

Incredible Years®-ASLD-Telehealth Pilot Study: Supportive Therapist Verbalizations and
Change in Maternal Well-Being

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Submitted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy
under the Executive Committee of the
Graduate School of Arts and Sciences

COLUMBIA UNIVERSITY

2023

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Abstract

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Background. Mothers of children with Autism Spectrum Disorder (ASD) report high levels of stress, depression, and poor well-being, with little sense of social support due to the high demands of their child's care. The Incredible Years[®] for Autism and Language Delays (IY-ASLD) program offers a unique model in that there is a dual focus on both child and parent outcomes. However, there is a dearth of literature on whether IY-ASLD can improve parental mental health outcomes. While there is some evidence to suggest that in-vivo therapist-to-parent supportive statements reduce parental resistance to treatment, there remains a gap in the literature regarding whether these behaviors directly impact parental mental health outcomes. Therefore, the present study investigated the degree to which exposure to the IY-ASLD telehealth curriculum (total minutes in attendance across sessions) along with in-vivo therapist-parent group verbal support was related to parental mental health outcomes and parental verbal approval statements of the child at post-treatment after controlling for baseline mental health and verbal approval.

Methods. Participants were seventeen mother-child dyads, with children ages 2-years-8-months to 5-years-old recruited from a preschool utilizing an Applied Behavior Analysis (ABA) approach to schooling. All or virtually all children referred to this school by their school district are at-risk for or have been diagnosed with ASD. All of the children had an IEP or IFSP with mandated speech services, 71% of the children met criteria for ASD ($N = 12$) on the Childhood Autism Rating Scale- 2-SF, and 2/3 of the sample had adaptive behavior composites below a

standard score of 70 on the Vineland Adaptive Behavior Scales- Third Edition Comprehensive Teacher Form (Sparrow et al., 2016). Participants were assigned to one of four treatment groups based on language level of the child and convenience of the group meeting time. Groups met for 12-weekly IY-ASLD sessions via telehealth. Data were collected at the beginning, mid-point, and end of treatment in the form of a parent questionnaire covering demographics, parental well-being (World Health Organization- Five Well-Being Index; WHO, 1998), depressive symptoms (Patient Health Questionnaire; Kroenke et al., 2001), and parenting stress (Parenting Stress Index-Fourth Edition, Short Form; Abidin, 2012). At post-treatment, parents reported satisfaction with the IY-ASLD-T program (IY-ASLD Parent Program Satisfaction Questionnaire). Data were also collected throughout treatment by recording IY-ASLD parent sessions. From the recorded parent sessions, two primary variables were developed. The first was treatment dosage, calculated as the total minutes each parent attended over the course of the 12-week intervention. The second was exposure to supportive therapist verbalizations during the first 10-minutes of each session, which was coded using the *Therapy Process Code (TPC)* to measure therapist supportive verbalizations during therapist-parent interaction (Chamberlain et al., 1986). Additionally, data were collected via a virtual parent-child play session (PCI) at the beginning, mid-point, and end of treatment, and later coded using the Verbal Behavior Developmental Language Coding System (VBDT) to measure parental verbal approval to child (Greer & Ross, 2008).

Results. Mothers in this study had low levels of depression (PHQ-9; $M = 4.59$, $SD = 4.69$), average parenting stress (PSI-4-SF; $M = 78.12$, $SD = 23.78$), and low levels of well-being (WHO-5; $M = 12.82$, $SD = 4.47$). There were no statistically significant changes in parental depression, parental stress, or observed verbal approval from pre- to post-treatment and the effect sizes were small based on the partial eta squared and Kendall's W values as per Cohen's (1988,

1994) guidelines (small = .20-.49, medium = .50-.79, large \geq .80). However, there was a statistically significant change in caregiver well-being from baseline, mid-treatment, to post-treatment and a small effect size based on Kendall's W ($W = .31$). A Friedman test indicated that caregivers demonstrated significant improvements in well-being from baseline to mid-treatment, and the improvement remained at post-treatment, $\chi^2(2) = 10.04, p < .01$. There was no significant relationship between treatment dosage or supportive verbalizations and change in caregiver well-being.

There was a significant negative correlation between treatment dosage and well-being at mid-treatment ($r = -.493, p = .044$), trending in the same direction at post-treatment ($r = -.369, p = .146$), possibly suggesting that parents with lower well-being, and therefore in greater need of support, attended IY-ASLD more frequently. An additional unexpected finding indicated that parents who were exposed to more supportive verbalizations had statistically significantly lower well-being at post-treatment. One explanation proposed by the authors is that parents who had lower well-being, and attended IY-ASLD sessions more frequently, received more supportive therapist verbalizations, possibly because they pulled for supportive verbalizations from the therapist.

Results from the Incredible Years satisfaction questionnaire indicated there was high satisfaction with the program and the group leaders. High ratings of satisfaction with the group leaders and the program overall indicated that group leaders in the program may have successfully accomplished providing a "good enough" sense of support and reinforcement to parents over the course of the intervention. Therefore, it's possible that specific therapist-to-parent supportive verbalizations were less related to improvements in parental well-being, and rather, the overall sense of support from the therapist to the parents in the group, along with

support between the parents in the group, were sufficient to result in improvements in maternal well-being over the course of the intervention.

Conclusions. Over the course of the IY-ASLD-T intervention, mothers demonstrated significant improvements in their overall well-being. While exposure to treatment and to supportive verbalizations from therapist to parents were not related to residualized change in well-being, these seem to be important factors in understanding the needs of parents with young children with ASD (e.g., parents with low well-being had higher attendance and received more supportive verbalizations). Taken together, the results suggest maternal well-being is an important and promising target for evidence-based behavioral parenting interventions such as IY-ASLD.

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Introduction

Decades of research on treating childhood disruptive behavior disorders have demonstrated the effectiveness of evidence-based behavioral parent programs. The majority of evidence-based behavioral parent training programs originated from the formative work of Constance Hanf and Gerald Patterson at the University of Oregon (Kaehler et al., 2016). These programs (e.g., Parent-Child Interaction Therapy, Eyberg, & Robinson, 1982, Eyberg, 1988; Helping the Noncompliant Child, McMahon & Forehand, 1981) are similar in their emphasis on teaching parents positive reinforcement skills and helping parents to implement these skills in a naturalistic setting (Kaehler et al., 2016; Maliken & Katz, 2013; Patterson, 1982). However, the majority of Hanf model approaches have primarily focused on improving child functioning and have less often focused on enhancing parental well-being and social support.

One Hanf program that has a dual focus on improving child behavior difficulties along with parental well-being in a group format, is the Incredible Years Program® (Webster-Stratton, 1981; 1982; 2008). The Incredible Years Basic Program (IY-Basic) was initially designed to treat children between the ages of three to eight with attention-deficit/hyperactivity disorder (ADHD) along with conduct problems. The IY-BASIC program for children with disruptive behaviors has strong research support, including multiple randomized control trials (RCTs) demonstrating the program's effectiveness in reducing disruptive child behavior and parental stress, as well as enhancing positive parenting practices and well-being (Axberg et al. 2007, Hutchings et al., 2007; 2012; McGilloway et al., 2014)

Another group of parents who have children with significant behavioral problems are those with young children with autism spectrum disorder (ASD¹). Children with ASD struggle

¹ Note autism, ASD, and Autism Spectrum Disorder are used interchangeably in this dissertation.

with social communication, including back and forth conversation, reduced sharing of interest, emotions, and affect, and failure to respond to social interactions as well as restricted interests, rigidity, and stereotyped motor movements, and high comorbidity with intellectual deficits (American Psychiatric Association [DSM-V], 2013). Delayed adaptive behaviors, along with unique challenges related to behavioral routines, sensory sensitivities, social avoidance, and communication, are common in young children with ASD and contribute to behavioral challenges for parents. As a result, parents of children with ASD report significantly higher parenting stress than parents of typically developing children and of children with other types of disabilities, except for ADHD (for a review see Hayes & Watson, 2013). Moreover, the depression scores of mothers who have children with ASD are also significantly higher on average than those of mothers whose children have other developmental disabilities (Olsson et al., 2001; Schwartzman & Corbett, 2020). Griffith et al. (2010) found that mothers of children with ASD have significantly lower levels of well-being than mothers of children with Downs Syndrome.

Social support, either formal or informal, has been identified as an important factor related to parenting children with ASD. Often, parents of children with ASD may feel isolated or ostracized from social support systems due to their unique circumstances parenting a child with more complex developmental needs (Shepherd et al., 2020). Lloyd et al. (2019) reported that parents of children with ASD feel isolated, as families and friends may end relations and noted that families often find it easier and safer to remain home as much as possible (Celia et al., 2020; Lloyd et al., 2019). Mothers of individuals with ASD also perceive low levels of social support, which is related to depression symptoms and overall well-being (Benson, 2010). Taken together,

social support is an important factor in understanding the parental mental health in the ASD population.

Despite the significant findings of high levels of parental stress, depressive symptoms, low levels of social support, the majority of interventions that include parents in treatment of young children with ASD are exclusively focused on the child's behavior and do not directly address parent stress, depressive symptoms, and well-being (Furlong et al., 2012; Wainer et al., 2017). In addition to a lack of focus on parental mental health, most parent-based interventions for young children with ASD do not examine intervention outcomes primarily in terms of parental mental health (e.g., stress, depression, and self-efficacy) (Stahmer & Pellecchia, 2015).

In recent years, the Incredible Years program has been laterally extended to target the unique behavioral needs of children on the autism spectrum as well as their parents. *Incredible Years® for Autism and Language Delays Program (IY-ASLD)* (Webster-Stratton, 2015) has been adapted for this population by including new videos depicting children with ASD, additional content on the unique play behaviors of children with ASD, and discussions of stress experienced by families. The primary long-term goals of IY-ASLD include enhancing children's social, emotional, and behavioral skills as well as helping develop support systems for parents. The group-based approach of IY-ASLD continues to offer the opportunity for parents to learn a series of skills to improve their child's social, emotional, and behavioral functioning in the context of connecting with other parents and collaborating with group therapists on treatment targets. Given the heightened levels of stress in parenting a child with ASD, the collaborative and supportive nature of therapist-to-parent interactions in the context of a group offers a critical opportunity to reduce parental stress and improve mental health.

In comparison to the extensive literature on IY-BASIC which documents significant gains in improving child disruptive behavior along with improving parental stress, well-being, and reducing depressive symptoms, there is limited research on IY-ASLD. Based on a literature search in English on studies on IY-ASLD, a total of five studies were found, with one of them being an unpublished dissertation (Dababnah & Parish, 2016; Hutchings et al., 2016; Muschiatti-Piana, 2020; Wahdan et al., 2023; Williams et al., 2020). There are some limited findings suggesting that IY-ASLD may reduce parental stress. Using a one-group pre-posttest design, Wahdan et al. (2023) found significant reductions in parents' total stress scores ($N = 34$) with a moderate effect size at completion of the IY-ASLD program. Similarly, a pilot study using the IY-BASIC program with parents of young children with ASD found a significant reduction in parental stress following completion of the program ($N = 17$) along with a large effect size ($d = .79$) (Dababnah & Parish, 2016). In contrast to the findings of reduced parental stress by Dababnah & Parish (2016) and Wahdan et al. (2023), Williams et al.'s (2020) feasibility study of IY-ASLD ($N = 58$) found that the nine parents who entered the treatment with clinically elevated levels of stress on the PSI-4--SF measure (sample $M = 97.79$, $SD = 19.79$; 64% above the threshold), all remained in the clinically elevated range at post-treatment (PSI-4-SF; $M = 92.13$, $SD = 19.51$). Williams et al. (2020) also found that there were no statistically significant differences in parental depressive symptoms on the Beck Depression Inventory-II over the course of the intervention, though parents did not begin the intervention with elevated depressive symptoms.

Only one prior study on IY-ASLD investigated the effect of IY-Basic on improving parental well-being for parents of young children with ASD. Hutchings et al. (2016) pilot study ($N = 9$), which used a pre-post design, found no significant differences in maternal well-being

from baseline to post-treatment on the Warwick-Edinburgh Mental Wellbeing Scale (Tennant et al., 2007). They did not report an effect size. The authors suggest the possibility that they did not find improvements in parental well-being over the course of the intervention because the majority of parents entered the treatment with positive well-being and therefore had minimal room for improvement in well-being. Additionally, the study had a particularly small sample size ($N = 9$), therefore limiting the extent of this finding. Based on the limited prior studies of IY-ASLD, there are currently mixed results regarding whether this program results in improvement in parental stress, depression, and well-being.

In-vivo therapist verbal behaviors have been investigated as a mechanism serving to enhance or undermine parental mental health outcomes (e.g., well-being, stress, depression, anxiety). Therapist factors may be essential to treatment outcomes due to the parallel-process occurring between the therapist and parent, mimicking the process between the parent and the child. These factors include therapist use of verbal reinforcement (e.g., support/praise), empathy, questioning behaviors, and directive comments. There is some evidence that in-session therapist verbal behaviors, such as devoting time to parental concerns outside of the context of the child's behavior, are important in parental retention and treatment outcomes (Prinz & Miller, 1994; Thijssen et al., 2017). However, at this time, there has been no exploration of whether therapist use of supportive verbalizations result in improved parental mental health in IY-ASLD.

This study, focused on parental mental health, is part of a larger effort to pilot a telehealth version of IY-ASLD prior to conducting a randomized control trial (RCT). As this study took place during the height of the pandemic when in-person options were unavailable, this study uses a telehealth-adapted version of IY-ASLD that was developed with the help of program developer, Carolyn Webster Stratton. The primary goal of this study is to examine hypothesized

positive changes in parental mental health (i.e., parental stress, depression, well-being) over the course of the intervention. If there are significant changes in parental mental health over the course of the intervention, the present study will investigate the degree to which exposure to the IY-ASLD-T curriculum (total minutes in attendance across sessions) along with exposure to therapist supportive verbalizations relate to improvements in parental mental health from baseline to post-treatment. Additionally, given the emphasis in IY-ASLD on the therapist using the same skills with the parent that the program encourages the parent to use with the child, this study will also investigate whether exposure to therapist supportive verbalizations will relate to changes in observed parent verbal approval in a parent-child Zoom play session from pre-to post-treatment. Finally, this study will also investigate parental satisfaction with the IY-ASLD program in order to add to the existing limited research on IY-ASLD.

Chapter One: Literature Review

Evidence-Based Behavioral Parent Training Programs

Behavioral parent training programs are evidence-based treatments that were initially developed to treat children with disruptive behavior disorders (e.g., oppositional defiant disorder, conduct disorder, attention-deficit/hyperactivity disorder). Constance Hanf and Gerald Patterson developed these programs at the University of Oregon in the 1960's and 1970's (Kaehler et al., 2016). Hanf-model treatments include Parent-Child Interaction Therapy (PCIT; Eyberg, 1988; 2011; Eyberg & Robinson, 1982; Funderburk & Eyberg) Community Parent Education (COPE, Cunningham, et al., 1995; Cunningham, et al., 2009), Defiant Children (DC; Barkley, 1987; 2013), Helping the Noncompliant Child (HNC; McMahon & Forehand, 1981; Kotchick & Forehand, 2002), and Incredible Years (IY-Basic; Webster-Stratton, 1981; 1982; 2008). These models collectively focus on targeting the parent-child interaction and training the parent in behavior management techniques to ultimately shift the child's behavior toward non-disruptive and compliant behaviors. This approach involves teaching key behavioral principles and parenting skills that strive to improve the bond between parent-child (e.g., spending time with the child focused on the child's interest or needs), increase desired parental behavior (e.g., praise, rewards, clear commands), and decrease undesired child behaviors using effective, non-punitive approaches (e.g., time out, loss of privileges). Caregivers are given homework and asked to practice the skills at home. The majority of these programs focus on working individually with a parent or a parent-child dyad.

The efficacy of behaviorally based parent training programs has been documented with decades of research, including randomized clinical trials (RCTs) conducted in clinical and community settings across diverse cultures internationally (e.g., China, Hong Kong, Puerto Rico,

Australia, New Zealand [*Māori* indigenous], Sweden, Spain, Iran, Netherlands) (Hanf, 1968; Kaehler et al., 2016). When delivered with fidelity, such parent training programs result in clinically significant improvement for the majority of participants. Behaviors assessed are focused primarily on child-factors (behavioral symptoms, psychopathology) and the parent-child relationship (mutual reinforcement, overall family functioning) (Bearss et al., 2015; Everett et al., 2021). These programs rarely incorporate material on parent-related stress factors and mental health (Furlong et al., 2012; Wainer et al., 2017). Therefore, a primary goal of this study is to explore the relationship between participation in a parent behavior management program and parental mental health outcomes.

