

Measures

Treatment Support Measure. Parenting self-efficacy, parenting skills, parent distress, and social support were measured using the Treatment Support Measure (TSM; Warren & Lambert, 2012). The TSM was designed for the primary caregivers of children and adolescents as a clinical support tool. The TSM was developed to be particularly useful for improving child psychotherapy outcomes through monitoring important parent variables related to treatment deterioration. The TSM has subscales for parenting self-efficacy, social support, parenting skills, parent distress, and therapeutic alliance. The TSM subscale for therapeutic alliance was not included in the current study. The TSM uses a five point Likert scale rating each item from 1 (strongly disagree) to 5 (strongly agree). Items are scored within subscales so that higher scores

indicate more positive attributes like higher parenting self-efficacy and lower distress. The TSM had good reliability across the four subscales (α = .80 to .90).

Outcome Questionnaire. The Outcome Questionnaire (OQ-45.2) was also used to assess parents' current level of psychological distress in the ASD,DS, ASDDS groups. The OQ-45.2 is a norm-referenced, 45-item self-report instrument used to assess the severity of parents' own psychopathology and distress. Specifically, the OQ-45.2 is designed to assess three domains of functioning: symptoms of psychological disturbance (particularly anxiety and depression), interpersonal problems (conflict with others or family problems), and social role functioning (work satisfaction or feeling competent; Lambert, Gregersen, & Burlingame, 2004). It consists of a total score and three subscale scores and may be used with a wide range of adults, ages 17-80. The OQ-45.2 may be used for a number of different purposes, including to screen clients, assist in making initial treatment decisions and recommendations, and monitor overall client progress. Higher scores indicate more distress. Clinical cutoffs indicating symptoms of clinical significance are 36 for the symptom distress score, 15 for interpersonal relations, 12 for social role, and 63 for the total score. Total administration time typically ranges from 3 to 15 minutes, with most clients completing it in 5 minutes. It uses a 0 (never) to 4 (almost always) five point Likert scale (Lambert, Gregerson, & Burlingame, 2004). Estimates of internal consistency ranged from .70 to .93 (Mueller, Lambert, & Burlingame, 1998). Test-retest reliability estimates over a 3-week period ranged from .78 to .84. Standard error of measurement (SEM), a common method of estimating the reliability of a given respondent's test score, is reported to be .93 (Lambert et al, 1996). The OQ-45.2 was used in the current study to give a broader range of symptoms of parent distress and psychopathology and to strengthen the use of the TSM parent distress subscale (TSM PD). Correlations between the OQ-45.2 total score and

TSM PD in the current study were high (Table 3, $r = -.70$, $p < .01$). This suggests that the TSM PD has good concurrent validity with the OQ-45.2 and the TSM PD gives a good brief estimate of parents' psychological and emotional distress and allows for comparisons across all of the groups.

Youth Outcome Questionnaire. The Youth Outcome Questionnaire (Y-OQ; Burlingame et al., 1996) was one measurement of child symptom severity. The Y-OQ is a parent-report measure of child symptom severity and treatment progress for children and adolescents (ages 4-17) that assesses the occurrence of observed behavior change (Burlingame, Wells, Lambert, & Cox, 2004). The Y-OQ is a 64-item questionnaire that includes six separate subscales to tap several behavioral domains of children and adolescents experiencing behavioral difficulties. In addition, some items are reverse-scored to describe elements of adaptive behavior. The Y-OQ uses a five-point Likert scale and is designed to be administered at intake to establish a severity baseline and can be used on a session-by-session basis to track the child's progress (Burlingame et al., 2001).

Burlingame et al. (2001) reported high internal consistency for the Y-OQ total score ($r = .97$) across four samples consisting of elementary school students ($N = 423$), a community normative sample ($N = 681$), outpatient $N = 342$) and inpatient ($N = 174$) and a clinical normative sample ($N = 490$). Test-retest reliability scores are also above .70, indicating moderately high temporal stability. High correlations exist between the Y-OQ total and subscale scores, and other frequently used assessment instruments (Wells, Burlingame, Hoag, Hope, & Lambert, 1996) such as the Child Behavior Checklist (Achenbach, 1991).

Developmental Behavior Checklist. The 24-item Parent Report version of the Developmental Behavior Checklist (DBC-24; Einfeld & Tonge, 1995) was used as another

measure of child symptom severity for the ASD and Down syndrome groups. This measure is intended to be sensitive to symptoms related to pervasive developmental issues such as autism spectrum disorders and Down syndrome. The DBC-24 was developed as a parent-report tool for assessing behavioral and emotional functioning of individuals with intellectual disability, aged 4 to 18. It has 96 items based on a 3 point Likert scale (0-not true as far as the informant knows, 1-somewhat or sometimes true, and 2-very true or often true). The parent report takes approximately 5 minutes to complete.

The DBC-24 shows good psychometric properties (Einfeld & Tonge, 1992, 2002). The internal consistency reliability for the total score is excellent (.94) and moderate to excellent (.73 to .91) for the subscales, with the exception of the slightly lower reliability in the Anxiety domain (.67). The test-retest reliability coefficients for parents good (.80). Concurrent validity with Adaptive Behavior Scales: Maladaptive Behavior section (ABS; Nihira, Foster, Shellhaas, & Leland, 1975) and Scales of Independent Behavior: Problem Behavior Section (SIB; Bruininks et al., 1984) were .86 and .70 respectively. Concurrent validity with clinician ratings were also good (.81) and the area under the Receiver Operating Characteristics (ROC) curve was 0.92, suggesting good sensitivity and specificity for detecting caseness and non-caseness. Overall, the DBC-24 has excellent psychometric properties and is appropriate for use with parents of children with developmental delays.

In the current study, the DBC-24 was compared to the Y-OQ total and subscale scores to evaluate how well the Y-OQ evaluates symptom severity for developmental disorders and to evaluate if certain subscales have higher levels of correlation with the DBC-24 than others. All scales on the Y-OQ correlate to the DBC-24 (Table 4) with the highest correlations between DBC-24 and Y-OQ behavior problems subscale ($r = -.70$, $p < .01$) and Y-OQ total score ($r = -$

.67, $p < .01$). This shows the DBC-24 has good concurrent validity with the Y-OQ. The Y-OQ shows the sensitivity to problem behavior in children with developmental disability and also has other subscales for social skills, interpersonal relationships, and psychological distress that can give a broader spectrum of behavior and emotional functioning than the DBC-24. Therefore, the Y-OQ is a good instrument for the purposes of this study and allows for a comparison of child symptom severity across the different groups.

Autism Spectrum Quotient. The Autism Spectrum Quotient (AQ-10) and Quantitative Checklist for Autism in Toddlers (Q-CHAT-10) are short 10 item autism screening tools for children ages 18 months to 18 years (Allison, Auyeung, Baron-Cohen, 2012). This short screening tool was used to help identify potential overlap between the ASD and Down syndrome groups as well as add support to parents' self-identification as having a child with ASD. The AQ-10 and Q-CHAT-10 are parent report measures that take only a few minutes to complete. The Q-CHAT contains yes/no questions such as: "Does your child look at you when you call his/her name?" The AQ-10 child and adolescent versions contain statements such as: "S/he finds it hard to make new friends." These statements are evaluated on a 4-point Likert scale (definitely agree, slightly agree, slightly disagree, and definitely disagree).