The Incredible Years[®] Parent Training Program

The Incredible Years[®] (IY-BASIC) Basic Parent Program is a group-based program developed by Carolyn Webster-Stratton that has a dual focus on both reducing children's conduct problems and also enhancing parental efficacy and overall well-being (Webster-Stratton, 2001a). The group-based approach of Incredible Years, in contrast to the one-on-one therapist-to-parent setting of many other interventions, offers a unique opportunity to improve parent psychosocial well-being, reduce stress, and gain social support from other parents via developing a collaborative relationship with the group therapist. While the program was initially designed to treat children between the ages of three to eight with conduct problems, over time it was expanded to a greater range of ages (babies 0-1 year, toddlers 1-3 years, preschoolers 3-6 years, school age children 6-12 years) and disabilities (autism and language delays, Webster-Stratton et al., 2018).

The underlying theoretical background for all of the Incredible Years Programs rests upon cognitive social learning theory (Patterson et al., 1982), Bandura's modeling theory

(Bandura, 1986), Piaget's developmental cognitive stages (Piaget & Inhelder, 1969) and attachment theory (Ainsworth, 1974; Bowlby, 1980). The goal of the IY-BASIC Parenting Program is to enhance positive parent-child relationships by promoting parent competencies and reducing negative discipline strategies. Additional goals include increasing parents' ability to use play interactions to coach children's social-emotional, academic, verbal and persistence skills and improve parental self-control, depression, and problem solving. The final critical goal is to increase family support networks and improve home-school bonding.

In order to serve as a group leader/therapist for the IY-program, clinicians must attend a 5-day training with the program developer, Dr. Carolyn Webster-Stratton. The content of the IY-BASIC Program is also thoroughly covered in a detailed manual to ensure treatment fidelity as well as replicability (Webster-Stratton, 2001b). The program begins with a focus on enhancing positive parent-child relationships by teaching parents to use child-directed interactive play, academic and persistence coaching, social and emotional coaching, praise, and incentive programs (Webster-Stratton & Reid, 2010). Then, parents learn how to set up predictable home routines and rules, followed by learning skills for nonviolent discipline techniques. The program is delivered in an in- person group format over 12 to 14 weeks in groups of 8 to 12 parents. Parents watch carefully selected video vignettes demonstrating behavioral principles which serve as the resource for discussions and learning. Parents engage in role-plays to practice skills and complete assignments to practice the skills at home and between sessions. Group leaders monitor parents' engagement in the program by calling and checking in with them each week.

Incredible Years Basic Program Effects on Child Behavior Issues

The IY-Basic Parenting Program has strong research support, including multiple randomized control trials (RCTs) demonstrating the program's effectiveness in reducing

disruptive child behavior, enhancing positive parenting practices and decreasing parental stress. across a diverse range of families. A recent meta-analysis of 50 IY-Basic trials found an average effect size on child conduct problems of $d = .37$, small, when based on independent observations of child behavior (Menting et al., 2013). Leijten et al. (2018) completed a meta-analysis from 14 IY basic RCT trials which documented a mean effect size of $d = .35$ for parent-reported conduct problems (Leijten et al., 2018). Similarly, Jones et al. (2007) noted that after completing the IY Basic Parent Training Program, pre-school children at risk of developing both conduct problems and attention-deficit hyperactivity disorder (ADHD) had lower levels of parent-reported inattention and hyperactive/impulsive difficulties (Jones et al., 2007).

The positive effects of the IY-Basic Program in improving parenting practices, specifically parent's use of language during observation sessions, has been documented in numerous studies. A randomized control trial for children, ages four to eight years old ($N = 151$), who had oppositional defiant disorder (ODD), indicated significant reductions in negative parenting (e.g., criticism, negative commands) and increase in positive parenting (e.g., labeling, praise) for mothers along with a decrease in negative parenting for fathers than those in the control group (Webster-Stratton et al., 2004). The effect size was medium for reductions in negative parenting and increases in positive parenting for mothers as well as in negative parenting for fathers in comparison to the control group. Furthermore, Scott et al. (2001; $N = 141$) found that parents in the intervention group of IY-Basic increased the proportion of praise to ineffective commands they gave their children threefold (Scott et al., 2001). In terms of long-term treatment effects, an 8-to-12-year follow up study of families treated because of preschool-aged children's conduct programs indicated that 75% of the teenagers had minimal behavioral and emotional problems (Webster-Stratton & Reid, 2010). Results from an RCT by Gardner et

al. (2006; $N = 76$) similarly showed significant change in reducing observed negative parenting, increasing positive parenting practices, and enhancing parent-reported confidence. A mediator analysis importantly found that an increase in positive parenting behavior was a partial mediator for improved child behavior (Gardner et al., 2010). When implemented in an RCT with 83 Portuguese families, the IY treatment group showed improved positive parenting language (e.g., labeled praise) ($p < .05$, $\eta^2 = .210$) significantly larger than in the control group on the observation measure (Leitão et al., 2021).

Incredible Years Basic Program Effects on Parental Mental Health

In addition to clear and substantial gains in reducing child disruptive behavior, there is a strong body of research documenting the benefits of the IY-Basic Program for improving parental psychosocial well-being and reducing parental stress and depression. Psychosocial well-being has generally been defined as the presence of positive emotions and moods (e.g., contentment, happiness) and satisfaction with life. Regarding improvements in immediate well-being, Axberg et al. (2007) found a significant increase in maternal self-rated well-being from pre-treatment to post-treatment with a medium effect size ($d = .55$) for parents of children ages 3-9 years old who participated in the IY-Basic program ($N = 113$) as opposed to the control group. In addition, parents reported that they were more optimistic about the future. In a small study of the IY-Basic Program for bereaved families ($N = 7$), Braiden et al. (2011) found a statistically significant increase in parental emotional well-being that indicated an improvement from pre-treatment to post-treatment, and enhanced well-being at a six-month follow-up (Braiden et al., 2011). In a qualitative interview with parents, there was a significant trend regarding improvements related to well-being that included normalizing parent experiences of coping with children with disruptive behaviors as well as experiencing support from the group

and gaining a sense of hope for their future. McGilloway (2012) found significant long-term gains in parental well-being from pre-treatment to post-treatment at both a six-month and one-year follow-up of parents who participated in the IY-Basic Program ($N = 103$). In this study, parents reported significant psychosocial benefits, such as enhanced social networks and improved coping skills, that were sustained for one year following their participation in the program.

One of the most consistent findings in the IY-Basic literature has been short-term and long-term reductions in parental stress after completing the program. In an early-intervention preschool population ($N = 18$), caregivers who participated in the IY-Basic program reported significant decrease in stress on the Parenting Stress Index- Fourth Edition (PSI-4; Abidin, 2012) along with significant improvements in self-reported parenting skills such as less frequent use of harsh and inconsistent techniques at post-treatment. In an RCT that took place in a primary care setting, Patterson (2002, $N = 116$) similarly found that, compared to the treatment as usual group, the IY-Basic intervention group showed significant improvement on the Parenting Stress Index total score immediately following the intervention as well as at six-month follow up (Patterson et al., 2002). Notably, in a foundational study on the IY-Basic program, Webster-Stratton (1988) reported that, compared to parents who only engaged in a group discussion treatment, parents who completed IY-Basic, which included both group discussion along with video modeling, had significantly reduced reports of parenting stress (Webster-Stratton et al., 1988). This finding suggests that there may be an added advantage of the IY-Basic model, including both discussions and reviewing videos, that assists in reducing parental stress. Additionally, Larsson (2009; $N = 127$) found that parents who participated in IY-Basic while their child engaged independently in therapy and parents who exclusively participated in IY-

Basic while their child was not in therapy had significant reductions in stress, with medium to large effect sizes ($d = .67$, $d = 1.07$), following participation in comparison to parents who had no treatment (Larsson et al., 2009). Taken together, these findings indicate that the IY-Basic Program can be particularly advantageous for improving parental well-being and reducing stress in parents of children with disruptive behaviors.

While there is clear evidence documenting improvements in parental well-being and reductions in stress following participation in IY-Basic, there has been somewhat less of a focus on assessing change in parental anxiety and depression. In a small sample ($N = 4$) of high-risk single mothers who participated in IY-Basic in a public clinic setting, Lees and Ronan (2008) found improvement in parental stress and depression scores from pre-treatment to post-treatment (Lees & Ronan, 2008). Regarding the long-term benefits of the IY-Basic program, Bywater et al. (2009, $N = 104$) found significant improvements in post-treatment versus pre-treatment parental depressive symptoms that were maintained at 12-months and 18-months following participation in IY-Basic for a cohort of preschoolers (Bywater et al., 2009). This study indicated a medium effect size at the 12-month timepoint and only a small effect size at the 18-month timepoint. In a preventative intervention of the IY-Basic Program for children at risk of developing conduct disorders, significant improvements in parental stress, parental depressive symptoms, and positive parenting skills were demonstrated at the six-month follow-up (Hutchings et al., 2007). Additionally, Hutchings et al. (2004, $N = 41$) data suggests that an intensive treatment group compared to a non-intensive group resulted in improvements to child behavior and maternal mental health (defined as parent stress, depression, broad psychiatric morbidity on the General Health Questionnaire) that were maintained over time (Hutchings, et al, 2004). In 2012, Hutchings et al. ($N = 130$) conducted an RCT on IY-Basic and found that maternal depression

mediated the relationship between intervention status and improved child behavior (Hutchings et al., 2012). These findings highlight maternal depressive symptoms as an underlying mechanism of child behavior change as a result of the intervention. The authors, therefore, offer the possibility that the collaborative nature of the IY program, with its focus on empowering parents, may relate to its efficacy in reducing parental depression and child behavior problems.

Parental Mental Health Characteristics & Child Behavior

There is a strong body of research indicating that maternal mental health factors, such as depression, stress, and well-being, are closely related to children's behavioral functioning. In particular, several studies have identified higher rates of behavioral difficulties in the children of mothers with depression, which can be manifested as low social competence (Gross et al., 1995), increases in externalizing behaviors and a poor parent-child relationship (Trentacosta et al., 2008). Social cognition models that have been researched focus on examining the role of beliefs that parents hold about the causes of their child's behaviors, which effect how parents respond to child behavior, and can serve to escalate or de-escalate child behavior challenges (Cornah et al., 2003). The negative attributional perspective involved in the learned helplessness model of depression, for instance, proposes that negative events are internal, stable, and global explanations for negative events or behaviors. Based on this explanation, mothers with mental health challenges would be more likely to believe that their children's problem behaviors are reflective of global, internal, and stable aspects of their child, serving to further escalate the negative cycle between the child and parent. However, there is also evidence to indicate that children with early disruptive behaviors serves to heighten emotional distress and discord for parents, increasing the risk of parental mental health challenges (George et al., 2006; Panico et al. 2014). As children with disruptive behaviors require increased use of behavioral management

strategies from their parents, parents can experience escalated levels of parental stress. Taken together, there are mixed findings regarding the causality or directionality between early childhood behavioral difficulties and parental mental health, with consistent findings in the bidirectionality between the two.

Evidence-based behavioral parent training programs, such as the Incredible Years, aim to directly affect parent behavior, by teaching positive behavioral management skills and indirectly improving child behavior. By directly working with parents during group sessions, the Incredible Years Program aims to change interactions parents have with their children with the goal of improving child behavior. As previously described, research on the Incredible Years Program indicates that parents who engage in this program often experience direct effects of improved mood, reduced stress, and enhanced well-being. Given these direct effects of the program on enhancing parental mental health, it is possible that improved parental mental health is an active and key ingredient in improving child behavior. Beauchaine et al. (2005) pooled data from several treatment trials (total $n = 514$) of the IY-Basic program and found that maternal depression moderated treatment response in terms of child behavior outcomes. Specifically, mothers with higher levels of depression had significantly greater improvements in child behavior compared to those who had lower levels of depression. Similarly, Gardner et al. (2010), found that maternal depression was a significant moderator of intervention effects, such that children of more depressed mothers fared better following the IY-Basic intervention ($n = 153$), relative to children in the control group ($n = 104$), who had much poorer behavioral outcomes when their mother was depressed. Therefore, the IY program may be a particularly useful program for parents who have poor mental health, as there is evidence indicating that there are more optimal gains in child behavior for parents with more impaired mental health.

Incredible Years Program Intervention Dosage & Associated Treatment Outcomes

There is data suggesting that treatment dosage, or the extent to which parents are exposed to the Incredible Years program, is related to the effect size of treatment outcomes (Baydar, et al., 2003; Webster-Stratton & McCoy, 2015). Regarding the IY-Basic program, the length varies from 12 to 14 two-hour sessions (or 24 to 28 hours). Webster-Stratton et al. (2012) states that the Incredible Years program is a flexible, non-fixed dosage program that is driven by principles and dynamic interventions developed to be flexibly adapted to each cultural context. Menting et al. (2013) found that the number of sessions attended by parents in the IY-Basic Program was positively related to intervention effects, even when initial severity of behavior was taken into account, suggesting that it is likely that higher treatment dosages lead to enhanced treatment gains in IY-ASLD. Using multiple regression to estimate the independent contribution of different groups of study features (e.g., treatment type, dosage, client type), Wilson and Lipsey's meta-analysis (2001) found that treatment dosage accounted for about 22% of the effect size variability in treatment outcomes for psychological interventions (Wilson & Lipsey, 2001).

The other information on dosage and IY comes from the teacher curriculum, IY Teacher Classroom Management program® (IY-TCM). In a meta-analysis, Korest and Carlson (2021), found that when studies provided a high-dosage (greater or equal to 42 hours of intervention or 6 sessions, each lasting 7 hours) of the program generally reported moderate to large effect sizes. In contrast, studies that provided low-dosage of the IYTCM program (less than 42 hours of intervention), generally reported low effect sizes (Korest & Carlson, 2021). Therefore, it is clear that dosage likely influences the effectiveness of IY-Basic and IY-TCM.

ASD Parent Population and Mental Health

Another group of parents who have children with significant behavioral problems are those with young children with autism spectrum disorder (ASD). Delayed adaptive behaviors along with unique challenges related to behavioral routines, sensory sensitivities, social avoidance, and communication, are common in young children with ASD and contribute to behavioral challenges for parents. As parenting an individual with ASD is uniquely challenging, parents of children with ASD tend to report higher levels parenting stress than parents of typically developing children and of children with other types of disabilities, except for ADHD (see Hayes & Watson, 2013). They also reportedly experience heightened levels of depression and lower levels of positive well-being, possibly due to the unique challenges faced parenting children with a broad spectrum of developmental and behavioral challenges (Baker et al., 2011, Estes et al., 2009; Gallagher et al., 2008)

Stress in Parents of Children with ASD

A meta-analysis conducted by Hayes & Watson (2013) found that parents of children with ASD had significantly elevated levels of stress compared to parents of typically developing children. Brobst et al. (2008), for example, found that mothers of children with ASD ($n = 25$) had an average Parenting Stress Index- Short Form (PSI-4-SF) score falling in the clinically elevated parental stress range ($M = 101.71$, $SD = 23.84$) compared to mothers of typically developing children ($n = 20$) who had an average PSI-4-SF score that fell below the clinically elevated range ($M = 66$, $SD = 16.22$). Similarly, Lee et al. (2009) found that parents of children with ASD ($n = 89$) had an average PSI-4-SF total score that fell in the clinically elevated range ($M = 92.52$, $SD = 20.88$), while parents of typically developing children ($n = 46$) had an average PSI-4-SF total score that fell below the clinically elevated range ($M = 60.71$, $SD = 14.79$). Davis and Carter

(2008) examined total parenting stress in mothers and fathers of toddlers with ASD on the PSI-4-SF and found that while 72% of mothers ($n = 54$) in the sample reported parenting stress scores in the clinically significant range ($M = 83.8$, $SD = 22.6$), only 51% of fathers ($n = 54$) reported parenting stress total scores in the clinically significant range ($M = 79.6$, $SD = 19.3$).

Additionally, in comparison to parents of children with other types of disabilities, Eisenhower et al. (2005) found that mothers of children with ASD reported the highest levels of stress on the Family Impact Questionnaire (FIQ; Donnenberg & Baker, 1993) compared to mothers of children with Down Syndrome and typically developing children. Therefore, it is possible that there are additional behavioral characteristics of ASD that may cause significant distress to caretakers. The authors introduced the possibility that the poorer quality of interpersonal responsiveness in children with ASD may serve as an additional factor in stress for their caretakers of children with ASD (Eisenhower et al., 2005). Therefore, it's possible that the ASD phenotype contributes to the overall experience of parental stress (Kasari & Seligman, 1997; Wolf et al., 1989).