At a cut-point of 6 on the AQ-10 adolescent, sensitivity was 0.93, specificity was 0.95, and positive predictive value was 0.86. At a cut-point of 6 on the AQ-10 child, sensitivity was 0.95, specificity was 0.97, and positive predictive value was 0.94. At a cut-point of 3 on the Q-CHAT-10, sensitivity was 0.91, specificity was 0.89, and positive predictive value was 0.58. The internal consistency was 0.85 for all measures. The AQ-10 and Q-CHAT-10 were selected due to their good psychometric properties and ease of use.

Procedures

This study utilized a cross sectional design that examined levels of parenting self-efficacy across five different groups. It is related to a larger series of research projects examining how a number of parent and youth variables are related to child psychotherapy outcomes in community mental health (Warren et al, 2011). The researcher received approval to conduct the study with human participants from the Brigham Young University Institutional Review Board.

Parents and primary caregivers of children with ASD and Down syndrome were recruited via email, on-line requests through disorder-specific community support groups, and verbal announcements at support group meetings. Parent support groups including the Utah Down Syndrome Foundation, the United Angels Foundation, the Utah Autism Coalition, and the Utah Parent Center were contacted and asked to include a research announcement in their weekly and monthly emails to parents regarding upcoming events, conferences, legislation, and research. One group (Dads Appreciating Down Syndrome) invited the researcher to attend a chapter meeting to distribute announcements and directly invite group members to participate. Only two parents or primary caregivers per household were invited to participate. Participants who did not complete the questionnaire for PSE were excluded from final analyses. Parents of children who did not have a child with ASD, Down syndrome, or both ASD and Down syndrome were excluded. Parents were also excluded if their child with ASD, DS, or ASD and DS was older than 20. During the initial round of recruitment, parents who completed the survey were offered the chance to enter a drawing for $50. However, early response rates were fairly low (53 responses over 3 months). Therefore, the incentive was changed with Institutional Review Board approval to $15 per participant and 92 more parents participated over 3 weeks.

Parents were categorized into the three diagnostic groups based on parent-reported diagnoses and symptoms of ASD. The AQ-10 and Q-CHAT-10 were used to help categorize the three ASD, Down syndrome, and Down syndrome with ASD groups. Parents who reported that their child had Down syndrome and had scores at or above the AQ-10 and Q-CHAT cutoffs were assigned to the ASDDS (Down syndrome with ASD) group. Parents who reported that their child had an ASD diagnosis and had scores at or above the AQ-10 and Q-CHAT cutoffs were assigned to the ASD group. Parents who reported that their child had a Down syndrome diagnosis and had scores two or more points below the AQ-10 and Q-CHAT cutoffs were assigned to the DS group. Parents who reported that their child had ASD but had scores one point below the AQ-10 or Q-CHAT cutoffs were initially placed in a pervasive developmental delay (pdd) or Down syndrome with developmental delay (DSpdd) group. However, the pdd group (N=9) was merged with the ASD group and the DSpdd (N= 9) group was merged with ASDDS due to similar mean scores on parenting self-efficacy and parent distress. Tukey's HSD was used to determine which groups to merge based on PSE and parent distress group differences (Table 5). The groups that had the least amount of differences in PSE or parent distress were combined. ANOVA confirmed that merging the groups did not interfere with obtaining significant results for between group differences on all of the TSM subscales (Table 6).

Archival data from Warren et al. (2011) were used for the parents and primary caregivers of children with emotional and behavioral diagnoses. This previous study recruited parents through a community-based mental health clinic in the Intermountain West. Data were collected from parents before or during their child's scheduled psychotherapy sessions at the mental health clinic where they were seeking services. This data included information about PSE, parenting skills, parent social support and parent distress (TSM); child symptom severity (Y-OQ); child

diagnoses, and demographics. The original sample for the study included parents or primary caretakers seeking treatment for their child aged 4 to 17 due to emotional and behavioral concerns. Clinicians interviewed and diagnosed up to four disorders. Parents of children who received a diagnosis of autism, a pervasive developmental disorder, or Asperger's syndrome were not included in the analyses of the current study. Participants who did not complete the measure for PSE (TSM) were also excluded.

Data for the community sample was also archival (Warren & Lambert, 2012). Participants for the community sample were contacted by phone using a random sample of phone numbers from phone books of cities within 30 miles of the community mental health clinic. These parents were invited to complete the TSM survey regarding PSE, social support, parent distress, parenting skills, and also demographic information. Survey packets were sent to them and they were given incentives after returning the completed surveys. Participants who did not complete the measure for PSE on the TSM were excluded.

The TSM was the only measure used across all five groups to assess PSE, social support, parenting skills, and parent distress. Parents from the ASD, Down syndrome, and emotional behavioral disorder groups were invited to complete the Y-OQ regarding child symptom severity. However, many did not complete this measure and were excluded from analyses that required the Y-OQ (n = 318). The OQ-45.2 (n = 114) and the DBC-24 (n = 116) were administered only to the ASD, ASD with Down syndrome, and Down syndrome groups to gather more information regarding parent and child symptom severity. Data entry errors and missing data on the TSM were estimated using a process in SPSS to estimate substitutes. There were 34 total estimates for missing items (31 missing, 3 data entry errors) across the 598 participants who

completed the TSM. These estimates were used due to the statistical program AMOS requirement for no missing data in structural equation modeling.

Results

Preliminary Analyses

ANOVA was used to evaluate the impact of categorical demographic variables (i.e., parent's sex, parent's education, household income) on PSE (Table 7). Pearson's correlations were used to look for correlations between PSE and continuous variables (i.e., child age, age of symptom onset, age of diagnosis; Table 8). ANOVA and ANCOVA were used to follow up on whether or not significant correlations between PSE and continuous variables were potential confounds and accounted for more or all of the variance in PSE attributed to diagnostic group. Significant relationships with PSE were found for the child's age: current age (r = -.19, p < .01), age of onset of symptoms (r = -.19, p = .05), and age of diagnosis (r = -.23 , p = .02). Parents reported lower PSE if their children were older, presented symptoms later, or were diagnosed later. Note that only parents with children with ASD or Down syndrome were asked about age of onset and diagnosis. Also note that the average age of children was significantly lower for the Down syndrome group (m = 5.31, sd = 5.54) than the ASD (m = 9.95, sd = 4.55), emotional and behavioral disorder (m = 10.03, sd = 4.00), and community groups (m = 11.45, sd = 3.84). The mean differences for child age between the Down syndrome group and ASD was statistically significant using Tukey HSD (mean difference = 4.64, se = 1.00, CI = 1.90 to 7.38). Pearson's correlations found a significant relationship between PSE and TSM subscale for social support (r = p < .01) and between PSE and the TSM subscale for parenting skills (r = .57, p < .01). Low social support was related to low parenting self-efficacy and low parenting skills were related to low parenting self-efficacy.

Hypotheses Testing

General linear modeling in SPSS 22 was used to run ANOVA to compare PSE means across all five groups. The effect of diagnostic group on PSE was found to be significant, $F(4,593) = 9.10$, $p < .01$. Table 9 lists the average scores each group of parents had on the TSM subscales. Tukey's HSD was used to run pairwise comparisons of the different group means for group differences in PSE (Table 10).

ANOVA results had a moderate effect size of Cohens $f^2 = .06$ and had an adjusted R^2 value of .05, indicating that 5% of the variance in PSE scores for this study is related to the diagnosis of the child. Tukey's HSD found that parents of children with ASD had the lowest scores of PSE ($m = 29.49$, $sd = 3.44$) and that these were significantly lower than the community scores (mean difference = -3.11, $se = .60$, $p < .01$, CI = -4.75 to -1.47), the scores of parents of children with Down syndrome (mean difference = -3.72, $se = .97$, $p < .01$, CI = -6.36 to -1.08), and the scores of parents of children with emotional or behavioral disorder diagnoses (mean difference = -1.62, $se = .58$, $p = .04$, CI = -3.19 to -.04). Although the data collected did not yield enough statistical power to detect statistically significant differences between PSE scores for the ASD and ASDDS groups, the mean difference between these groups is in the expected direction with the ASD group having lower PSE scores than the ASDDS group. Also, the observed difference of 1.85 points is actually larger than the difference between the ASD and EB groups of 1.62 points. This suggests that even small differences would be statistically significant if a larger sample was collected. The mean difference between the community sample and the parents of children with emotional and behavioral diagnoses was also significant with the EB group having lower scores than the community (mean difference = 1.49, se, = .37, $p < .01$, CI = .47 to 2.51).

It was hypothesized that parents of children with more severe symptoms, specifically problem child behavior (such as aggression or defiance), would have lower rates of parenting self-efficacy across disorders. Pearson's correlations run in SPSS found significant correlations between child behavior as measured by the Y-OQ and DBC-24 and PSE as measured by the TSM. Significant correlations were found across all subscales of the Y-OQ and the DBC-24 (Table 4). In order to determine whether or not child behavior was a potential confound for the relationship between diagnostic group and PSE scores, between group differences were analyzed. Children with different diagnoses showed significant variance in their symptom severity. Children with ASD had the highest Y-OQ and DBC scores while children with DS had the lowest scores (Table 11).

ANCOVA was used to evaluate the relationship between PSE and problem behavior across diagnostic groups using Y-OQ subscales as covariates with diagnostic group as the fixed factor to evaluate if the variance in PSE attributed to diagnostic group was better explained by symptom severity. Three of the Y-OQ subscales (behavior dysfunction, critical items, and intrapersonal distress) and the Y-OQ total score showed significant effects on PSE while the main effect of diagnostic group on PSE was no longer statistically significant (Table 12). The main effect on PSE by the other three subscales of the Y-OQ (social problems, somatic, and interpersonal relations) did not eliminate the significance of the main effect of group on PSE scores. It is important to note that only a small number of participants in the DS group completed the Y-OQ ($n = 9$) and this contributed to small statistical power to detect significance. When the DS group was removed from the analysis, ANCOVA showed significant main effects for the other diagnostic groups (ASD, ASDDS, and EB) and all of the Y-OQ scales. Therefore, it is assumed that the failure to find main effects for diagnostic group on PSE when accounting

for child symptom severity was due to the small sample in the DS group. No interactions between diagnostic group and the Y-OQ subscales in ANCOVA showed significant effects on PSE.

ANCOVA was also used to evaluate the main effect of the DBC-24 on PSE scores while controlling for group differences. The DBC-24 and diagnostic group showed main effects on PSE when both variables are included in the model (Table 12). Please note that more parents from the DS group completed the DBC-24 (n = 19) than completed the Y-OQ (n = 9). The DBC-24 sample was large enough to detect statistical significance for the group variable. This adds further support to the assumption that the lack of statistical significance found for some of the Y-OQ subscales was due to small sample size. There were no significant interaction effects between DBC-24 and diagnostic group on PSE scores. Overall, correlations between child behavior variables and PSE supported the hypothesis that as negative child behavior increases PSE decreases. Furthermore, child behavior did not account for all of the same variation in PSE as diagnostic group in ANCOVA. This supported the hypothesis that both diagnosis and child behavior impact PSE. However, effect sizes for child behavior were larger than effect sizes for diagnostic group on PSE overall (Table 12). This may be due in part to the heterogeneity of symptom severity within some of the groups. For example, the EB group has a lot of variance in types of diagnoses, symptoms, and comorbidity, making comparisons between EB and other groups more difficult to detect. Therefore, even small differences in PSE by group could be clinically significant.

It was hypothesized that parents with higher levels of current psychological distress would have lower reported parenting self-efficacy across disorders. SPSS was used to bivariate correlations and found significant relationships between PSE and parent distress as measured by

the OQ-45 and TSM parent distress scale (TSM PD; Table 13). Low scores for PSE (low parenting self-efficacy) were related to low scores for parent distress (more distress) for the TSM subscales. High scores on the OQ-45 (more distress) were related to low PSE scores. ANCOVA was then used to evaluate the relationship between PSE and parent distress across diagnostic groups in order to evaluate whether or not differences in parent distress accounted for the variance attributed to group differences. Two of the OQ-45 subscales (social role and interpersonal relations) and the OQ-45 total score showed significant main effects on PSE while the main effect of diagnostic group on PSE remained statistically significant (Table 12). However, the OQ-45 symptom distress scale (η_p^2 = .17) and the TSM parent distress scale (η_p^2 = .19) appear to account for the variance PSE scores attributed to group. The main effect of diagnostic group on PSE scores is no longer significant when these measures of parent distress are included in the model. It appears that some specific symptoms of parent distress may be more strongly correlated with PSE than others. When symptoms of parent distress are accounted for, diagnostic group may no longer show significant effects on PSE scores.