Depressive Symptoms in Parents of Children with ASD

There is some evidence to suggest that in addition to heightened parental stress, there are elevated levels of parental depressive symptoms in parents of children with ASD. Parental depression is closely related to parental stress. Phetrasuwan & Miles (2009), for example, found a significant positive correlation between parenting stress and depressive symptoms, as parents with greater stress had higher levels of depressive symptoms. Additionally, they found that mothers of school-age children with ASD ($N = 106$) had an average score falling slightly below the significant depressive symptomology cut-point ($M = 15.73$, $SD = 11.42$, cutoff is > 16), on a measure of depression symptoms, the Center for Epidemiological Studies Depression Scale

(CES-D; Radloff, 1977), emphasizing that mothers of children with ASD have heightened depressive symptoms. In a pre-school population, a comparison of mothers of children with ASD not only reported higher levels of stress, but also reported higher levels of depressive symptoms on the CES-D ($M = 13.71$, $SD = 8.04$, cutoff >16) than mothers of typically developing children ($M = 8.82$, $SD = 8.37$) (Quintero & Lee McIntyre, 2010). Furthermore, a meta-analysis of 18 studies identified increased risk of depression among mothers of children with developmental disabilities, and ASD specifically, compared to those with typically developing children (Singer, 2006). Wolf et al. (1989) noted that mothers of children with autism ($n = 30$) had elevated levels of depressive symptoms ($M = 10.47$, $SD = 7.95$, cutoff > 9) on the Beck Depression Inventory (BDI; Beck et al., 1961) in comparison to parents of children with down-syndrome ($n = 31$) ($M = 8.03$, $SD = 6.77$) and mothers of typically developing children ($n = 62$) ($M = 5.00$, $SD = 3.80$). Moreover, the BDI scores of mothers who had children with ASD ($n = 62$) ($M = 11.8$) were not only significantly higher than those of mothers with typically developing children ($n = 204$) ($M = 5.2$), but also significantly higher than those of mothers whose children intellectual disability ($n = 145$) ($M = 9.2$) (Olsson & Hwang, 2001).

Well-being in Parents of Children with ASD

Given the heightened levels of stress and depression in parents of children with autism, there is also evidence to suggest that parents of children with ASD, also have lower levels of well-being compared to parents of typically developing children (Benson et al, 2010; Giallo et al., 2011; Hauser-Cram et al., 2001). Samadi et al. (2014), for example, noted that in comparison to fathers ($n = 52$) of young children with ASD ($M = 8.62$, $SD = 5.98$, cutoff >7), mothers ($n = 69$) of children with ASD had significantly lower levels of emotional well-being ($M = 15.05$, $SD = 7.05$) as assessed by the General Health Questionnaire (GHQ; Goldberg & Williams, 1991).

Additionally, Griffith (2010) found that mothers of children with ASD had significantly lower levels of well-being than mothers of children with Downs syndrome. Faso et al. (2013) found that general hopefulness is important for parental well-being as assessed on The Satisfaction With Life Scale (SWLS; Diener, Emmons, Larsen, Griffin, 1985), particularly when parenting in the unique context of raising a child with ASD. Ban and Lui (2021) found that on the Brief Subjective Well-Being Scale (SWBS; Zing, 2003) parents ($N = 240$) of children with ASD reported low levels of well-being only if they also reported high levels of perceived discrimination and low levels of social support.

Incredible Years for Autism Spectrum Disorder and Language Delays (IY-ASLD)

As evidence-based behavioral parent training became more established for the treatment of disruptive behavior, there have been attempts to laterally extend this approach by using parents to treat children with autism spectrum disorder. To address the unique needs of parents of children with ASD, a new *Incredible Years*[®] Parent Program for preschool children with ASD and language delays (IY-ASLD, ages 2-5) was developed and piloted (Dababnah & Parish, 2016; Hutchings et al., 2016; Webster-Stratton et al., 2018) to address the mix of behavioral and developmental problems as well as language delays that present in this population. IY-ASLD is delivered in 12-14 weekly, two-hour, in-person sessions and covers eight topic areas: (1) child-directed narrated play, (2) pre-academic and persistence coaching, (3) social coaching, (4) emotion coaching, (5) developing imagination through pretend play; (6) promoting children's self-regulation skills, (7) using praise and rewards to motivate children; and (8) effective limit setting and behavior management. This program continues to utilize video vignettes, group discussion, role play to practice skills, and home activities (Webster-Stratton & McCoy, 2015).

Like IY-Basic, IY-ASLD program is unique in that it is a group-based approach that has a dual focus on both improving child behavior along with targeting parental stress, depression, and social support. A main principle of the program is to promote a supportive group and empower parents via collaborative learning in a supportive environment. A trained group leader facilitates discussions among parents about parenting, child development, and family issues in a group format. The program is not a didactic, one-size-fits all approach but rather is based on a collaborative model. The flexible group discussions might normalize the experiences of parents, leading to the discovery that they share many issues and ways to problem solve (Webster-Stratton, 2009).

Incredible Years-ASLD Program Effects on Child Behavior Issues

As per a literature search of studies documenting IY-ASLD in English, a total of five studies were identified, as this is a newly developed intervention (Dababnah & Parish, 2016; Hutchings et al., 2016; Muschietti-Piana, 2020; Wahdan et al., 2023; Williams et al., 2020). A comprehensive review of the literature revealed only one randomized control trial (RCT) of the IY-ASLD program. This small study of 58 parents was designed to assess the feasibility and acceptability of the program (Williams et al., 2020). Participants were parents of children aged 3–8 years with a diagnosis of ASD or strongly suspected ASD. Treatment was implemented across four specialist children’s centers in Wales. Half of the families ($n = 29$) were randomly assigned to receive IY-ASLD treatment immediately and half ($n = 29$) were waitlisted to a treatment as usual control condition. It was not powered to detect differences in outcomes and was limited in its use of observational data (Williams et al., 2020). The authors reported logistical challenges that led to missing data from parent-child observations. The authors found good levels of acceptability by parents (based on 75% attendance and satisfaction mean rating of

5.46 [$SD = 0.89$] on a 1-7 point Likert scale) in support of conducting a larger randomized control trial is required to examine the effectiveness of the program. Additionally, Williams et al. (2020) noted that at baseline, more than 70% of parents reported that their children had clinically elevated behavioral disruption on the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2000), but there were no significant differences in child behavior over the course of the intervention. One small pilot study ($N = 9$) noted significant improvement in child behavior from pre- to post-treatment on the Strengths and Difficulties Questionnaire, specifically in the domains of total difficulties, peer problems and prosocial skills (Hutchings et al., 2016). Additionally, parents reported high satisfaction with the program, finding the video vignettes, group discussion and shared problem solving particularly useful (Hutchings et al., 2016). Wahdan et al. (2023) used a one-group pre-post design with a total of 34 parents of children with ASD enrolled at the Palestinian Child Institute to assess the effect of IY-ASLD. To assess improvements in parental management of child behavior, they had parents complete the Incredible Years Questionnaire (IYQ) for Parents, a seven-item parent-report scale assessing parental use of praise along with aggressive and destructive behaviors. They reported a positive effect of the IY-ASD program in improving behavioral management skills by significantly reducing negative parent behaviors (e.g., decreased parent aggressive and disruptive child behavior, decreased mothers and fathers' use of physical force and other harsh punishment toward their children) and improving parent's perceptions of positive child behaviors (e.g., increased parental use of praise) on the IYQ measure (Wahdan et al., 2013). This study documented medium effect sizes. Thus far, all program evaluations of IY-ASLD are focused on an in-person delivery of the IY-ASLD Program. Presently, there are no RCTs that assess the efficacy of the IY-BASIC or the IY-ASLD program in a telehealth delivery format.

Incredible Years-ASLD Program Effects on Parental Mental Health Variables

Although the IY-Basic program documents significant findings regarding reduced parental stress along with improved parental well-being, outcomes for parental mental health have not been as extensively studied in IY-ASLD. There are some limited findings suggesting that IY-ASLD improves parental self-efficacy and reduces parental stress (Muschiatti-Piana, 2020; Wahdan et al., 2023; Dababnah & Parish, 2016). A recent un-published dissertation (Muschiatti-Piana, 2020) of IY-ASLD found that parents ($N = 11$) had significant improvements in parental self-efficacy from pre-treatment ($M = 315.9$, $SD = 44.9$) to post-treatment ($M = 345.9$, $SD = 57.65$), with significant improvements in the domain of Play and Enjoyment and Learning and Knowledge, on the Tool to Measure Parenting Self-Efficacy (TOPSE; Kendall & Bloomfield, 2005).

With regard to IY-ASLD and improvements in parental stress, using a one-group pre-posttest design, Wahdan et al. (2023) found significant reductions in parents' total stress scores ($N = 34$) with a medium effect size at completion of the IY-ASLD program. A pilot study using the IY-Basic program with parents of young children with ASD similarly found a significant reduction in parental stress with a medium effect size ($d = .79$) following completion of the program (Dababnah & Parish, 2016). The authors used a pre-post design with a total of 17 parents. While modules matched the current IY-ASLD program, the videos of children were from the Preschool program, and did not include children with ASD. In exit interviews some parents noted the videos should have featured children with ASD. In this study, parents qualitatively reported that the child-directed play-based focus on the Incredible Years program served as a helpful and supportive framework for interacting with their children which starkly contrasted the typical highly structured ASD treatments. Dababnah & Parish (2016) noted qualitatively that the majority of parents requested an extension of the program in order to

continue practicing skills, particularly those related to parental stress. Nearly all parents who completed the program reported that it improved their relationship with their child (Dababnah & Parish, 2016).

In contrast to the findings of reduced parental stress by Dababnah & Parish (2016) and Wahdan et al. (2023), Williams et al.'s (2020) feasibility study of IY-ASLD, and the only existing RCT for IY-ASLD, found that while parents entered the treatment with clinically elevated levels of stress on the PSI-4-SF measure ($M = 97.79$, $SD = 19.79$; 64% above the threshold), they remained in the clinically elevated range at post-treatment (PSI-4-SF; $M = 92.13$, $SD = 19.51$). Williams et al. (2020) also found that there were no statistically significant differences in parental depressive symptoms on the Beck Depression Inventory-II over the course of the intervention, though parents did not begin the intervention with elevated depressive symptoms. Williams et al. (2020) did not assess parental well-being over the course of the intervention, but did state that future studies should focus on parental well-being outcomes and whether parental mental health variables may serve as possible moderators of intervention effectiveness.

Only one prior study on IY-Basic with parents of children with ASD investigated the effect of the program on improving parental well-being. Hutchings et al. (2016) pilot study ($N = 9$), which used a pre-post design, found no significant differences in maternal well-being from baseline to post-treatment on the Warwick-Edinburgh Mental Wellbeing Scale (Tennant et al., 2007). The authors suggest the possibility that they did not find improvements in parental well-being over the course of the intervention because the majority of parents entered the treatment with positive well-being and therefore had minimal room for improvement in well-being. Taken together, while there is insufficient prior literature on whether the IY-ASLD program plays a role

in improving parental mental health for parents of young children with ASD, there is some indication that this program may result in improvements in parental mental health variables, particularly parental stress, for parents who begin the program with elevated levels of impairment across the domains of stress, depression, and well-being.

Therapist-Parent Interactions in Evidence-Based Behavioral Parenting Programs

While specific behavioral techniques and content of parent-training programs have been thoroughly described and studied, in-vivo therapist-to-parent interactions have been less explored in the parent behavior management training literature. These factors may be essential to treatment outcomes due to the parallel-process occurring between the therapist and parent, mimicking the process between the parent and the child. The extent to which therapists' model foundational skills (e.g., reinforcement of desired behavior) during sessions may be responsible for the extent to which parents learn and generalize new skills. Troutman (2015) has indicated that when coaching parents in behavioral parenting skills, the goal is to use the same skills with parents they are being coached to use with their children (Troutman, 2015). Therefore, it is clear that when engaging in parental behavior coaching, therapists who use in-session behaviors that not only "tell" parents about skills but also "show" parents the same skills leads to greater treatment retention (Troutman, 2015).

Despite the limited focus on evaluating in-vivo therapist-parent interactions in behavioral parent management interventions, there are several therapist process variables that have been previously explored as important in parental retention and treatment outcomes of parents engaging in evidence-based behavioral interventions (Prinz & Miller, 1994; Thijssen et al., 2017). Some factors that have been previously explored include therapist reinforcement (e.g.,

support/praise), empathy, questioning behaviors (e.g., asking relevant follow up questions), and directive comments (e.g., directing the parents to use a certain strategy).

Therapist Verbal Empathy. Giannotta et al. (2019) found that when parents perceived therapists as able to understand their problems, they attended more and completed more homework activities. They also found that parental perceptions of therapists as supportive team leaders predicted overall parental satisfaction with the intervention (Giannotta et al., 2019).

Therapist Attention to Parents' Life Concerns. Another in-session therapist behavior that has been investigated is the degree to which the therapist focuses on parents' life concerns that are unrelated to the child in the context of parent behavior management treatment. It has been demonstrated that parents of children with behavioral difficulties often experience stress from multiple sources (e. g., familial, interpersonal sources) and may have an unexpressed need to focus on a larger set of life challenges besides child management and parent-child interactions (Prinz & Miller, 1994). Werba et al. (2006) found that maternal distress and negative self-talk ultimately predicted PCIT dropout, suggesting that parental distress and general well-being are critical components in treatment retention. Prinz & Miller (1994) demonstrated that adjusting a social learning treatment for parents of children with disruptive behavior disorders to include in-session time devoted to addressing parents' concerns outside of the context of their child's behavior during training sessions significantly reduced attrition.

Therapist Change Talk. Therapists' use of motivational speech, or change-talk, has also been examined as a variable influencing treatment retention and overall parental gains. The use of specific techniques to achieve and maintain increased motivation include eliciting self-motivational statements (e.g., clients specifying what changes they will make, personal statements in support of a given point of view) about attending and adhering to treatment,

overcoming potential barriers to treatment participation (Nock & Kazdin, 2005). Incorporated motivational interventions with families has been found to increase session attendance and retention in parent training (Nock & Kazdin, 2005).

Therapist Verbal Positive Reinforcement. While limited research has focused on measuring in-vivo supportive therapist behaviors in evidence-based parent management programs, several studies have found that these behaviors are connected to improved parental supportive statements to children, and reduced parental resistance. Eames et al. (2010) found that in the IY-Basic program, therapist use of praise during parent training intervention sessions significantly predicted change in parental use of praise with their children and greater therapist reflective behaviors predicted change in parental reflective behaviors (Eames et al., 2010). These results, therefore, suggest praise and reflection as key leader behaviors that influence mechanisms of change in parenting behaviors in parent trainings (Eames et al., 2010). Additionally, therapist behaviors such as supporting and facilitating (e.g., empathic comments) reduced likelihood of parental noncompliance, whereas therapist teaching and confronting (e.g., directly giving corrective feedback to parents) was associated with subsequent increases in parent noncompliance during sessions (Patterson & Forgatch, 1985). In contrast to this finding, Harwood and Eyberg (2004) found that in Parent Child Interaction Therapy (PCIT), high rates of therapist supportive statements and low rates of facilitative statements predicted families who later dropped out of treatment (Harwood & Eyberg, 2004). The finding about supportive statements was counterintuitive. These authors speculate that in-session supportive statements may be insufficient to engender the self-efficacy needed to effectively learn new skills or that families who eventually drop out of treatment may elicit more statements of therapist support (Harwood & Eyberg, 2004).

In the Oregon Parent Management Program, Thijssen et al. (2017) found that therapist's process skills, specifically encouraging parental skill development and joining a family's storyline (e.g., asking relevant follow up questions), were significantly related to decreases in parental stress (Thijssen et al., 2017). These researchers defined therapist process skills as providing support to create a safe and supportive learning context by maintaining appropriate balance, encouraging skill development, and joining the family's story line. In terms of long-term effects on parent stress, Thijssen et al. (2017) highlighted that 6 months after completing parent management training, parents experienced significantly less stress when therapists had higher levels of process skills. Interestingly, therapist process skills were related to a decline in parenting stress, suggesting that creating a safe and supportive learning context is essential for reducing parental stress.