It was hypothesized that parenting self-efficacy would play a mediating role between problem child behavior and parents' current psychological distress. A series of regression analyses was run by using structural equation modeling following the steps of mediation analysis suggested by Baron and Kenny (1986) and Holmbeck (2002): the first regression analysis examines the relationship between the predictor and the criterion; the second regression analysis examines the relationship between the predictor and the potential mediator; the third regression analysis examines the relationship between the potential mediator and the criterion; the fourth regression analysis examines the effect of the predictor and the potential mediator on the criterion. Structural equation modeling in AMOS condenses these steps as multiple regressions

can be run simultaneously. The first model showed a direct effect of child behavior using the Y-OQ total score on parent distress as measured by the TSM ($\beta = .44$, $p < .01$). The second model included PSE as a potential mediating variable (Figure 1). This model showed a direct effect of child behavior on PSE ($\beta = -.39$, $p < .01$) and a direct effect of PSE on parent distress ($\beta = .36$, $p < .01$). The effect of child behavior on parent distress decreased when PSE was included as a mediating variable ($\beta = -.28$, $p < .01$). A Sobel test was used to see if the mediation path had a significant impact on parent distress. The two-tailed Sobel coefficient of -8.90 had a regression weight of $\beta = -.14$ and was significant at the .01 level of probability. The mediation path was small but statistically significant and the direct path between child behavior and parent distress was also significant. This analysis shows a partial mediation effect of PSE between child behavior and parent distress.

It is also possible that another variable may better explain the complex relationships between PSE, child behavior, and parent distress. Since self-efficacy is shown to affect behavior (Bandura, 1986), PSE is likely to impact parenting skills and may indirectly affect child behavior. Although not a hypothesis of the current study, post-hoc SEM found interesting alternative models that included parenting skills as important in understanding the relationship between PSE, parent distress, and child behavior (Figure 2). PSE had a significant effect on parenting skills ($\beta = .59$, $p < .01$). Parenting skills had a significant effect on child behavior ($\beta = -.41$, $p < .01$). Child behavior had a significant effect on parent distress ($\beta = -.23$, $p < .01$). Parenting skills and PSE also had a significant effects on parent distress ($\beta = -.31$, $p < .01$). Part of the partial mediation effect of PSE between child behavior and parent distress may also be explained through parenting skills.

Discussion

The construct of parenting self-efficacy seems particularly important in the treatment of children and their families. It has been related to treatment outcomes (Teti & Gelfand, 1991; Warren et al., 2011), parent distress (Hastings & Brown, 2002; Scheel & Rieckmann, 1998; Shumow & Lomax, 2002), parenting skills (Bondy & Mash, 1999; Coleman & Karraker, 2000; Scheel & Reickmann, 1998), and child behavior (Teti, O'Connell, & Reiner, 1996; Woolfson, Taylor, & Mooney, 2011). Parents of children with ASD may be at particular risk for low PSE. However, previous research has failed to consistently find this relationship. Some studies had difficulty due to poor comparison groups and small sample size (Fields, 2006; Meirsschaut, Roeyers, and Warreyn, 2010; Rutgers et al., 2007). Some researchers questioned the ability of the questionnaires used to accurately measure parenting self-efficacy in parents of children with ASD (Fields, 2006, Palafox, 2004). Palafox (2004) also suggested that the truncated range of symptom severity in their study made it impossible to detect differences in parenting self-efficacy. Rutgers et al. (2007) suggested that their null finding may be due to the age of the children assessed. The aim of this study was to help clarify some of the discrepancies in previous research regarding the effect of an ASD diagnosis on PSE by addressing these limitations and expanding the understanding of how PSE interacts with other variables frequently associated with PSE.

PSE Differences between Diagnostic Groups

This study found that PSE scores are different across different child diagnostic categories with a small to moderate effect size (adjusted $R^2 = .05$; Cohen's $f^2 = .06$). Parents of children with ASD had the lowest PSE scores among the five diagnostic groups in this study and these scores were significantly different from the Down syndrome, emotional behavioral disorder, and

community groups. Parents of children with Down syndrome and parents from the community sample had had the highest PSE scores. Parents with children who had both ASD and Down syndrome and parents of children with emotional and behavioral disorder diagnoses had PSE scores lower than the DS and CM groups but higher than the ASD group. Due to the unanticipated addition of the ASD with Down syndrome group, all three ASD and DS groups were smaller than planned. This led to less power to detect significant differences between the ASDDS group and the DS or ASD groups. However, the size of the community group and emotional and behavioral disorders groups allowed for enough power to detect a small but significant difference in PSE scores between those two groups. It is likely that if ASD, DS, and ASDDS groups had been larger, the similar small difference between ASDDS group and the ASD and DS groups. Although the difference was not statistically significant, it contributes to a pattern of lower parenting self-efficacy for parents who have a child with ASD. Even though the size of the effect of diagnostic group on PSE was small, this has clinical significance. Due to the heterogeneity of the diagnostic groups regarding symptom severity and comorbidity, finding small effects can be clinically relevant. If the diagnostic groups had been larger and more distinct, differences in PSE may have been easier to identify.

Previous studies have discussed the "Down syndrome advantage" and the "autism disadvantage" (Fidler, Hodapp, & Dykens, 2000; Stoneman, 2007). A child with DS may have protective features like increased warmth and parental validation while a child with ASD can be less emotionally demonstrative and socially validating toward their family. The difference in parenting self-efficacy across diagnostic groups suggests that both concepts may be true. Parents who have a child with ASD may be at a particular disadvantage regarding parenting self-efficacy while parents who have a child with Down syndrome may have an advantage. Parents who have

a child with both ASD and Down syndrome may experience both the advantage of the one and disadvantage of the other, resulting in a parenting self-efficacy score in between the two. The difference in PSE between the ASD, DS, and ASDDS groups remained significant even after accounting for symptom severity. As hypothesized, parents of children with ASD had the lowest PSE scores. This fits the theory that several factors related to developing parenting self-efficacy place parents of children with ASD at risk, such as; delayed diagnosis, social blaming of parents, severe problem behavior, and less social support.

Parents of a child with emotional and behavioral disorders had lower parenting self-efficacy scores compared to the community sample or the Down syndrome group. The difference between the community sample and EB group fits with the previous literature regarding parenting self-efficacy and poor emotional regulation and problem behavior in children with psychological diagnoses (Teti & Gelfand, 1991). However, there was no specific hypothesis about differences between DS and the EB groups and the lack of difference between DS and the CM groups was surprising. Several of the previously identified covariates with parenting self-efficacy were also found to be relevant in this study. The DS group was unique from the other diagnostic groups due to the younger age of the children and the severity of child behavior reported. Differences in parent distress and parenting skills were also found to be relevant to levels of PSE.

Role of Child Behavior in PSE

Parents of children with more severe emotional and behavioral problems were found to have lower parenting self-efficacy. All subscales of the Y-OQ and the DBC-24 were correlated with PSE. DBC-24 scores and Y-OQ scores were also highly correlated. This is consistent with previous research that found child symptom severity, and particularly problem behavior, to

correlate with parenting self-efficacy (Teti & Gelfand, 1991). Overall, child behavior showed larger effect sizes than diagnostic group on PSE. When Y-OQ scores were included as a covariate in ANCOVA, group effects on PSE became statistically non significant. This may have been due to the small sample of parents in the DS group who completed the Y-OQ (n = 9) since DBC-24 and group effects were significant in ANCOVA and Y-OQ and group effects were significant when the DS group was excluded from ANCOVA. It may also be due to certain developmental problem behaviors that the Y-OQ does not evaluate, such as repetitive stimulation seeking behavior, have more impact on PSE.