Social Cognitive Learning Theory, Attachment Theory, Group Therapeutic Factors Theory & Improved Parental Mental Health in the Incredible Years Program

Two key theories that underly the Incredible Years Program are social cognitive learning theory and attachment theory, which taken together can provide a rationale for parental improvements in mental health over the course of the intervention. Social cognitive learning theory posits that learning occurs in a social environment, by interacting with others, imitating modeled behaviors, and observing differential reinforcement (Brauer & Tittle, 2012; Schunk, 2012). Therefore, a key assumption in Incredible Years is that child behavior is learned from interactions with significant others in their lives, particularly parents, not only by experiencing a consequence of a certain behavior but also by imitating the behaviors of others. This key assumption can be extended to understand how parents learn in the Incredible Years program, not only by watching videos of other parents practicing skills, but also by observing and listening

to other parents in the group who receive reinforcement from the group leader and other parents. In this model, therefore, learning occurs through both direct and vicarious behavioral reinforcement, where social relationships are a key component to learning. Therefore, group therapists' use of supportive verbalizations to individual parents or the group as a whole, which can include explicit reinforcement, empathy, validation, or normalization, can increase parents' positive sense of themselves both in terms of their ability to learn tangible behavior management skills as well as in the broader sense of viewing themselves positively. By directly receiving or indirectly observing social reinforcement via praise or empathy from the group leader for either practicing a new skill or expressing and labeling a challenging emotional experience, parents in the group experience themselves as competent, capable, and liked, serving to enhance their well-being and reduce their stress.

Incredible Years also draws from relational approaches of attachment theory (Ainsworth et al., 1974) because of its central concern with emotion, affective processes, and the quality of relationships (Webster-Stratton, 2016). In the IY program, the primary strategy of teaching parents to use child-directed approaches that involve using attention and praise to change behavior also influence the relational and affective aspects of parent-child interactions, separate from behavioral management (Webster-Stratton, 2016). Webster-Stratton (2016) indicates that child-directed play is an attachment-based way to promote positive parenting and parent-child bonding or attachment and is a goal in itself. Therefore, the IY program emphasizes the importance of the increasing parental expression and communication of positive affect, including affection, enjoyment, and empathy during play interactions. Just as parents are encouraged to utilize positive and affectively-charged techniques with their children to build a positive parent-child relationship, therapists in IY utilize this same strategy to build a positive therapist-parent

relationship. Similar to the way parents use child-directed approaches with their children, therapists' use of focused attention to each parent during group, acknowledging and attending to each parents' unique knowledge and strengths, enhance the therapist-parent relational connection (Webster-Stratton, 2001). Therefore, therapist use of supportive verbalizations, such as empathy, normalization, validation, and agreement, support a positive social bond between therapists and parents. Decades of research has documented that this positive relational bond, in which parents feel seen, understood, empowered, and liked by the therapist, serve to reduce parental feelings of isolation, shame, stress and improve their well-being (Kazdin et al., 2006; Kazdin et al., 2017). Schmidt et al. (2014), for example, found that higher levels of parent-rated therapeutic alliance with their behavioral parent training therapist was associated with greater gains in parental sense of competence, parenting skills, and with greater improvements in child behavior.

The group therapeutic modality of Incredible Years, which fosters social connection and reduces isolation, is another important factor related to IY's positive impact on parental mental health. There is a strong body of research indicating that the group treatment modality, in comparison to individual interventions, foster group members' sense of hope, interpersonal connection and can result in improvements in mental health of group members (Pennefather et al., 2018; Rayan et al., 2017; Wada et al., 2018). Research on the group process by Yalom (1995) and Yalom and Leszcz (2005) highlights eleven therapeutic factors that can significantly help facilitate change within individuals participating in the group, with a primary factor being universality. Universality is the idea that in group experiences, group members encounter other individuals who have faced similar challenges, and recognize that they are not alone and can feel satisfaction with this normalization and connection (Yalom, 1995). Yalom (1995) describes universality as group members' feeling that their challenging experiences are not unique, helping

group members feel that their experiences are typical, and can help in combating isolation and hope for change. In Incredible Years, parents are provided with opportunities for group discussion, with group leaders prompting parents to reflect on their experiences practicing new behavioral skills with their children and to share barriers and challenges in these experiences. The group therapists' ability to facilitate and provide emotional support to group members in the form of agreement, reflection, or self-disclosure, can provide group members with a feeling that their experiences are normal, relatable, and that their efforts to change are noticed and applauded. Taken together, the therapeutic factor of emotional support may be a particularly important active ingredient in facilitating improvements in well-being for parents who experience heightened levels of stress along with isolation and stigmatization related to having a child with a developmental disability. Therefore, supportive verbalizations from therapist to parent is likely to reduce parents' sense of isolation, increase their sense of being cared for, ultimately helping to improve well-being and ameliorate feelings of depression and stress. As there is a strong connection between feelings of isolation and depression, contact with an emotionally supportive group leader is likely to enhance parental sense of social connection not only to the group leader but to the group as a whole.

Chapter Two: Research Questions

Parents of young children with ASD experience heightened levels of parenting stress and depression, impacting their overall well-being due to the unique challenges faced parenting children with a variety of developmental and behavioral challenges. In recent years, there has been an increase in parent-based behavioral interventions for the ASD population that specifically and successfully target child behavior but fail to explicitly target and measure parental well-being. Given the heightened level of parental stress parenting a young child with ASD along with the long-established connection between parenting stress and child outcomes, the Incredible Years for Autism and Language Delays® program offers a unique model in that there is a dual focus on both child and parent outcomes. While the Williams et al. (2020) feasibility study on IY-ASLD indicated that parents did not experience reductions in parental stress or depression following the intervention, there have been initial findings from quasi-experimental studies by Dababnah & Parish (2016) and Wahdan et al. (2023) which indicate that parents exposed to IY-ASLD did have significantly reduced parental stress with medium effect sizes following completion of the intervention.

Another area that has been overlooked in this literature has been the impact of in-vivo therapist-parent interactions on changes in parental well-being, stress, and depression during the course of intervention. While there is some evidence to suggest that in-vivo therapist-to-parent supportive and affirming statements reduces parental resistance to treatment, there is limited and contradictory evidence on whether these behaviors directly impact parental well-being, stress, and depression.

Therefore, the present study will investigate the degree to which exposure to the IY-ASLD-T curriculum (total minutes in attendance across sessions) along with exposure to in-vivo

therapist-parent group verbal support to the group during check-in at the beginning of each session will be related to parental mental health scores at post-treatment after controlling for baseline scores. It is unknown at this time the degree to which exposure to the Incredible Years for Autism and Language Delays Telehealth curriculum (dosage) as well as therapist-to-parent supportive verbalizations together can predict positive changes in parental well-being, stress, and depression. Given the emphasis in IY-ASLD on the therapist using the same skills with the parent that the program encourages parents to use with the child, it is also hypothesized that exposure to therapist verbal support of the group at check-in will be related to observed parent verbal approval in a Zoom-recorded parent-child play session at post-treatment, controlling for levels of the same parent behaviors at baseline and exposure to the curriculum (i.e., dosage). More specifically, high rates of therapist support will be related to greater mother verbal approval of child at post-treatment, controlling for prior levels of this behavior. Additionally, in order better understand parental perceptions of the IY-ASLD program, parents' report of satisfaction with the program at the end of treatment were also analyzed in this study.

Chapter Three: Hypotheses

Hypothesis 1a: There will be a significant change in parents well-being, depression, and stress scores such that parents will show an increase in well-being and a decrease in depression and stress from pre- to post-intervention.

Hypothesis 1b: Parents with pre-treatment well-being, depression, and stress scores in the clinically-significant range will have improved such that their scores no longer remain in the clinically-significant range at post-treatment following completion of IY-ASLD. Parents in the normal range at baseline (on the variables mentioned above) will remain in the normal range and not move into clinically the significant range at post-treatment.

Hypothesis 2: Parental treatment dosage scores (total minutes in session across the 12 sessions) from IY-ASLD-T, will be positively correlated with maternal well-being, stress, and depression post-treatment scores, while controlling for baseline mental health scores and any demographic covariates that are found to be related to residualized change scores.

Hypothesis 3: Number of therapist supportive verbalizations to which a parent is exposed will be positively correlated with maternal well-being, and negatively correlated with stress, and depression post-treatment scores, while controlling for baseline well-being, depression, and stress scores and demographic covariates that are found to be related to residualized change scores in mental health variables. Exposure to therapist supportive verbalizations will be the sum of the frequency of statements for each therapist's session (10-minute check-in) that the parent was present for.

Hypothesis 4: Exposure to therapist supportive verbalizations scores, will be positively correlated parental verbal approval of child in Zoom play session at post-treatment, while controlling for baseline maternal verbal approval scores and treatment dosage (total minutes in

sessions) and demographic covariates that are found to be related to residualized change in parent verbal approval.

Chapter Four: Methods

Participants

Participants were seventeen biological mother-child dyads with children who attended a full-day, intensive Applied Behavior Analysis (ABA) preschool in a suburb of a large city in the northeastern United States. All or virtually all children referred to this school by their school district are at risk for or have been diagnosed with ASD. Institutional Review Board (IRB) approval for the study was obtained from the ABA School and from the University IRB. To be included, children had to be a) age 2 to 5 years old and b) have mandated speech and language services on an Individual Education Program (IEP) or an Individualized Family Service Plan (IFSP) for a preschooler with a disability (as the state does not use specific disability classifications until kindergarten). Parents had to speak and read English fluently and be able to commit to a 3-month intervention and assessment sequence. See Table 1 for a sample description.

Table 1. Demographic and Clinical Information of Parents-Child Dyads at Baseline

Participants ($n = 17$)	Value
Parent Race/Ethnicity*	
Asian or Pacific Islander	2 (12%)
Black	1 (6%)
Hispanic, Latino, Spanish origin	3 (18%)
White	12 (71%)
Parent Country of Origin	
Born in US	12 (59%)
Born Outside US	7 (41%)
Parent Employment Status	
Full Time	8 (47%)
Part Time	2 (12%)

Not Employed	6 (35%)
Parent Education Level	
Some College	1 (6%)
Bachelor's Degree	7 (41%)
Advanced Degree	9 (53%)
Household Income Level	
\$15,000 to \$24,999	1 (6%)
\$50,000 to \$74,999	2 (12%)
\$75,000 to \$99,999	1 (6%)
\$100,000 to \$149,999	2 (12%)
\$150,000 to \$199,999	2 (12%)
\$200,000 or more	9 (53%)
Children in Household	1.94 (± 0.97)
Only child	7 (41%)
Two children	5 (29%)
Three children	4 (24%)
Four children	1 (6%)
Sibling has Dev. Delay	2 (12%)
Child Gender	
Male	15 (88%)
Female	2 (12%)
Child Age (months)	48 \pm 8.8
CARS-2ST Total T-Score	34 \pm 6.4 (71% ASD)
Child Vineland Adaptive Behavior-3***	70 \pm 6

Note: Values are counts with percentages or $M \pm SD$.

* Participants are listed in each racial category they reported. Therefore totals in this section are greater than sample size and percentage exceed 100%

** VABS = Vineland Adaptive Behavior Scales: Standard Score (SS) has a mean of 100 and Standard Deviation of 15; V-scale score has mean of 15 and Standard Deviation of 3.

Parents ages ranged from 27 to 45 years ($M = 36.93$, $SD = 5.14$) and the majority were born within the US (59%). Those born outside the US reported the following countries of origin: Canada, India, Mexico, Nicaragua, Russia, Ukraine, Zambia, and Albania. Parents identified themselves as White ($n = 12$; 71%), Latinx ($n = 3$; 18%), Black ($n = 1$; 6%), or Asian or Pacific Islander ($n = 2$; 12%). Caregivers had a range in highest education completed (ranging from less than one year of college credit to a Doctoral Degree), with 5.9% completing less than one year of

college credit, 41.2% having a Bachelor's Degree, 5.9% having a masters or professional degree, and 11.8% having a Doctoral Degree. The mean education completed was 8.65 (8=Bachelor's Degree, 9=Master's Degree) with a standard deviation of 1.367. Household incomes ranged from high (53% at \$200,000 or more) to medium (30% at \$75,000- \$199,999) to low (18% at below \$75,000). [Note: In the metropolitan region of the study an income below \$68,720 for a family of four is categorized as *low-income*.] Parents who participated in the study had one child ($n = 6$, 35%), followed by having two children ($n = 5$; 29%), three children ($n = 4$, 23%), and four children ($n = 1$, 5%). Two families (12%) had another child with a developmental delay.

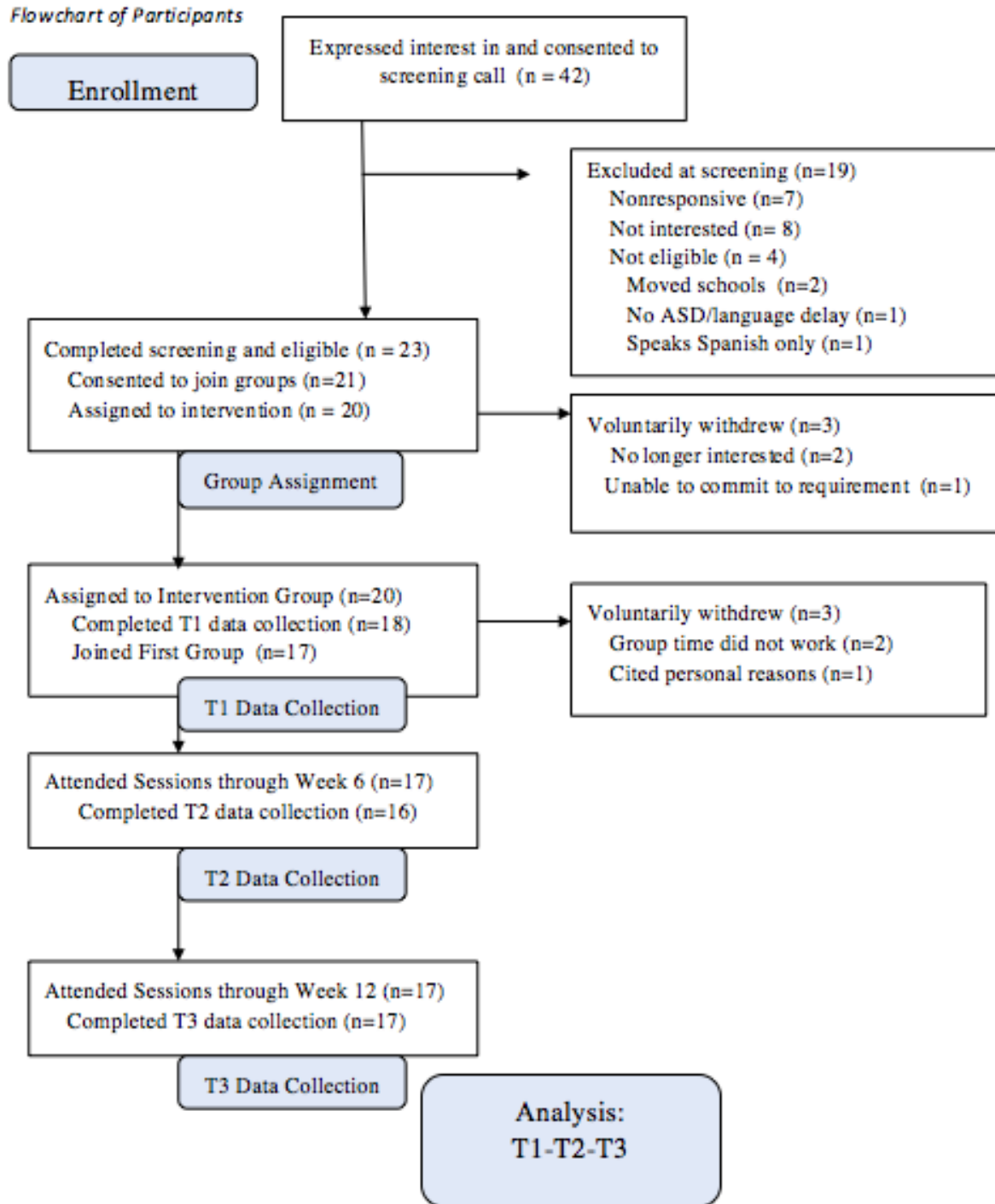
Child participants were mostly male ($n = 15$; 88%) with a mean age of 4 years (range 34 to 60 months) at baseline. Classroom teachers completed the Childhood Autism Rating Scale-Second Edition, Standard Version (CARS2-ST) with scores verified by an ADOS-2 research trained PhD. On this measure, twelve children (71%) met criteria for ASD using the revised cutoff scores (greater than 28.5) for CARS2-ST (Ji et al, 2023), four children met criteria for other developmental disabilities and one child had minimal to no symptoms of ASD. Classroom teachers also completed Vineland Adaptive Behavior Scale –Third Edition (VABS, Sparrow, Cicchetti, & Saulnier, 2016). On this measure, the mean VABS score fell at the threshold for clinically impaired adaptive behaviors ($M = 70$, $SD = 6$, cutoff less than 70), and a total of eleven children (65%) had VABS scores that fell in the clinically impaired adaptive behavior range.

Recruitment

Over 100 parents received paper flyers and emails from the school about the program with links to an informational website and a QR code to access the digital sign-up form (see Appendix A for recruitments materials). Informal conversations about the program were also had during school pick up. Over a 1-month period in early 2021, 42 caregivers completed the

sign-up form and consented to a screening call. Twenty-three caregivers were determined to be eligible and interested in participating in the program, and received consent forms. Following consent, 20 participants ultimately enrolled to begin the intervention. Participants were then assigned to groups based on availability and the approximated verbal level of the child (listener-only, listener and speaker, listener-speaker joined) based on input from school administrators. Following group assignment, 3 additional participants withdrew within the first week for personal or scheduling reasons. A total of 17 participants attended the first group and completing the baseline (T1) data collection, including Qualtrics surveys and parent-child video interactions (PCI). All 17 completed the 12-week program and completed all assessments except for one parent who was not available for the PCI at mid-treatment (T2). A flow chart of enrollment procedures is included in Figure 1.

Figure 1. Participant Enrollment Process



Design

The design of the intervention was a quasi-experimental study with data collected at three time points: Baseline (Time 1), Mid-treatment/Week 6 Probe (Time 2), and Post-treatment (Time 3). The purpose of this intervention was: (1) to examine the acceptability and feasibility of implementing IY-ASLD via telehealth within the community prior to conducting an RCT and (2) to collect preliminary data on changes in parent and child outcome variables over the course of treatment in order to refine the assessment protocol and identify variables most likely affected by the intervention.

Intervention

The intervention was implemented by four clinicians (also called “therapists” in this study) trained and supervised by the IY program developer and other IY experts. All four of the clinician group leaders attended a 5-day training (15 hours) for the IY-ASLD program in January 2021. Three of the four group leaders were advanced doctoral students in the Teachers College School Psychology Program and one was an advanced doctoral student in the Teachers College Applied Behavior Analysis Program. All clinicians had previous experience working with young children with ASD and had prior training in behavioral interventions. During the intervention, all leaders followed the manual for structuring sessions, and assigning home activities. Sessions were videotaped and then segments of the videos were reviewed during biweekly supervision sessions with the program developer, Dr. Carolyn Webster-Stratton (seven supervision sessions in Spring of 2021). Group leaders took turns showing video segments from their group sessions, completed goals and written reflections on their delivery of the program, and brought specific questions to the supervisor. The supervision group would then watch their own and each other’s video segments and would brainstorm and role play different approaches to resolve questions.

During supervision sessions, Dr. Webster-Stratton provided feedback to group therapists, modeling the process by which group therapists' could provide feedback to parents' in each group. Despite this type of modeling occurring during supervision, Dr. Webster-Stratton did not provide any didactic teaching or formal teaching on providing supportive verbalizations to parents' during group sessions.

In the Spring of 2021, each therapist led groups with 4-5 participants that were non-randomly assigned to groups, based on verbal levels of their children and then compatibility between therapist and parent schedules. The intervention included weekly 60-90-minute sessions, conducted via Zoom. When delivered in person, groups often have 10+ parents, who meet over two hours. At the recommendation of the program developer, the telehealth delivery was offered to smaller groups with 90 minute sessions. Smaller group sizes allowed each parent the opportunity to participate numerous times over the session. Attendance in the group sessions was recorded by leaders and verified later by research assistants. Outside of weekly group sessions, parents were provided with worksheets, handouts, and assignments ("home activities") to guide their application of learned skills in the home environment. For the group, reading from *The Incredible Years: A Troubleshooting Guide for Parents of Children Aged 3-8 Years (3rd Edition)* book was an optional assignment (Webster-Stratton, 2019). Group leaders contacted or attempted to contact parents individually on a weekly basis for check-in phone calls.

The group sessions include the same core components each week and follow a consistent structure as outlined in the Leader's Manual. Sessions begin with a weekly group check-in; in which parents would reflect on their home activities from the prior week and share successes or challenges. Each parent was asked in turn to reflect on their week in terms of completing the assignment or giving general updates and reflections on how things have been with their child in

the prior week. The therapists' encourage discussion to address questions and concerns. Therapists' then introduce additional parenting strategies related to the module. Parents are encouraged to ask questions and apply strategies to their own children. When learning new skills, parents are shown video vignettes of real parents and their children with ASD, which provide exemplar models of skills applications in the home setting. Videos are paused frequently for discussion, commentary, and self-reflection. As parents learn new skills, they are prompted to brainstorm ideas as a group, complete exercises and worksheets, pair up for partner discussions, and write "scripts" for how they would apply the skill when playing their child. Parents then engage in role-plays, to practice with each other and gain feedback on their skill acquisition. After the group, parents receive handouts with tips for implementing the skills and prompts for applying the skills in play sessions at home. With each of these activities, the group leader fosters a supportive environment for learning and sharing stories. Due to the isolation felt by many parents raising a child with ASD, the leaders guide discussions to build connection and social support within the group, and encourage network building within the community. *The Incredible Years* model follows several core principles in its approach to treatment, using home activities, video, vignettes, social support, and close collaboration.

The IY-ASLD program, like many parent training programs, begins with the foundational strategies to increase responsive parenting skills and build positive parent-child relationships during play. There are eight modules covered in the program. These are: (1) Child-Directed Narrated Play Promotes Positive Relationships, (2) Pre-Academic and Persistence Coaching Promotes Language Development and School Readiness, (3) Social Coaching Promotes Friendship Skills, (4) Emotion Coaching Promotes Emotional Literacy, (5) Pretend Play

Promotes Empathy and Social Skills, (6) Promoting Children's Self-Regulation Skills, (7) Using Praise and Rewards to Motivate Children, and (8) Limit Setting and Behavior Management.

Compared to the IY-Basic, the IY-ASLD program has an increased focus on methods for using play activities to build language, empathy, social skills, and behavioral-regulation. Due to the communication difficulties of children with ASD, parents learn to assess their child's language levels and use reinforcing and developmentally appropriate ways to prompt social communication. The program emphasizes a functional approach to behavior change, and parents learn the "ABCs" of behavior, by recognizing the antecedents (A) that set up a behavior (B) and the consequences (C) that maintain it. Parents learn ways to shape antecedents and reinforcing consequences to promote appropriate and/or desired behaviors. To get into their child's "attention spotlight" parents leverage their child's play interests and sensory preferences along with narration, imitation, and praise, as means of establishing joint attention and shared enjoyment in play.

Data Collection Procedures

Data were collected at the beginning, mid-point, and the end of treatment in the form of a parent questionnaire on Qualtrics and a virtual parent-child play session (PCI). At baseline the child's head teacher completed a Vineland Adaptive Behavior Scale –Third Edition Teacher Report Form (VABS-3, Sparrow et al., 2016) and the CARS2-2ST under the supervision of a PhD research reliable ADOS-2 psychologist.

Data were collected throughout treatment by recording IY-ASLD parent sessions and coding therapist verbalizations in the first 10-minutes. Parents completed a baseline questionnaire on Qualtrics covering demographics, maternal well-being, depressive symptoms, and parenting stress. They completed the same questionnaire at two to three time points

(baseline, mid-treatment, and post-treatment). All sessions of the IY-ASLD parent program and the PCIs were recorded remotely via Zoom Healthcare, a video conferencing platform that is encrypted to protect the confidentiality of all participants. Zoom Healthcare fully complies with the Health Insurance Portability and Accountability Act (HIPPA) Security Standards. Zoom Healthcare employs Advanced Encryption Standard (AES) using 256-bit keys to protect meetings.

Parents and children participated in 15-minute parent-child interaction (PCI) sessions over Zoom, with parent and child participants joining from their homes at pre-intervention (Time 1), mid-intervention, and post-intervention (Time 2). Parent-child dyads were asked to sit at a table in an enclosed room with minimal distractions, and to place a laptop or a tablet across from where they are seated and to remain in the frame of the camera. Each participant was asked to prepare a list of items to be used during the PCI sessions. These items included a) crayons, b) two blank sheets of paper, c) a bag or a bin to put toys back in, and d) a variety of the child's preferred toys, such as shape sorters, pop-up toys, magnet tiles, connect four or toy vehicles. Refer to Appendix C for a copy of the instructions given to each participant prior to the beginning of the PCI assessment sessions. At the conclusion of each session, video recordings of the sessions were uploaded directly to the lab shared drive labeled with each participant's unique 5-digit number.

The free-play task was used for this study. For this task the experimenter asked the parent participant to bring to the table a variety of toys that the child prefers and to place them in front of him. The experimenter instructed the parent to play with their child as they normally would. A 5-min timer was set and the experimenter's camera was turned off. After five minutes of the free play task, the experimenter turned back on their camera and praised the mother and the child on

finishing the task.

Measures

Demographic Measures: Caregivers answered questions regarding demographic and family characteristics including caregiver and child age, caregiver level of education, marital status, ethnicity, nativity, and family income.

Parenting Stress Index- Fourth Edition, Short Form (PSI-4- SF) (Abidin, 2012): The PSI-4-SF is a 36-item self-report scale containing three empirically derived subscales across three subdomains: parental distress, parent-child dysfunctional interaction, and difficult child, all of which contribute to total parenting stress. Responses are completed on a 5-point Likert scale for items such as: “I feel trapped by my responsibilities as a parent.” The PSI-4-SF has excellent internal consistency as reported by the authors ($\alpha=0.95$) and in this sample at baseline ($\alpha=.94$). Construct validity as a measure of parenting stress is strong, based on extensive research as reported in the manual.

World Health Organization Well-Being Index (WHO-5) (WHO, 1998): The WHO-5 is a 5-item self-report measure of current mental well-being (see Appendix G). Responses such as “I woke up feeling fresh and rested,” and “my daily life has been filled with things that interested me,” are completed on a 5-point scale ranging from 5 (all of the time) to 0 (none of the time). The raw score ranges from 0 (absence of well-being) to 25 (maximal well-being). The measure has good construct validity. It has been noted that the 5 items of the measure constitute a unidimensional scale, where each item adds unique information regarding the level of well-being. Therefore, individual item scores can be added to a meaningful total well-being score. Internal consistency as reported by the authors ($\alpha = 0.89$) is high as it is in the current sample at baseline ($\alpha = 0.86$).

Patient Health Questionnaire (PHQ-9) (Kroenke et al., 2001): The PHQ-9 is a 9-item self-report questionnaire used to make criteria-based diagnoses of depression, assessing the presence and severity of depressive symptoms (see Appendix G). Items such as “little interest or pleasure in doing things” are rated on a scale of 0 (few to no signs of depression) to 27 (severe depressive symptoms). The PHQ-9 is a reliable and well-validated short item measure used to screen for severity of depression with patients demonstrating few to no depressive symptoms (scores of 0-4), mild depression (scores of 5-9), moderate depression (scores of 10-14), moderately severe depression (scores of 15-19), or severe depression (scores of 20-27). Internal consistency for this measure was moderate to high ($\alpha=.85-.90$; in the current sample $\alpha=.76$ at baseline), and analysis of convergent and divergent validity indicate strong psychometric properties.

IY-ASLD Parent Satisfaction Questionnaire-Evaluation of Group Leader & Group (Webster-Stratton, 2019): The IY-ASLD Parent Program Satisfaction Questionnaire is an 8-item self-report questionnaire used to assess parents’ perception of the group leader and the parent group in general. For the group leader domain, four items were included, such as “I feel that the leader’s teaching was” (very poor, superior). Regarding the group as a whole domain, there were four items, such as “I feel the group was” (very unsupportive, very supportive). All items were rated on 7-point Likert scale, with higher scores indicating greater satisfaction with the group leader or the group as a whole.

Observational Coding Measures

Observed Therapist Supportive Statements

Therapist and parent verbalizations during the initial 10-minute check-in were transcribed. As described above, the check-in component of each session occurred at the beginning, in which each parent was individually prompted by the therapist to reflect on how their week went with their child, and discuss challenges as well as successes related to the previously assigned homework. Therapists' encouraged parents to engage in discussions to overcome barriers they may have encountered over the week, and also provide feedback and reinforcement for parental efforts and successes. Each parent had an opportunity to reflect and participate in the group conversation. Transcripts were coded by trained research assistants who used the transcript for coding decisions. To complete the written transcriptions of the check-in sessions, coders listened to the session and wrote out line-by-line therapist and parental verbal statements. One quarter of the transcripts were randomly selected and then verified by an independent reviewer who listened to the zoom session while reading the transcript. No significant discrepancies were found. All coders were unaware of the hypotheses of the current study and were trained until they reached an acceptable level of reliability on each item (80% agreement or greater following procedures established for the ADOS-2; Lord et al., 2012). Videos of group sessions were coded for supportive verbal behavior from the therapist to parents in the group. The coding system used, *The Therapy Process Coding (TPC) Scheme*, is a behavioral observational coding system developed to capture moment-by-moment therapist-parent interactions specifically during parent training (Chamberlain et al., 1986). In the full therapy process coding scheme, all therapist verbalizations are classified into 1 of 8 mutually exclusive categories to describe therapist verbal activity: Support ("It sounds like you have been

dealing with a lot of difficult problems at home”); Teach (“It is important to be consistent”); Information Seek/Question (“When did you first notice these problems?”); Structure (“Now I am going to ask you about his development”); Disagree (“I don’t think that is a good idea”); Interpret/Reframe (“He is doing that to get attention”); and Facilitate (“Okay,” “Yeah,” “Uh-huh,” “Um-humm,” “Right,” “I see”). In the present study, only therapist supportive verbalizations were coded due to previous literature suggesting therapist-to-parent reinforcement advances treatment gains in terms of parental well-being. Additionally, in this study, supportive verbalizations were coded as supportive statements from the therapist to an individual parent or to the group as a whole. There is a large body of research documenting how exposure to verbal support via observational/vicarious reinforcement can serve to reinforce individuals who are not directly receiving the reinforcement (e.g., Kazdin 1974; Chang & Dudek, 2006). Therefore, the concept of vicarious reinforcement indicates that individuals are reinforced both via individual reinforcing statements as well as observing others’ being reinforced. This study used a frequency count for number of supportive verbalizations given by the therapist to any parent during check-in based on the concept of vicarious and observed reinforcement. The Support category can be coded as any one of 12 types of verbal support: Reinforce, Agree, Humor, Empathy, Self-Disclose, Supportive, Joining, Filling In, Apologies, Compliments; and Supportive Disagree. Each therapist statement was coded into either the verbal support category or a non-supportive statement category. Chamberlain and Ray (1988) reported interobserver reliability for the therapist verbal codes from .75 to .85. A sample of how these therapy verbalizations were coded can be found in Table 2, and Coding Procedures and Guidelines can be found in Appendix D.

Table 2. Example of Transcript and TPC Support Coding System

Transcript	Support Categories													
	Paraphrase	Reinforce	Agree	Humor	Paraphrase	Empathy	Self-Disclose	Supportive	Joining	Filling In	Apologies	Compliments	Supportive Disagree	None
<i>Mother:</i> I thought about how I did the role play in my head. I was like don't ask too many questions [laugh] like see what he does.														
<i>Therapist:</i> Oh, that's so funny [laughs]!						1								
<i>Mother:</i> I just was like watching and kind of you know as he was doing it and as he was opening them, I was saying what colors they were to him. Like, ohh you have the blue one! Oh, you have the yellow one. And then he was putting them down, when he put them down, he was closing them and I was also going over the colors with him again. . .														
<i>Therapist:</i> [claps, smiles] ahh!! Exciting.						1								
<i>Mother:</i> When he didn't, I said like good trying and that's when I started doing the praising and persistence stuff and- and you know I'd high five him and stuff like that. So trying to kind of incorporate all that stuff that we - yea so it went pretty well.														
<i>Therapist:</i> That sounds wonderful!		1												
<i>Mother:</i> Yeah														
<i>Therapist:</i> And I like the toy game that you mentioned. It's academic in nature- opening, closing matching colors.		1												
<i>Mother:</i> Yeah														
<i>Therapist:</i> That's great!												1		
<i>Mother:</i> Mhmm [nods]														
<i>Therapist:</i> I love that you tried to your positive attitude. That can be really challenging. Do you feel like you were in his attention spotlight while you were playing with him or not?		1												
<i>Mother:</i> In and out kind of, you know. Um I feel like at the beginning of it he was like all about it and I was trying to like, you know, narrate to him what the colors were and he was like interested and after a while, he started kind of losing this interest in it.														
<i>Therapist:</i> mhmm														1
<i>Mother:</i> I think it was a good try [laughs]														
<i>Therapist:</i> That sounds awesome. Yeah. I think just the attempt is most important part.								1						

TPC coding was conducted during the first 10-minute segment of each group session during the initial weekly check-in. The weekly check-in was selected for coding because it was the first contact between the therapist and parents and focused on developing the therapist-parent relationship. It served not only as a means of gathering information about whether parents completed the weekly assignment but also as an opportunity for the therapist to begin to engage the parents in the treatment process.