PSE and Parent Distress

Parent distress was also found to correlate with parenting self-efficacy across all subscales of the OQ-45 and the TSM PD scale. Parent distress showed larger effect sizes on PSE than group in ANCOVA. TSM PD had a partial eta squared value of .19 while group effects were no longersignificant. These results are consistent with the reviewed literature. Cutrona and Troutman (1986) and Teti and Gelfand (1991) found that lower parenting self-efficacy was related to depression in mothers. Hastings and Brown (2002) found an additional relationship between parenting self-efficacy and anxiety in fathers. Miller et al. (1992) went a step further in explaining the relationship between parenting self-efficacy and parent distress by looking at cognitive processes to explain higher levels of anxiety and depression. They found that parents possessing low parenting self-efficacy tend to make more internal attributions of failure. While none of these studies can show directionality, theories of distress and self-efficacy suggest a bidirectional, interactive relationship where anxiety and depression lead to negative attributions of parenting self-efficacy. Low parenting self-efficacy leads to poor parenting such as; lack of

persistence and inconsistent parenting practices. This leads to failure, distress, and affirmation of the perception of low parenting ability.

Child Age and PSE

Across all five groups, child age showed significant variance with parenting self-efficacy. Parents of older children had lower parenting self-efficacy. Amongst the ASD, DS, and ASDDS groups, significant effects were also found for the age of a child when symptoms first presented and the age of the child when they were diagnosed. However, it is important to note that there is a significant difference in the average ages of the groups. Children with Down syndrome had the youngest average age and were typically diagnosed at birth. The variance between age and parenting self-efficacy seemed due to the large difference in average age between the five groups.

Social Support and PSE

A significant relationship was found between social support and parenting self-efficacy. Parents who felt more supported by their family, friends, and community reported higher levels of parenting self-efficacy. This is consistent with previous literature. Teti and Gelfand (1991) found that perceived support from a partner, family, or close friends influenced parenting self-efficacy. Kersh, Hedvat, Hauser-Cram, and Warfield (2006) found that marital support for mothers and social support for fathers was related to increased parenting self-efficacy. ANCOVA was used to evaluate whether or not reported social support would better explain PSE scores in diagnostic groups and found that effects for diagnostic groups on PSE remained relevant when including social support in the analyses.

Parenting Skills and PSE

Parents who reported lower parenting self-efficacy also reported lower parenting skills: such as consistent discipline, praise, and quality time with their child. ANCOVA was used to evaluate whether or not reported parenting skills would better explain parenting self-efficacy scores in ASD and found that effects for diagnostic groups on parenting self-efficacy remained significant when including parenting skills in the analyses. Parenting self-efficacy was found to mediate parent characteristics and quality of parenting skills in children with behavioral and emotional disorders (Bondy & Mash, 1999; Scheel & Reickmann, 1998). Parents with high parenting self-efficacy, are more likely to persevere in the face of challenges and consistently apply parenting skills even in difficult circumstances. Therefore, high parenting self-efficacy is likely to be particularly advantageous for parents who have a behaviorally or temperamentally more difficult child where parents may need more patience or perseverance (Teti, O'Connell, & Reiner, 1996). However, parents who feel that they are less capable in applying good parenting techniques will be less likely to persist in challenging situations and show inconsistent parenting intervention (Coleman & Karraker, 2000; Luster, 1986; Wells-Parker, Miller, & Topping, 1990).

SEM and PSE

Structural equation modeling was used to look for relationships and path analysis between the above mentioned correlates and covariates. Previous studies found that parenting self-efficacy mediated depression and anxiety for mothers and anxiety for fathers with a behaviorally difficult child (Hastings & Brown, 2002). Woolfson, Taylor, and Mooney, (2011) found that parenting self-efficacy was a possible moderator of the effect of child disability on problem behavior. Several interesting relationships were discovered that suggest complicated interactions that contribute to the overall variance in parenting self-efficacy scores (Figure 3).

However, these interactions did not eliminate the effect of an ASD diagnosis on parenting self-efficacy.

The effect of diagnostic group on PSE was no longer significant when measures of parent distress were included in ANCOVA. This suggests that the small group effects may only be significant within the framework of variables with larger effect sizes. SEM also suggests that PSE may mediate some of the effects of other variables. Models that included PSE, child behavior, and parent distress found that PSE plays an important role in the path between child behavior and parent distress as a partial mediator. Additionally, post hoc analyses suggest PSE may also mediate other variables' effect on parent distress. Parenting skills in particular may be an important factor related to parent distress, child behavior, and PSE.

Overall, this study supports the hypothesis that parents of children with ASD are at risk for low parenting self-efficacy compared to parents of children with other developmental and psychological disorders and the community. This study also showed significant parent distress, less consistent parenting practices, and less social support for parents who have low parenting self-efficacy. The effect of PSE on parent distress appears be indirect as a mediator of other variables. Previous research has also found a relationship between low parenting self-efficacy and poor treatment involvement and outcomes (Warren et al., 2011). This supports the conclusion that parents and children with ASD would benefit from having parenting self-efficacy monitored in treatment. One possible means for monitoring parenting self-efficacy in treatment is to use the TSM. The TSM was used in this study has good psychometric properties and application for monitoring parenting self-efficacy, social support, parenting skills, and parent distress in a treatment setting.

Study Limitations and Future Directions

The recruitment of parents for this study inherently selects parents who have certain resources (time and internet access) and are associated with community groups related to their child's diagnosis. This has implications for education level, social support, SES, and possibly symptom severity. Large effect sizes may be harder to find if recruitment procedures select participants with more time and less distress. Another difficulty in finding meaningful results was the smaller sample sizes for the Down syndrome groups and the small observed differences of only a few points on the TSM. A larger sample that showed the same distribution of scores would have led to higher statistical power to detect significant differences between the smaller groups. An important limitation that likely affected the size of effect of diagnostic group on PSE was the heterogeneity of the diagnostic groups. This was reflected in the range of clinical diagnoses and comorbidity in the EB group and the range of child symptom severity within the ASD groups. The ASD groups also likely had comorbidity with other clinical diagnoses. This is a difficult limitation to address without more accurate means of assessing clinical diagnoses. Another limitation to this study was that it was cross sectional and not experimental or longitudinal. Ultimately, correlations and regression cannot indicate causal relationships. Future research could focus on using parenting self-efficacy as an intervention point in treatment for groups where it is likely to have the most affect and evaluate whether or not other variables improve as would be expected with a mediating variable and evaluating parenting self-efficacy over time. Longitudinal data would also help to examine how PSE changes over time as children and parent interactions develop and change with intervention. It would be interesting to see how intervention targeting parenting self-efficacy, parenting skills, or both parenting self-efficacy and skills impacted child behavior and parent distress over time. Glatz and Buchanan (2015) found

that parenting self-efficacy, parenting practices, and adolescent behavior changed in their interactions and how they affected each other at different ages. It would be interesting to see if certain interventions were more impactful at different child ages.

Overall, our study suggests that parents of children with ASD are at higher risk for low parenting self-efficacy. This is important due to the impact that parenting self-efficacy has been shown to have on both parents and their children: increased parent distress, poorer child therapy outcomes, poorer parenting skills, and treatment drop out. Parents of children with ASD could be monitored for low parenting self-efficacy. This could in turn be used as an intervention point in child psychotherapy. Parenting self-efficacy was not the only variable associated with parent and child symptoms. Parenting skills in particular was also an interesting variable related to parent distress and problem child behavior. The effect of parenting skills on child behavior and parent distress was observed to be stronger than that of parenting self-efficacy. However, parenting self-efficacy and parenting skills were highly correlated and may have a strong interaction with each. It would be interesting to see if one or the other was a more effective point of intervention in a treatment setting. It would likely be beneficial to assess both specific parenting skills and parenting self-efficacy in child psychotherapy.

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Table 1

Parent Demographics

		ASD		ASDDS		DS		EB		CM		Total	
		n	%	N	%	n	%	n	%	n	%	n	%
Sex	Male	1	1.7	1	2.6	1	4.2	24	9.7	24	13.0	51	9.2
	Female	59	98.3	38	97.4	23	95.8	224	90.3	161	87.0	505	90.8
Ethnicity	Caucasian	56	93.3	35	92.1	20	83.3	222	78.4	169	90.9	502	84.9
	African American							23	8.1	5	2.7	28	4.7
	Native American					1	4.2	17	6.0	5	2.7	23	3.9
	Pacific Islander					1	4.2	10	3.5	3	1.6	14	2.4
	Hispanic	3	5.0			1	4.2	5	1.8	2	1.1	11	1.9
	Asian			2	5.3			3	1.1			5	.8
	Mixed	1	1.7	1	2.6			3	1.1	2	1.1	7	1.2
	Other					1	4.2					1	.2
Annual Income	Rather not say	5	8.5	3	7.7			119	41.3			127	30.7
	Under $10,000	2	3.4	2	5.1	2	8.3	100	34.7			106	25.7
	$10,000 - 19,999	3	5.1	3	7.7	1	4.2	40	13.9			47	11.4
	$20,000 - 29,999	2	3.4	5	12.8	3	12.5	12	4.2			22	5.3
	$30,000 - 39,999	7	11.9	3	7.7	2	8.3	7	2.4			19	4.6
	$40,000 - 49,999	6	10.2	8	20.5	7	29.2	7	2.4			28	6.8
	$50,000 - 74,999	15	25.4	7	17.9	2	8.3	1	.3			25	6.1
	$75,000 - 99,999	13	22.0	6	15.4	6	25.0	1	.3			26	6.3
	$100,000 - 149,999	6	10.2	2	5.1	1	4.2	1	.3			10	2.4
	Over $150,000			3	7.7							3	.7

Note. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group, and Total = totals across groups.

Table 2

Child Age Differences Across Groups

Variable	Group	Range	*m*	*sd*	*n*
Child Age	ASD	3 to 20	10.31	4.99	58
	ASDDS	6 mo to 19	7.00	4.92	39
	DS	1 mo to 19	5.32	5.53	24
	EB	4 to 18	9.83	3.97	287
	CM	3 to 17	11.45	3.84	189
Age Symptom Onset	ASD	18 mo to 11	2.39	2.08	58
	ASDDS	birth to 1	.21	.25	39
	DS	in utero to birth	--	--	24
Age Diagnosed	ASD	18 mo to 17	5.24	3.79	58
	ASDDS	birth to 8	.69	.78	39
	DS	in utero to birth	--	--	24

Note. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group, mo = months. Age in years unless otherwise specified.

Table 3

TSM Parent Distress and OQ-45.2 Concurrent Validity

Scale		OQ tot	OQ sd	OQ sr	OQ ir
TSM PD	Pearson *r*	-.70	-.68	-.58	-.60
	p	<.01**	<.01**	<.01**	<.01**

Note. **Correlation is significant at the 0.01 level (2-tailed). n = 114. OQ tot = OQ-45 total score. OQ sd = OQ-45 symptom distress. OQ sr = OQ-45 social role. OQ ir = OQ-45 interpersonal relations.

Table 4

Concurrent Validity of Y-OQ and DBC-24

Scale		YOQ tot	YOQ ip	YOQ so	YOQ ir	YOQ bd	YOQ sp	YOQ ci
DBC-24	Pearson *r*	.67	.51	.34	.49	.70	.52	.63
	p	. 00**	<.01**	<.01**	<.01**	<.01**	<.01**	<.01**

Note. YOQ tot = Y-OQ total score, YOQ ip = Y-OQ Intrapersonal Distress, Y-OQ so = Y-OQ Somatic Symptoms, YOQ ir = Y-OQ Interpersonal Relations, YOQ bd = Y-OQ Behavior Dysfunction, YOQ sp = Y-OQ Social Problems, and YOQ ci = Y-OQ Critical Items. Correlations are 2-tailed. *n* = 92. **Correlation is significant at the 0.01 level.

Table 5

Tukey HSD of TSM PSE and TSM PD for pdd and DSpdd groups

Dependent Variable: TSM PSE					95% Confidence Interval	
(I) group	(J) group	(I-J) Mean Difference	Std. Error	*p*	Lower Bound	Upper Bound
DSpdd	ASD	3.44	1.436	.202	-.81	7.69
	ASDDS	2.37	1.512	.703	-2.10	6.84
	DS	.07	1.544	1.000	-4.50	4.64
	EB	1.93	1.351	.786	-2.07	5.93
	pdd	3.11	1.882	.648	-2.46	8.68
	CM	.50	1.362	1.000	-3.53	4.53
pdd	ASD	.33	1.436	1.000	-3.92	4.57
	ASDDS	-.74	1.512	.999	-5.21	3.73
	DS	-3.04	1.544	.436	-7.61	1.53
	DSpdd	-3.11	1.882	.648	-8.68	2.46
	EB	-1.18	1.351	.976	-5.18	2.82
	CM	-2.61	1.362	.471	-6.64	1.42
Dependent Variable: TSM_PD						
DSpdd	ASD	3.16	2.43	.85	-4.05	10.37
	ASDDS	1.75	2.56	.99	-5.85	9.34
	DS	-4.53	2.62	.59	-12.29	3.23
	EB	-1.04	2.29	.99	-7.83	5.75
	pdd	4.00	3.19	.87	-5.45	13.45
	CM	-6.59	2.31	.06	-13.43	.26
pdd	ASD	-.84	2.43	1.00	-8.05	6.37
	ASDDS	-2.25	2.56	.97	-9.85	5.34
	DS	-8.53*	2.62	.02	-16.29	-.77
	DSpdd	-4.00	3.19	.87	-13.45	5.45
	EB	-5.04	2.29	.29	-11.83	1.75
	CM	-10.59*	2.31	.00	-17.43	-3.74

Note: Mean Square (Error) = 45.95. *The mean difference is significant at the .05 level. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group, DSpdd = Down syndrome with autism symptoms below cutoffs, pdd = autism symptoms below cutoffs.