Four masters-level research assistants served as transcribers and TPC coders. The four research assistants learned therapist codes by reading the TPC manual and attending a one-hour group training session (Chamberlain et al., 1984). Then coders practiced the coding scheme using videotaped therapist-parent interactions. They continued training until they reached an acceptable level of reliability with one of two master coders on three therapist-parent check-in videos (80% agreement or greater following procedures established for the ADOS-2; Lord et al., 2012). When there was a disagreement on coded items, differences in ratings were discussed among raters and a consensus score was obtained. Ratings by the research assistant and any consensus codes were used in analyses.

Interobserver Agreement (IOA) on Observed Therapist Supportive Statements. After the coders were trained to reliability, each coder was assigned 12 videos and served as a primary coder. In order to check for inter-observer agreement on coding the check-in sessions for therapist supportive statements, 25% of each coders videos were checked by a trained, independent observer and inter-observer agreement was calculated. Using each line of transcription as a trial, trial-by-trial interobserver agreement (IOA) was calculated for supportive therapist verbalizations (coded as a supportive statement or a non-supportive statement). Reliability was not calculated based on which of the 12 types of supportive statements the therapist made, but rather whether or not the therapist made a supportive statement or a non-supportive statement. IOA for supportive therapist verbalizations were calculated using the following formula: $(\text{total trials agreed} / [\text{total trials agreed} + \text{disagreed}]) * 100$. Average Overall IOA ranged from 85%-100% with an average agreement of 93%.

Parent-Child Interaction Observational Measure: Parent Verbal Approval

Parent-child sessions were recorded on Zoom, transcribed, and then coded by trained research assistants who used the transcript and video for coding decisions. All coders were unaware of the hypotheses of the current study. Coders were trained from a set of written guidelines (see Appendix E) and were calibrated by scoring videos independently and then line-by-line discussing any disagreements with the training experimenter, until they reached 100% agreement. After calibrating, the coders scored new videos independently while flagging instances where the code was unclear. Unclear instances were discussed in group meetings and coded together to ensure internal consistency. Coders were expected to maintain at least 80% overall agreement with the experimenter's codes when coding independently. This is considered above the acceptable level of reliability (80% agreement or greater following procedures established for the ADOS-2; Lord et al., 2012). To ensure continued reliability and resolve coding questions, the coders also met regularly to review video segments with Board Certified Behavior Analyst (BCBA) supervisors and a faculty member (Dr. Dudek) to ensure coding continued to follow verbal behavioral theory and coding guidelines written by three BCBA doctoral candidates. If IOA agreement was too low (<75% overall) consensus coding was required, the consensus code was used in all future analyses. In all other cases, the original rater's code was used for analyses.

In the present study, language was categorized by the presence of parental verbal approvals defined as verbal behaviors emitted by the parent and directed to the child to endorse, commend, and praise the child, or a positive attempt to engage the child. Approvals may be delivered vocally with audible sounds (e.g., "Good job!"); non-lexical (e.g., "Weee!") or non-vocal gestures, or physical contact (e.g., a thumbs up, high fives, hugs, tickle, kiss). A sample of

how this variable was coded can be found in Table 3, and Coding Procedures and Guidelines can be found in Appendix E.

Table 3. Example of Transcript and VVO- Response Coding System

Transcript	Type of Vocal Verbal Operant				Type of Reinforcement /Response Record how the <i>partner</i> in dyad responded to the vocal verbal operant				
	Mands	Tacts	Approvals	Disapprovals	Speaker: vocal verbal speaker response (words/word attempts)	Speaker vocal non-lexical speaker response (grunt, laugh, cry)	Gestural non-vocal verbal response (head nod, shake, wave)	Listener only/ Compliance response (non-vocal response, demonstrate s attending to speaker)	None (not attending or no response observed)
Mother: Help me clean up? (holds out crayon box)	1							1	
Child (puts crayon in box, no vocalization)					1				
Mother: Good job cleaning!			1		1				
Child: I did it.		1			1				
Mother: You put the crayon away. Yay!		1	1				1		
Child (nods head yes)									

Treatment Dosage

Intervention sessions of IY-ASLD parent groups were recorded on Zoom Healthcare.

Intervention session videos were used to establish attendance ("dosage") variables for each participant. Exposure to the curriculum was measured using therapist’s attendance records and then was independently verified using the session video recordings. Parents who attended the full session in each week were recorded for 90-minute “dosage” of treatment. Due to variations by therapists and parents’ schedules (e.g., childcare, work, and personal reasons), there were instances where participants did not attend a full 90-minute session. If they had scheduling conflicts, participants were permitted to log into the Zoom session for as long as they were able to join, and their dosage was measured based on the time spent in session that week (e.g., 45 minutes if half of a session was attended). Parents who were absent from the session received 0

minutes of treatment. Participants' total dosage time was summed across the 12 sessions. Each parent participant has a dosage variable measuring the total number of minutes spent in sessions, based on attendance records, which a research assistant verified from video recorded sessions.

Data Analysis

Data was first analyzed by reporting descriptive statistics for all numerical variables (Mean, SD, Median), creating a correlation matrix for all variables, testing variables for normality (Shapiro-Wilk Test of Normality (appropriate for sample $N < 50$), testing data for skewness (values should be less than ± 1.0 to be considered normal), testing data for kurtosis values (should be less than ± 1.0 to be considered normal), and checking the QQ Plots (if the data are normally distributed, the data points will be close to the diagonal line). If normality was present, for hypothesis 1a, the mean value of dependent outcome variables at each time point (baseline, mid-treatment, post-treatment) was compared using a one-way repeated measures ANOVA to investigate whether there will be a significant change in parents well-being, depression, and stress scores such that parents will show an increase in well-being and a decrease in depression and stress from pre- to post-intervention. To calculate an effect size η^2 will be used. The following parameters were used to interpret effect sizes as per Cohen's (1988, 1994) guidelines; small = .20-.49, medium = .50-.79, large $\geq .80$. If normality was not present, outcome variables at each time point (baseline, mid-treatment, post-treatment) were compared using the Friedman's test, the non-parametric equivalent of a one-way repeated measures ANOVA. Effect sizes will be reported in Kendall's W. Additionally, changes in parental well-being, depression, and stress scores were examined from pre- to post-intervention to investigate change in clinical significance of parental scores. The non-parametric McNemar Test examined whether parents with pre-treatment well-being, depression, and stress scores in the clinically-significant range improved

such that their scores no longer remain in the clinically-significant range at post-treatment following completion of IY-ASLD and whether parents in the normal range at baseline (on the variables mentioned above) remained in the normal range and not move into clinically the significant range at post-treatment. Finally, Pearson's partial correlations will be used for hypothesis 3 and 4 when assumptions were met. Specifically, to capture change in outcome variables, partial correlations were used to test the relation between elements of the intervention (e.g., dosage, therapist supportive verbalizations) and the outcome (e.g., well-being at post-treatment) after controlling for the autoregressive effect (e.g., well-being at baseline). In these analyses, the autoregressive effect residualizes the outcome, leaving only variability that is unexplained by autoregressive effect and can therefore be conceptualized as the variability due to change.

Chapter Five: Results

Preliminary Analyses

Data Preparation

Missing data. Raw data from questionnaires was examined to identify the scope of missing data. There were 99% of total responses provided across measures, thus multiple mean imputation was not used. When at least 80% of the participants' responses were available on a scale, missing items were imputed using the mean score of other items on the scale. This method allows for imputed scores to be consistent with the participant's pattern of responses to similar items when an adequate number of actual responses were available. Mean imputation calculations were used for one component of the Observed Therapist Supportive Statement variable and for dosage. One of the session videos for one therapist's group was lost but attendance data was available. A mean was created using the available eleven other data points.

Testing Assumptions. The dataset was evaluated to determine whether the variables were normally distributed. A skewness or kurtosis statistic between -1 and 1 typically indicates a reasonably normal distribution (Klein, 1998). According to Klein's (1998) recommendation, cut-offs of z-scores for skew (skewness/standard error) greater than 3.0 and kurtosis (kurtosis/standard error) greater than 10 were used in this dissertation. Values of skewness greater than 3 and kurtosis greater than 10 are considered extreme. However, regression analyses tend to be robust to skew; therefore, skewness is reported as a descriptive feature of the sample. A summary of skewness and kurtosis tests can be found in Table 4, which reviews all descriptive statistics for the dependent and independent variables. For all dependent variables the skewness and kurtosis were within the acceptable range (see Table 4) except caregiver well-being at baseline and post-treatment, caregiver depression at baseline and mid-treatment, household

income, and maternal verbal approval to child at post-treatment. There was a positive skew for caregiver well-being at baseline and post-treatment indicating that most caregivers demonstrated negative well-being. The negative skew for household income indicates that most caregivers had high income. For maternal depressive symptoms, the negative skew indicates that most mothers were not moderately or severely depressed as one would expect in a community sample.

Treatment Groups, Exposure to Supportive Verbalizations, and Change in Caregiver Well-being, Stress, Depression. Preliminary analyses were conducted to investigate whether there were significant relationships between treatment group and exposure to supportive verbalizations as well as between treatment group and residual change scores in caregiver well-being (WHO-5), stress (PSI-4-SF), and depression (PHQ-9). The goal of this analysis was to determine whether treatment group should be controlled for in the analyses.

A one-way repeated measures ANOVA indicated that there were significant differences in exposure to supportive verbalizations by the treatment group, $F(3,16) = 6.367$ $p < .05$. Between the four treatment groups, mean scores in exposure to therapist supportive verbalizations ranged from 143 to 94 over the course of the 12-week program (Group A: $M = 143.00$, $SD = 18.92$, Group B: $M = 110.80$, $SD = 16.47$; Group C: $M = 95.75$, $SD = 19.27$, Group D: $M = 94.00$, $SD = 17.64$). However, there were no significant differences in any of the primary outcome variables, residual change scores in caregiver well-being, stress, depression, across the four treatment groups, p 's $> .05$. Therefore, treatment group was not included used as a control variable for follow-up analyses investigating change in caregiver well-being throughout the course of treatment.

Parent Demographics and Residual Change in Caregiver Well-being, Stress, Depression. Preliminary analyses were also conducted to investigate whether there were

significant relationships between parental demographic characteristics and residual change scores in caregiver well-being (WHO-5), stress (PSI-4-SF), and depression (PHQ-9) in order to see if any demographic variables should be controlled for in the analyses.

Regarding residual change scores in caregiver well-being (WHO-5), there were not significant partial correlations between well-being at post-treatment and caregiver nativity ($p = .999$) or caregiver education ($p = .137$) when controlling for well-being at baseline. Therefore, caregiver nativity and education were not included as control variables for analyses focused on well-being (WHO-5). However, there was a statistically significant partial correlation between well-being at post-treatment and household income when controlling for well-being at baseline ($r = -.66, p = .006$). Therefore, household income was included used as a control variable for follow-up analyses investigating change in caregiver well-being throughout the course of treatment.

Regarding residual change scores in caregiver stress (PSI-4-SF), there were no significant partial correlations between stress at post-treatment and caregiver nativity ($p = .349$), caregiver education ($p = .310$), or household income ($p = .978$) when controlling for stress at baseline. Similarly, there were no significant partial correlations between depression at post-treatment and caregiver nativity ($p = .158$), caregiver education ($p = .225$), or household income ($p = .605$) when controlling for depression at baseline. Therefore, caregiver nativity, caregiver education, and household income were not included as control variables for analyses focused on parental stress and parental depression.

Child Demographics and Residual Change in Caregiver Well-being, Stress, Depression. Preliminary analyses were also conducted to investigate whether there were significant relationships between child demographic characteristics and residual change scores in

caregiver well-being (WHO-5), stress (PSI-4-SF), and depression (PHQ-9) in order to see if any demographic variables should be controlled for in the analyses.

Regarding residual change scores in caregiver well-being (WHO-5), there were not significant partial correlations between well-being at post-treatment and baseline child Vineland Adaptive Behavior Scale-3, Adaptive Behavior Composite scores ($p = .830$), or CARS2-ST scores ($p = .673$) when controlling for well-being at baseline. Therefore, Vineland Adaptive Behavior scores and CARS2-ST scores were not included as control variables for analyses focused on well-being (WHO-5). However, there was a statistically significant partial correlation between well-being at post-treatment and child gender (coded 1 male, 2 female) when controlling for well-being at baseline ($r = -.53$, $p = .033$) such that parents of male children had greater improvements in well-being whereas parents of female children had less improvements in well-being. As there were only two females included in the study, child gender was not included as a control variable in follow-up analyses on caregiver well-being.

Regarding residual change scores in caregiver stress (PSI-4-SF) there were not significant partial correlations between stress at post-treatment and child Vineland Adaptive Behavior ABC scores ($p = .158$) when controlling for stress at baseline. Therefore, Vineland Adaptive Behavior scores and child gender were not included as control variables for analyses focused on well-being (WHO-5). However, there was a statistically significant partial correlation between caregiver stress at post-treatment and CARS2-ST scores when controlling for parental stress at baseline ($r = -.57$, $p = .022$) such that parents had less change in stress when they had children with lower CARS-2ST scores. There was no relationship between parental stress and CARS2-ST scores at baseline. Therefore, CARS2-ST scores were included as a control variable for all analyses including caregiver stress.

Regarding residual change scores in caregiver depression (PHQ-9) there was not a significant partial correlation between depression at post-treatment and child gender ($p = .138$). Therefore, child gender was not included as control variables for analyses focused on parental depression. However, there was a statistically significant partial correlation between caregiver depression at post-treatment and CARS2-ST when controlling for parental depression at baseline ($r = -.65, p = .007$), such that parents such that parents had less change in depression when they had children with lower CARS2-ST scores. There was no relationship between parental depressive symptoms and CARS2-ST scores at baseline. There was also a statistically significant partial correlation between caregiver depression at post-treatment and baseline Vineland Adaptive Behavior scores when controlling for parental depression at baseline ($r = .51, p = .044$), such that parents of children with higher Vineland ABC scores had more change in depressive symptoms. There were no significant correlations between Vineland ABC scores and depression scores at baseline. Due to the Pearson's correlation value of .51 between the CARS2-ST scores and Vineland Adaptive Behavior Scale ABC scores, only the CARS2-ST was included as a control variable for all analyses including caregiver depression.

Parent and Child Demographics and Residual Change in Maternal Verbal Approval to Child in Zoom Play Sessions. Preliminary analyses were conducted to investigate whether there were significant relationships between any parent and child demographic characteristics and residual change scores in maternal verbal approval to child at baseline to post-treatment in order to see if any demographic variables should be controlled for in the analyses. There were not significant partial correlations between maternal verbal approval to child at post-treatment and child Vineland Adaptive Behavior scores and CARS2-ST scores (p 's $> .05$) when controlling for maternal verbal approval to child at baseline. Therefore, Vineland Adaptive Behavior scores,

CARS2-ST scores, were not included as control variables for analyses focused on maternal verbal approval to child. Additionally, there were no significant partial correlations between maternal verbal approval to child at post-treatment and household income, parental education, or parental nativity (p 's > .05) when controlling for maternal verbal approval to child at baseline. Therefore, household income, parental education, and parental nativity were not included as control variables for analyses focused on maternal verbal approval to child.

Descriptive Statistics of Primary Study Variables

Table 4: Descriptive Statistics for Study Variables

Variables	<i>N</i>	<i>M</i>	<i>SD</i>	Min.	Max.	Skewness ^a	Skew z-score ^c	Kurtosis ^b	Kurtosis z-score ^c
Well-being (WHO-5 Base)	17	12.82	4.47	6.00	25.00	1.31	3.74	2.62	3.74
Well-being (Who-5 Mid)	17	15.06	4.36	7.00	25.00	.410	1.17	.526	.751
Well-being (Who-5 Post)	17	15.12	4.49	10.00	25.00	1.24	3.54	1.17	1.67
Parent Stress (PSI-4-SF Base)	17	78.12	23.78	39.00	123	.101	.288	-.785	-1.12
Parent Stress (PSI-4-SF Post)	17	75.64	25.54	41.00	128	.481	1.37	-.689	-.984
Depression (PHQ-9 Base)	17	4.59	4.69	.00	18.00	1.50	4.29	3.06	4.37
Depression (PHQ-9 Mid)	16	3.56	3.65	.00	13.00	1.29	3.68	1.72	2.46
Depression (PHQ-9 Post)	17	3.76	3.76	.00	10.00	.66	1.88	-.94	-1.34
Treatment Dosage (minutes)	17	803.47	161.8	451	990	-.782	-2.23	-.145	-.207
Sum of Supportive Statements	17	110.88	25.48	73.00	168.0	.466	1.33	.105	.15
Mother Verbal Approval Base	16	15.94	8.98	3.00	34.00	.290	.828	-.682	-.974
Mother Verbal Approval Mid	17	8.25	6.18	.00	19.00	.478	1.36	-.772	-1.10
Mother Verbal Approval Post	17	11.88	11.73	1.00	42.00	1.67	4.77	2.50	3.57
Family Income	17	8.59	2.033	3	10	-1.586	-4.53	2.249	3.21

^a Standard error of skewness = .35

^b Standard error of kurtosis = .70

^c Z-statistic to determine cutoffs for skewness and kurtosis is determined by dividing the produced statistic by standard error

Parental Characteristics

Caregiver depressive symptoms at baseline on the PHQ-9 ranged from 0 to 13, with a mean of 4.59 and a standard deviation of 4.69. Individuals who receive a score of 0-4 are considered in the “minimal level of depressive severity,” 5-9 is “mild depression,” 10-14 is “moderate depression,” 15-19 is “moderately severe,” and 20-27 is in the “severe depression range.” In this sample, 5 of the 17 participants were found at the “mild” level of depression, 1 demonstrated moderate depression, and 1 participant had moderately severe depression. As the cutoff for clinically significant depressive symptoms is 10 or above, only 2 of the 17 parents (11%) were found at the “moderate” or higher level of depression, while 15 of the 17 participants (88%) were found at the “mild” or below level of depression (9 or below).

In this sample, total parenting stress raw scores at baseline were found to have a mean score of 78.17, which converts to a percentile rank of 58, placing the majority of parents within a non-elevated level of parenting stress. Only two caregivers reported significantly elevated levels of parenting stress, based on a raw score of 110, which falls in the 85th percentile rank. Taken together, this indicates that our sample of caregivers had average levels of total parental stress.

Total scores for caregiver well-being on the WHO-5 at baseline ranged from 6 to 25 in this sample (possible scores range from 0 to 25) with higher scores indicating better self-reported well-being. Notably, one parent is considered a potential outlier as her scores were at the extreme upper end of possible WHO-5 total scores (25) across the baseline, mid-treatment, and post-treatment timelines. When WHO-5 scores were analyzed without this participant, the mean caregiver well-being score went down by less than one point while the standard deviation scores were largely reduced, from 4.48 to 3.29. Therefore, all analyses including caregiver well-being change scores were conducted both including and excluding this participant. The mean of the

sample at baseline was 12.82 with a standard deviation of 4.47 with the outlier participant included whereas the sample at baseline was 12.06 with a standard deviation of 3.29 with the outlier excluded, indicating a low level of reported well-being in the sample, as scores below 13 indicate poor well-being.

Observational Coding Measures

Exposure to Therapist Supportive Statements. In terms of supportive verbalizations made from therapist to caregivers during each 10-minute check-in for the 12-week intervention, participants were exposed to a total of 73.00 to 168 supportive verbalizations. ($M = 110.88$, $SD = 25.48$).

Parent Verbal Approval. At baseline, parents produced an average of 15.94 verbal approvals ($SD=8.98$), at mid-treatment they produced an average of 8.25 verbal approvals ($SD=6.18$), and at post-treatment they produced an average of 11.88 approvals ($SD = 11.73$).

Attendance Dosage. Treatment dosage ranged from 520 minutes to 1,070 minutes in total. Across groups, the average number of minutes in session 859 minutes (a little over 9 sessions) with a standard deviation of 143 minutes (almost two sessions). There were two participants who had low attendance (scores of 520 and 526 minutes), they were not considered outliers as they fell within 2 standard deviations of the mean. Therefore, these participants were included in all analyses of the study.

Correlations of Study Variables

Preliminary analyses of main study variables were done to examine relationships that exist between specific parental mental health variables with other caregiver characteristics and demographics. See Table 5. Pearson correlations were conducted for continuous and interval

variables while Point-Biserial Pearson correlations were conducted for dummy-coded dichotomous variables.

Correlations between Caregiver Mental Health Variables (well-being, depression, stress). Regarding correlations between different caregiver mental health variables, several significant correlations were found. Specifically, caregiver depression at baseline was significantly negatively correlated with caregiver well-being scores across baseline ($r = -.55, p = .022$), mid-treatment ($r = -.59, p = .013$), and post-treatment ($r = -.52, p = .032$). Therefore, caregivers with higher depression severity scores had lower caregiver well-being scores across all three time points (baseline, mid-treatment, post-treatment). Caregiver stress at baseline was significantly positively correlated with parental depression at baseline ($r = .86, p = .001$), mid-treatment ($r = .87, p = .001$), post-treatment ($r = .73, p = .001$). Caregiver stress at baseline was significantly negatively correlated with caregiver well-being at baseline ($r = -.61, p = .009$), mid-treatment ($r = -.65, p = .004$) and post-treatment ($r = -.58, p = .015$).

Correlations between Caregiver Mental Health Variables & Primary Observational Measures. There was a significantly negative correlation between the number of supportive verbalizations by the therapist to the group that the caregiver experienced (exposure to supportive verbalizations is a function of therapist verbalizations and attendance) and caregiver well-being at mid-treatment ($r = -.51, p = .038$) and post-treatment ($r = -.51, p = .035$), suggesting that caregivers who were exposed to more therapist supportive verbalizations had lower levels of well-being at mid-treatment and post-treatment. Additionally, as would be expected, there was a significantly positive correlation between treatment dosage and number of supportive verbalizations ($r = .69, p = .002$).

Correlations between Child Characteristics

There was a significantly negative correlation between the Vineland ABC scores and the CARS2-SF ($r = -.63$, $p = .007$), such that children who had more impaired adaptive behaviors on the Vineland (lower scores indicate poorer adaptive behavior skills), tended to have more symptoms of ASD.

Table 5. *Intercorrelations of Study Variables*

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Caregiver Well-being (WHO-5) Baseline	--															
2. Caregiver Well-being (WHO-5) Mid-treatment	.82**	--														
3. Caregiver Well-being (WHO-5) Post-treatment	.89**	.81**	--													
4. Caregiver Depression (PHQ-9) Baseline	-.55*	-.59*	-.52*	--												
5. Caregiver Depression (PHQ-9) Mid-treatment	-.46	-.59	-.53*	.80**	--											
6. Caregiver Depression (PHQ-9) Post-treatment	-.65**	-.71**	-.64**	.65**	.83**	--										
7. Parent Stress (PSI-SF) Baseline	-.61**	-.65**	-.58*	.86**	.87**	.73**	--									
8. Parent Stress (PSI-SF) Post-treatment	-.53*	-.57*	-.54*	.70**	.82**	.78**	.90**	--								
9. Number of Supportive Verbalizations	-.43	-.51*	-.51*	.01	.19	.20	.17	.12	--							
10. Treatment Dosage	-.38	-.49*	-.37	-.07	.19	.18	.11	.06	.69**	--						
11. Household Income	-.04	-.21	-.34	.01	.12	.11	-.07	-.11	.19	-.05	--					
12. Child Gender (1M, 2F)	-.11	-.18	-.35	-.09	.05	.24	.01	.19	.26	.33	.26	--				
13. Caregiver Approval Baseline	.06	.29	.01	-.06	-.38	-.33	-.11	-.06	.01	-.32	-.23	.13	--			
14. Caregiver Approval Mid-treatment	.08	.14	.11	-.45	-.45	-.21	-.32	-.19	.29	.20	-.01	.27	.40	--		
15. CARS2-ST	.10	.16	.04	.05	-.30	-.46	-.15	-.42	.23	-.03	.25	-.16	.34	.14	--	
16. Vineland ABC	-.20	-.19	-.20	.21	.54*	.52*	.51*	.60*	-.09	.01	.16	.35	-.16	-.24	-.63**	--

Hypothesis Testing

Hypothesis 1a:

Hypothesis 1a examined the extent of change across treatment times (baseline, mid-treatment, post-treatment) in caregiver well-being (WHO-5), depression (PHQ-9), and stress (PSI-4-SF). As the data violated the normality assumption of a one-way repeated measures ANOVA analyses due to elevated skewness in the caregiver well-being scores at baseline, caregiver well-being scores at post-treatment, caregiver depression scores at baseline and caregiver depression scores at post-treatment, a non-parametric test was completed to analyze the change across time in caregiver well-being and caregiver depression. Therefore, a Friedman test was used to determine whether there were significant changes across time in caregiver well-being and caregiver depression.

A Friedman test was run to determine if there were differences in WHO-5 scores from baseline, mid-treatment, to post-treatment. As can be seen in Table 6, WHO-5 scores were statistically significantly different at the different time points during the intervention, $\chi^2(2) = 10.04, p < .01$. The effect size, as measured by Kendall's W Coefficient of Concordance, indicated a small effect size ($W = .31$). Pairwise comparisons were performed with a Bonferroni correction for multiple comparisons. WHO-5 scores were statistically significantly different between baseline ($Mdn = 12$) to post-intervention ($Mdn = 14.50$) ($p = .013$) and baseline to mid-intervention ($Mdn = 15$) ($p = .010$). At baseline, caregiver well-being (WHO-5 baseline) scores ranged from 6 to 20, with 50% of caregivers obtaining scores below 13 indicating poor well-being and 50% of caregivers obtaining scores of 13 or higher indicating positive well-being. At mid-treatment, caregiver well-being (WHO-5 mid-treatment) scores ranged from 7 to 20, with 25% of caregivers

obtaining scores below 13, indicating poor well-being, and 75% of caregivers obtaining scores of 13 or higher, indicating positive well-being. At post-treatment, caregiver well-being (WHO-5 post-treatment) scores ranged from 10 to 25, with 31% of caregivers obtaining scores below 13, indicating poor well-being, and 68% of caregivers obtaining scores of 13 or higher, indicating positive well-being.

Table 6.

Related-Samples Freidman's Test Summary for Change in Caregiver Well-being (WHO-5)

	Total N	Df	χ^2	Sig.	Effect Size
Summary	16	2	10.04	.007*	.31

A Friedman test was also run to determine if there were differences in PHQ-9 scores from baseline, mid-treatment, to post-treatment. PHQ-9 scores decreased from baseline ($Mdn = 4.00$), to midway ($Mdn = 3.50$), to post-intervention ($Mdn = 3.00$). However, as can be seen in Table 7, the differences were not statistically significant, $\chi^2(2) = 3.39$, $p = .183$. The effect size, as measured by Kendall's Coefficient of Concordance, indicated a small effect size ($W = .11$). As there was one outlier noted in the sample due to a particularly elevated initial PHQ-9 score at baseline, this test was run excluding this participant's data. The outcome without this participant indicated that the differences in PHQ-9 scores throughout the three time points were not statistically significant, $\chi^2(2) = 3.23$, $p = .199$.

Table 7.

Related-Samples Freidman's Test Summary for Change in Caregiver Depression (PHQ-9)

	Total N	Df	χ^2	Sig.	Effect Size
Summary	16	2	3.39	.183	.11

As the caregiver stress scores at baseline and post-treatment met all testing assumptions for a one-way repeated measures ANOVA, this test was used to assess change over time in caregiver

stress. As seen in Table 8, the intervention did not elicit statistically significant changes in caregiver stress over time, $F(1,16) = .716$, $p = .410$. The effect size as calculated by a partial eta squared for a one-way repeated measures ANOVA indicated a small effect size ($\eta_p^2 = .04$) (Cohen, 1969). The effect size as calculated by a generalized eta squared for a one-way repeated measures ANOVA similarly indicated a small effect size ($\eta_G^2 = .002$).

Table 8.

ANOVA Model Summary for Change in Caregiver Stress from Baseline to Post-Treatment

	Sum of Squares	Df	Mean Square	F	Sig.	Effect Size
Time	40.265	1	40.265	.716	.410	.04
Error	900.235	16	56.265			

Hypothesis 1b:

Hypothesis 1b examined whether parents with pre-treatment well-being, depression, and stress scores in the at risk or clinically-significant range will have improved such that their scores no longer remain in the clinically-significant range at post-treatment following completion of IY-ASLD. It was hypothesized that parents in the normal range at baseline (on the variables mentioned above) would remain in the normal range and not move into clinically the significant range at mid-treatment and post-treatment.

As seen in Table 9, at baseline, 8 participants had impaired well-being while 9 had non-impaired well-being. Following the intervention, the number of participants with non-impaired well-being increased to 12 participants (71%) with a concomitant reduction in the number of participants with impaired well-being to 5 participants (29%). This change was a consequence of the 4 participants at baseline who had impaired well-being demonstrating non-impaired well-being at post-treatment, but with 1 participant who initially had non-impaired well-being developing impaired well-being at post-treatment. The effect size, as measured by Kendall's W Coefficient of

Concordance, was small ($W = .31$). An exact McNemar's test determined that there was not a statistically significant difference in the proportion of participants with impaired well-being at baseline and post-treatment, $p = .323$.

Table 9. Caregiver Well-being (WHO-5) Change From Baseline to Post-Treatment

	Post-Treatment Impaired	Post-Treatment Non-Impaired	Total N
Baseline Impaired (12 or lower) ^a	4	4	8
Baseline Non-Impaired (13 or higher)	1	8	9
Total N	5	12	

^aCut-point for Caregiver Well-being (WHO-5) is 12. Scores reaching 12 or lower are considered significantly poor well-being.

Changes across time in participants' depressive symptoms (PHQ-9) can be seen in Table 10. Developers of the PHQ-9 determined that a cut point of 10 or above indicates clinically significant depression (including moderate to severe depression), whereas a cut point of 9 or below indicates non-clinically significant depression (mild-to-minimal depression) (Kroenke et al., 2001). As seen in Table 10, at baseline, two parents reported moderate-severe symptoms of depression on the PHQ-9, with both of them moving into the normal range at post-treatment and none of them remaining in the impaired range. Regarding the two parents who moved from the clinically significant range of depression to the non-clinically significant range of depression, one demonstrated change from baseline (PHQ-9 Baseline = 10) to mid-treatment (PHQ-9 Mid-treatment = 4) and one demonstrated change from mid-treatment (PHQ-9 Mid-treatment = 13) to post-treatment (PHQ-9 Post-treatment = 9). At baseline, 15 parents were in the normal range and 14 of these parents remained in the normal range at post treatment. One caregiver started treatment in the normal range (PHQ-9 Baseline = 6), remained in the non-impaired range during the middle of treatment (PHQ-9 Mid-treatment = 4), and entered the significant range at post-treatment (PHQ-9

Post-treatment=10). The effect size, as measured by Kendall's Coefficient of Concordance, was small ($W = .11$). An exact McNemar's test determined that there was not a statistically significant difference in the proportion of participants with impaired depression scores at baseline and post-treatment, $p = 1.00$.

Table 10. Caregiver Depression (PHQ-9) Change From Baseline to Post-Treatment

	Post-Treatment impaired	Post-Treatment Non-Impaired	Total N
Baseline Impaired (10 or higher) ^a	0	2	2
Baseline Non-Impaired (9 or lower)	1	14	15
Total N	1	16	

^a Cut-point for Caregiver Depression (PHQ-9) is 9. Scores reaching 10 or higher are considered moderate depressive symptoms and are related to a clinically significant major depressive episode. Scores of 9 or lower indicate mild to now depressive symptoms.

Changes in parental stress (PSI-4-SF) from baseline to post-treatment can be found in Table 11. At baseline, two caregivers scored above the cutoff score for clinically elevated parental stress (Raw Score = 110 or higher, Percentile Rank = 85% or higher). At the end of treatment, both of these caregivers remained in the clinically elevated range. At baseline, 15 caregivers obtained parental stress scores in the non-impaired range, as they were below the cutoff of elevated parental stress, and all remained in this range at post-treatment. The effect size as calculated by a partial eta squared for a one-way repeated measures ANOVA was small ($\eta_p^2 = .04$) (Cohen, 1969). An exact McNemar's test determined that there was not a statistically significant difference in the proportion of participants with impaired stress scores at baseline and post-treatment, $p = 1.00$.

Table 11. Caregiver Stress (PSI-4-SF) Change From Baseline to Post-Treatment

	Post-Treatment Impaired	Post-Treatment Non-Impaired	Total N
Baseline Impaired ^a	2	0	2
Baseline Non-Impaired	0	15	15

Total N	2	15
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^a Cut-point for Caregiver Stress (PSI-4-SF) is obtaining a Raw Score of 110 (Percentile Rank = 85) or higher.