Table 6

Diagnostic Group Effects on TSM Subscales in ANOVA after Merging Groups

Dependant Variable	*df*	*F*	*p*	Adjusted R^2	Effect Size f^2	Observed Power α = .05
PSE	4, 593	9.10	<.01**	.05	.06	.99
PD	4, 593	44.74	<.01**	.23	.30	1.00
SS	4, 593	11.01	<.01**	.06	.07	1.00
PS	4, 593	17.58	<.01**	.10	.12	1.00

Note: PSE = parenting self-efficacy. PD = parent distress. SS = social skills. PS = parenting skills. **Significant at the $p = .01$ level. f^2 = Cohen's standardized effect size for regression.

Table 7

PSE Differences Across Demographic Variables

Dichotomous Variable	*df*	*F*	*p*	Adjusted R^2	Effect Size f^2	Observed Power α = .05	Groups
Parent Sex	1, 305	4.00	.05	.01	.01	.51	ASD, DS, ASDDS,EB
Relation to Child	6, 467	1.78	.10	.02	.02	.67	EB, CM
Parent Ethnicity	7, 529	.80	.58	.01	.01	.35	ALL
Parent Primary Language	1,131	.28	.60	<.01	<.01	.08	ASD, DS, ASDDS
Parent Age Category	4,122	.02	.99	<.01	<.01	.05	ASD, DS, ASDDS
Education	7,124	1.65	.13	.09	.10	.66	ASD, DS, ASDDS
Income Category	1, 357	.59	.81	.02	.02	.29	ASD, DS, ASDDS, EB
Occupation	7, 125	.43	.88	.02	.02	.18	ASD, DS, ASDDS
Employment Status	5, 127	.66	.65	.03	.03	.24	ASD, DS, ASDDS
Marital Status	3, 129	.53	.66	.12	.14	.16	ASD, DS, ASDDS
Child Sex	1, 287	<.01	.97	< .01	< .01	.05	EB
Child Ethnicity	6, 459	.47	.83	< .01	< .01	.19	ASD, DS, ASDDS, EB
Comorbid disorders	1, 131	.95	.33	< .01	< .01	.16	ASD, DS, ASDDS
Number children at home	6, 126	1.50	.18	.07	.07	.56	ASD, DS, ASDDS
Other children with diagnoses	1, 131	2.29	.13	.10	.20	.32	ASD, DS, ASDDS

Note. *significant at .05 level. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group

Table 8

PSE Correlations with Demographic Variables

Continuous Variables	*r*	*p*	*n*	r^2	Groups
Annual Income	-.13*	.04	236	.02	EB
Number of children at home	< .01	.98	133	< .01	ASD, DS, ASDDS
Age of Child	-.11**	<.01	597	.01	ALL
Age of symptom onset	-.19*	.05	112	.04	ASD, DS, ASDDS
Age of diagnosis	-.23*	.02	112	.05	ASD, DS, ASDDS

Note: ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group.
*significant at .05 level **significant at .01 level.

Table 9

Group TSM Subscale Average Scores

		PSE		PD		SS		PS	
Group	*n*	*m*	*sd*	*m*	*sd*	*m*	*sd*	*m*	*sd*
ASD	57	29.49	3.44	28.58	7.22	25.47	7.32	45.33	6.93
ASDDS	41	31.34	3.48	30.34	7.53	27.56	6.76	49.54	5.42
DS	24	33.21	3.32	35.58	8.37	29.00	6.33	51.33	5.90
EB	287	31.11	4.65	32.71	6.76	28.02	6.99	46.00	6.72
CM	189	32.60	3.06	39.53	6.70	30.97	4.65	50.17	5.52

Note. PSE = Parenting Self-Efficacy. PD = Parent Distress. SS = Social Support. PS = Parenting Skills. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group.

Table 10

Group differences for TSM PSE using Tukey's HSD

					95% Confidence Interval	
(I) group	(J) group	Mean Difference (I-J)	Std. Error	*p*	Lower Limit	Upper Limit
ASD	ASDDS	-1.85	.81	.15	-4.07	.37
	DS	-3.72	.97	<.01**	-6.36	-1.08
	EB	-1.62	.58	.04*	-3.19	-.04
	CM	-3.11	.60	<.01**	-4.75	-1.47
ASDDS	ASD	1.85	.81	.15	-.37	4.07
	DS	-1.87	1.02	.36	-4.52	.92
	EB	.23	.66	1.00	-1.75	2.05
	CM	-1.26	.68	.35	-3.24	.61
DS	ASD	3.72	.97	<.01**	1.08	6.36
	ASDDS	1.87	1.02	.36	-.92	4.66
	EB	2.10	.84	.09	-.21	4.41
	CM	.61	.86	.95	-1.74	2.96
EB	ASD	1.62	.58	.04*	.04	3.19
	ASDDS	-.23	.66	1.00	-2.05	1.58
	DS	-2.10	.84	.09	-4.41	.21
	CM	-1.49	.37	<.01**	-2.51	-.47
CM	ASD	3.11	.60	<.01**	1.47	4.75
	ASDDS	1.26	.68	.35	-.61	3.13
	DS	-.61	.86	.95	-2.96	1.74
	EB	1.49	.37	<.01**	.47	2.51

Note: The error term is Mean Square (Error) = 15.95. **The mean difference is significant at the .01 level. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group.

Table 11

Child Symptom Severity Averages by Group

	ASD			ASDDS			DS			EB		
Scale	*m*	*sd*	*n*	*m*	*sd*	*n*	*m*	*sd*	*n*	*m*	*sd*	*n*
YOQ ip	26.49	11.30	51	12.47	11.88	30	3.22	4.47	9	23.78	11.71	228
YOQ so	8.04	5.91	51	7.13	3.93	30	5.11	2.93	9	6.78	4.65	228
YOQ ir	8.00	6.25	51	5.27	6.40	30	.44	2.74	9	8.46	7.10	228
YOQ sp	3.73	2.82	51	3.93	3.11	30	1.56	2.30	9	5.10	4.93	228
YOQ bd	21.47	8.71	51	18.17	8.16	30	7.00	6.78	9	17.40	9.29	228
YOQ ci	7.47	4.02	51	4.17	3.88	30	1.44	1.33	9	7.71	4.57	228
YOQ tot	75.04	30.44	51	53.57	31.13	30	18.89	15.16	9	68.22	33.91	228
DBC	19.96	6.82	56	14.71	8.52	41	12.53	8.21	19			

Note. ASD = autism spectrum disorders group, ASDDS = autism spectrum and Down syndrome group, DS= Down syndrome group, EB = emotional and behavioral disorders group, CM = community group. YOQ tot = Y-OQ total score, YOQ ip = Y-OQ Intrapersonal Distress, Y-OQ so = Y-OQ Somatic Symptoms, YOQ ir = Y-OQ Interpersonal Relations, YOQ bd = Y-OQ Behavior Dysfunction, YOQ sp = Y-OQ Social Problems, and YOQ ci = Y-OQ Critical Items.

Table 12

ANCOVA with PSE as DV and Diagnostic Group Fixed

Scale	Covariate					Group				
	df	*F*	*p*	η_p^2	f^2	*df*	*F*	*p*	η_p^2	f^2
YOQ-tot	1, 313	52.69	<.01**	.14	.16	3, 313	1.56	.20	.02	.02
YOQ-bd	1, 313	17.49	<.01**	.05	.05	3, 313	1.73	.16	.02	.02
YOQ-ci	1, 313	39.12	<.01**	.11	.12	3, 313	1.96	.12	.02	.02
YOQ-ip	1, 313	41.85	<.01**	.12	.14	3, 313	1.93	.13	.02	.02
YOQ-sp	1, 313	51.20	<.01**	.14	.16	3, 313	4.63	<.01**	.04	.04
YOQ-so	1, 313	6.90	<.01**	.01	.01	3, 313	2.99	.03*	.03	.03
YOQ-ir	1, 313	12.95	<.01**	.16	.19	3, 313	5.71	<.01**	.07	.08
OQ-tot	1, 110	18.78	<.01**	.15	.18	2, 110	3.49	.03*	.06	.06
OQ-sd	1, 110	79.32	<.01**	.42	.72	2, 110	.79	.46	.01	.01
OQ-sr	1, 110	45.38	<.01**	.29	.41	2, 110	1.83	.16	.03	.03
OQ-ir	1, 110	12.95	<.01**	.11	.12	2, 110	5.71	<.01**	.09	.10
DBC-24	1, 112	5.51	.02*	.02	.02	2, 112	4.33	.02*	.02	.02

Note: YOQ tot = Y-OQ total score, YOQ ip = Y-OQ Intrapersonal Distress, Y-OQ so = Y-OQ Somatic Symptoms, YOQ ir = Y-OQ Interpersonal Relations, YOQ bd = Y-OQ Behavior Dysfunction, YOQ sp = Y-OQ Social Problems, and YOQ ci = Y-OQ Critical Items. OQ tot = OQ-45 total score. OQ sd = OQ-45 symptom distress. OQ sr = OQ-45 social role. OQ ir = OQ-45 interpersonal relations. *Significant at the p = .05 level. **Significant at the p = .01 level. f^2 = effect size for regression. η_p^2 = partial eta squared; variance accounted for in PSE.

Table 13

PSE Correlations with Parent Distress

	OQ-tot	OQ-sd	OQ-sr	OQ-ip	TSM PD
Pearson *r*	-.47	-.51	-.31	-.39	.47
p	<.01**	<.01**	<.01**	<.01**	<.01**

Note: YOQ tot = Y-OQ total score, YOQ ip = Y-OQ Intrapersonal Distress, Y-OQ so = Y-OQ Somatic Symptoms, YOQ ir = Y-OQ Interpersonal Relations, YOQ bd = Y-OQ Behavior Dysfunction, YOQ sp = Y-OQ Social Problems, and YOQ ci = Y-OQ Critical Items. $n = 90$. **Significant at the $p = .01$ level.

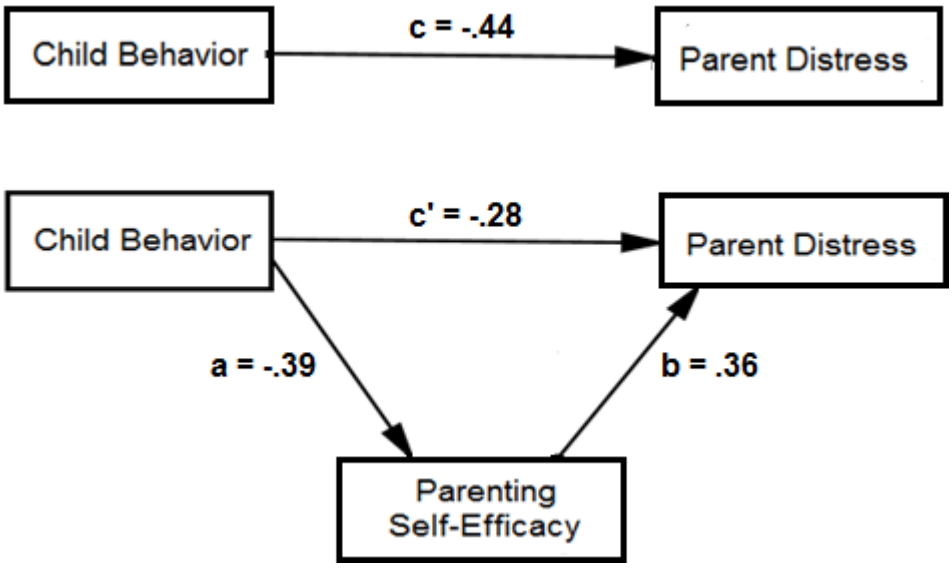

Figure 1. Path Diagram for PSE as Mediator

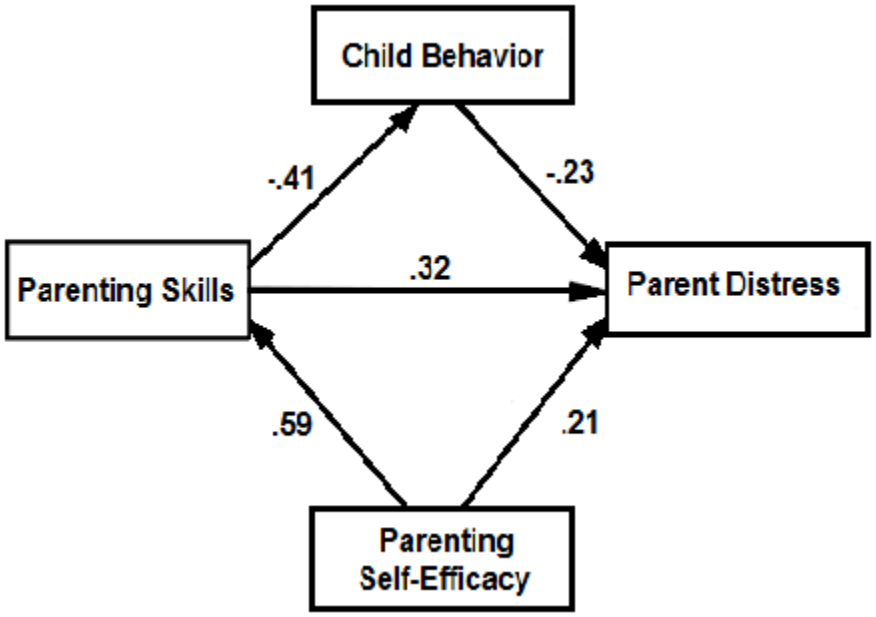

Figure 2. Path Diagram with Parenting Skills as Potential Mediator