Hypothesis 2

Hypothesis 2 examined whether treatment dosage was positively correlated with maternal well-being, stress, and depression post-treatment scores, while controlling for baseline mental health variables. As parental well-being was the only outcome variable in which there were statistically significant improvements (see Table 6), and neither caregiver depression or stress changed significantly, this analysis was only run on caregiver well-being scores at post-treatment. Because household income was found to be significantly correlated with well-being at post-treatment while controlling for well-being at baseline, this demographic variable was included as an additional control variable. More specifically, a Pearson's partial correlation was run to assess the relationship between treatment dosage and well-being at post-treatment after adjusting for well-being at baseline and household income. Prior to conducting the partial correlations, two initial bivariate Pearson's correlations, that did not control for baseline well-being or household income, established that there was a statistically significant negative correlation between treatment dosage and well-being at mid-treatment, $r(17) = -.493$, $p = .044$, but there was not a statistically significant correlation between treatment dosage and well-being at post-treatment, $r(17) = -.369$, $p = .146$. The Pearson's partial correlations showed that the strength of the relationship between treatment dosage and well-being at post-treatment was weaker (and not statistically significant) when controlling for well-being at baseline ($p = .796$), household income ($p = .115$), and both well-being at baseline and household income ($p = .587$).

Hypothesis 3

Hypothesis 3 examined whether exposure to therapist supportive verbalizations, was positively correlated with positive change in maternal well-being, stress, and depression post-treatment scores, while controlling for baseline mental health. As seen above, only well-being demonstrated significant change from baseline to post-treatment. Because household income was found to be significantly correlated to residualized change in wellbeing this demographic variable was included as an additional control variable. Prior to conducting the partial correlations, an initial bivariate Pearson's correlation, without controlling for baseline well-being or household income, established that there was a statistically significant negative correlation between number of supportive verbalizations and well-being at post-treatment, $r(17) = -.512, p = .035$. However, the Pearson's partial correlation that was run to assess the relationship between supportive verbalizations and well-being at post-treatment after adjusting for well-being and income at baseline was not significant, $r_{\text{partial}}(17) = -.260, p = .350$.

Hypothesis 4

Hypothesis 4 examined whether the number of therapist supportive verbalizations, would be positively correlated with parental verbal approval scores at post-treatment, while controlling for baseline maternal verbal approval scores and treatment dosage. Therefore, a Pearson's partial correlation was run to assess the relationship between supportive verbalizations and maternal verbal approval at post-treatment after adjusting for maternal verbal approval at baseline and treatment dosage. A Pearson's partial correlation established that there was not a statistically significant relationship between maternal verbal approval at post-treatment and supportive verbalizations when controlling for both maternal verbal approval at baseline and treatment dosage ($p = .823$).

Exploratory Findings

Parental satisfaction with the group leader and the group overall was investigated as part of an exploratory analysis. Quantitative findings indicated that parents tended to report high levels of satisfaction with the program and the group leader. Group leader effectiveness scores ranged from 25.75 to 27.00, on a scale with a range from 0 to 28, indicating that parents largely rated the group leaders as effective and helpful. Across groups, parents rated therapists as highly prepared, competent, helpful, and feeling extremely satisfied with the group leaders concern for their child. Ratings of the group overall were not statistically significantly different between groups ($p = .636$). Across the four therapy groups, overall ratings of the groups ranged from 20.25 to 17.75, on a scale of 0 to 23, indicating that parents had high ratings of connectedness to their groups. More specifically, the majority of parents (64%) reported that they felt the group was “very supportive” and that they felt the other parents in the group were “very interested” in their child (52%). Notably, 15 of the 17 parents (88%) reported that they would like to continue meeting with as a group, indicating that the vast majority of parents enjoyed the group and would like to continue to maintain group contact.

Regarding reports of satisfaction with the telehealth format of the program, when asked if parents would choose an in-person or a telehealth version of the IY-ASLD program, 60% (9 of the 15) parents who answered this question stated that they would choose the telehealth format while only 26% (4 of the 15) parents who answered this question stated that they would prefer in-person delivery of the program. Furthermore, when asked if parents believed the telehealth format was as effective as in-person visits, seven parents stated that they “agreed” with this statement, two parents stated that they “strongly agreed,” one parent stated that they “strongly disagreed” with the statement and five parents believing the statement was “neutral.” When asked an open-ended

question about what parents liked about the telehealth format, seven parents said it “saved time” (e.g., traveling to clinic), and two parents stated that it was “convenient.” When asked an open-ended question about what parents disliked about the telehealth format, two parents stated feeling “disconnected,” with one parent saying “it was harder to interact outside of group and get to know other members,” and another stating that they “missed having personal interactions.”

On the IY-ASLD satisfaction questionnaire, several parents reported that the main benefit of the program was learning to view the child from their unique developmental stage and engaging in child-directed play, which ultimately facilitated improved connection with their children. For example, one parent stated acceptance of their child’s condition (“that every child is fine as they are”) and the importance of child-directed play (“that it’s helpful to follow [the child’s] lead [as] there is no correct way of playing but to just enjoy activities together with the child”). Other parents made similar remarks such as “this program taught me to be more child directed,” and “no one child is the same,” expressing both acceptance of their child’s unique presentation and developmental stage along with learning a new strategy for connecting with their child (child-directed play). Additionally, one parent directly addressed that the program was “eye opening” and helped them to “see things in a different view than ABA therapy as another way to approach [their] child’s behavior.” These findings are aligned with the qualitative report from Dababnah & Parish’s study (2016), in which they found that the biggest advantage for many of the parents in their pilot study of IY-ASLD was the focus of the program on meeting their children at their child’s individual developmental stage by engaging in child-directed play, and that nearly all parents who completed the program felt it improved their relationship with their child. They also found that parents enjoyed learning about the novel child-directed play-based approach in IY-ASLD, as it served as a helpful

and supportive framework for interacting with their children which starkly contrasted the typical highly structured ASD treatments.

Chapter Six: Discussion

Summary of Findings

Using a quasi-experimental pre-post design, the present study examined changes in parental mental health scores (well-being, depression, stress) and observed parent verbal approval of child during play over the course of treatment in a pilot study ($N = 17$) of IY-ASLD via telehealth (IY-ASLD-T). Results indicated that parents, at baseline, had low levels of depression (PHQ-9; $M = 4.59$, $SD = 4.69$) and average parenting stress (PSI-4-SF; $M = 78.12$, $SD = 23.78$), but low levels of well-being (WHO-5; $M = 12.82$, $SD = 4.47$). There were no statistically significant changes in parental depression, parental stress, or observed verbal approval but there was a statistically significant change in caregiver well-being from baseline, mid-treatment, to post-treatment, such that caregivers demonstrated significant improvements in well-being over the course of the pilot intervention. Regarding well-being, although there were statistically significant differences from baseline, mid-treatment, to post-treatment, the effect size as measured by Kendall's W Coefficient of Concordance, indicated a small effect size ($W = .31$). Additionally, Lakens (2013) has noted there is a dramatic increase in power when repeated measures designs are utilized, indicating that the finding of improved well-being over the course of the intervention should be interpreted with caution. There were similarly small effect sizes in changes in depression and stress over the course of the intervention. To better understand what might be related to improvements in well-being, baseline well-being (WHO-5), income, and treatment dosage were controlled for, creating a residualized change score for well-being. There was not a significant relationship between treatment dosage and change in caregiver well-being. Similarly, when therapist verbal supportive

statements were controlled for, along with initial baseline well-being and income, there was no relationship between the residualized change score for well-being and therapist verbal supportive statements.

Parental Stress

The sample of mothers who participated in this study had, at baseline, average levels of parenting stress (PSI-4-SF) ($M = 78.12$, $SD = 23.78$, cutoff is raw score >110). Only two caregivers reported significantly elevated levels of parenting stress at baseline and they remained in the high stress group at post-treatment. This is in contrast to many other studies showing elevated levels of stress when parenting children with ASD and other developmental delays. For example, Brobst et al. (2008) found that mothers of children with ASD had an average PSI-4-SF score of 101.71 ($SD = 23.84$) compared to mothers of children that were typically developing who had an average PSI-4-SF score of 66 ($SD = 16.22$). Similarly, Lee et al. (2009) found that parents of children with ASD had an average PSI-4-SF total score of 92.52 ($SD = 20.88$), while parents of typically developing children had an average PSI-4-SF total score of 60.71 ($SD = 14.79$). The sample used in the current study, therefore, represents a unique sample of parents of children with autism, generally having relatively low levels of parental stress.

This finding of average parenting stress is also in contrast to the consistent finding in the Incredible-Years Basic (IY-Basic) program literature, for parents of children with behavioral disorders, that IY-Basic results in short-term and long-term reductions in parental stress. Although the IY-Basic program documents significant findings regarding reduced parental stress, there is presently a dearth of information on whether the IY-ASLD program improves parental stress for parents of young children with ASD **who are stressed**. At this time, there are some limited and initial findings suggesting that IY-ASLD may reduce parental stress. A pilot study using the IY-

Basic program with parents of young children with ASD found a significant reduction in parental stress following completion of the program (79% had elevated PSI-4 scores at baseline; 36% had elevated PSI-4 scores at post-treatment) (Dababnah & Parish, 2016). However, the authors used a pre-post design with a total of 17 parents and therefore note significant limitations due to the small sample size and the lack of a control group. The authors note that it is impossible to conclude from this study that this program specifically led to changes in parental stress (Dababnah & Parish, 2016). Additionally, a feasibility study of IY-ASLD, and the only existing RCT for IY-ASLD (Williams et al., 2020), found that parents entered the treatment with clinically elevated levels of stress on the PSI-4-SF measure ($M = 97.79$, $SD = 19.79$; 64% above the threshold), and remained in the clinically elevated range at post-treatment (PSI-4-SF; $M = 92.13$, $SD = 19.51$). The authors of this study similarly report that the study was not powered to detect differences in outcomes (Williams et al., 2020). Both Williams et al. (2020) and Dababnah & Parish (2016) reported that qualitative reports from parents at the end of the intervention indicated that the majority of parents requested an extension of the program in order to continue practicing skills, particularly those related to parental stress. Taken together, while there is insufficient prior literature on whether the IY-ASLD program may play a role in reducing parental stress for parents of young children with ASD, there is some indication that this program may result in improvements in parental stress for parents who begin the program with elevated levels of stress.

Importantly, the population in this sample is notably different from the population used in other pilot studies on the IY-ASLD program for parents of young children with ASD. More specifically, the sample of parents included in this study varied in education level and socioeconomic status, and these differences between the parenting sample in this study and others may have contributed to both lower parental stress, and associated lack of improvements in parental

stress, in this sample. In this sample, parents had high levels of education (53% of sample had an advanced degree; only 6% had less than a bachelor's degree) and high income (76% of sample had a household income of \$100,000 or more, 50% \$200,000 or more) which contrasts the majority of previous pilot studies investigating IY-ASLD in which parents had lower levels of education (Williams et al., 2020 notes 55% of sample left school before the age of 17) and lower income (Lee et al., 2009 notes 59% of sample had a household income of \$70,000 or less). In addition, because child behavior problems were not included as an inclusion criterion for this study, it is possible that child behavior problems were less severe than in previous studies which indicated that their samples had elevated child behavioral problems which were closely related to parental stress levels. For example, Dababnah and Parish's (2016) study emphasized that the children of parents in their study had clinically elevated behavioral problems, reflected in high scores in the Child Domain of the PSI (79% had scores above the 75th percentile in the PSI-CD domain, whereas in our sample 17% had scores above the 75th percentile). Therefore, as the sample of mothers in this study were unique in comparison to prior pilot studies on IY-ASLD, it's possible that the atypical low-levels of parental stress, and associated lack of improvements in parental stress, are the result of the unique population and not an accurate assessment of whether the IY-ASLD program serves to reduce parental stress in the broader population of parents of young children with ASD and language delays.

Parental Depression

At baseline, mothers in this study had low levels of depression (PHQ-9) ($M = 4.59$, $SD = 4.69$, cutoff is >9), with the average score at baseline falling in the non-impaired, minimal range of depression category. Only 12% of parents in this study reported depressive symptoms on the PHQ-9 that fell above the cutoff for moderate to severe depressive symptoms. This is in contrast to prior

literature indicating that there tends to be elevated levels of depressive symptoms for parents of children with ASD and other developmental delays in comparison to parents of typically developing children (Singer, 2006). For example, in Williams et al.'s (2020) RCT feasibility study on the IY-ASLD program, they found that parents who entered the study had a baseline Beck Depression Inventory (BDI-II) score of 10.35, falling in the “dysphoria” range for depressive symptoms. Olsson and Hwang (2001) similarly found that 50% of mothers of children with ASD had clinically elevated depression scores on the Beck Depression Inventory (BDI) in comparison to only 17% of mothers of typically developing children. The sample used in the current study, therefore, represents a unique sample of parents of children with autism, generally having low levels of maternal depression.

Results from this study indicated that there were not statistically significant differences in maternal depression (PHQ-9) across baseline, mid-treatment, and post-treatment or a statistically significant difference in the proportion of parents at baseline and post-treatment with depression (PHQ-9) scores that fell in the clinically elevated range. However, with greater power an effect may have been found. In this study, both of the parents who began the pilot IY-ASLD-T intervention with moderate-to-severe symptoms of depression on the PHQ-9 moved into the normal range at post-treatment. Additionally, of the 15 parents who began the pilot IY-ASLD-T intervention under the threshold of clinically elevated depressive symptoms, 14 of them remained in this range at post-treatment, with only one parent entering the significant range at post-treatment. Additionally, the effect size, as measured by Kendall's Coefficient of Concordance, was small ($W = .11$). Therefore, it is expected that with a greater sample size, and greater power, there would be a more substantial effect of the intervention on reducing parental depressive symptoms.

Research on the Incredible-Years Basic (IY-Basic) program for parents of children with behavioral disorders has often found significant improvements in parental depressive symptoms (Bywater et al., 2009; Hutchings et al., 2004; Hutchings et al., 2007; Hutchings et al., 2012; Lees & Ronan 2008). There is minimal prior research on whether the IY-ASLD program reduces parental depressive symptoms for parents of young children with ASD, with some initial findings indicating that the program is unrelated to changes in parental depression. For example, in Williams' et al. (2020) feasibility study of IY-ASLD, they found that there were no significant differences found in maternal depression from pre- to post-treatment. However, the authors of this study report that due to the small sample size ($N = 58$), the study was not powered to detect differences in outcomes (Williams et al., 2020). Therefore, as previously described, given that the sample of mothers in this study were unique in comparison to prior pilot studies on IY-ASLD (e.g., income, education, children with elevated behavioral problems), it's possible that the atypical low-levels of depressive symptoms and low power in this pilot study to detect change account for the lack of significant change in depressive symptoms. It remains unclear whether the IY-ASLD program serves to reduce parental depression in the broader population of parents of young children with ASD and language delays.

Exposure to Supportive Verbalizations, Treatment Dosage, and Change in Maternal Verbal Approval to Child

This study found that there was not a statistically significant relationship between maternal verbal approval at post-treatment and supportive verbalizations when controlling for both maternal verbal approval at baseline and treatment dosage. Though the findings were not significant, at baseline, parents had a higher mean verbal approval score ($M = 15.94$, $SD = 8.98$), whereas parents had lower mean verbal approval scores at mid-treatment ($M = 8.25$, $SD = 6.18$) and post-treatment

($M = 11.88$, $SD = 11.73$). One limitation of this study was that verbal approval language was the only form of language assessed across the study, and may have been insufficient in effectively capturing changes in parental verbal behavior. It is possible, for example, that although verbal approval statements from parents to children did not change over the course of the intervention, parents who had, at baseline, primarily been using “mands” or verbal commands to their child may have shifted into using greater “tacts,” or descriptive talk, rather than verbal approvals. While the current study only looked at verbal approval language from parents to children at pre- and post-treatment, O’Shaughnessy’s (2023) unpublished dissertation assessed multiple components of verbal behaviors, including “tacts,” “mands,” and “disapprovals,” parents emitted to their children before and after the IY-ASLD telehealth intervention. O’Shaughnessy (2023) found significant increases from pre-to-post IY-ASLD telehealth intervention in parental use of “tacts,” or descriptive talk to their children during play. It is also important to acknowledge that therapists’ use of praise with parents may not have been directly related to parents use of praise with their children, as there were multiple other factors that may be more directly related to parental changes in praise with their child. For instance, the program did result in increases in parental descriptive language with their child, not necessarily more reinforcing speech, which was not captured by the verbal approval category of speech between parents and their children in this dissertation. While results regarding change in maternal verbal approval form this study cannot be interpreted due to lack of significant findings, the reduction in verbal approval over the course of the intervention is inconsistent with findings from IY-Basic indicating that the program tends to increase parent’s use of positive language over the course of the intervention (e.g. labeling, praise) and decrease negative language (e.g. criticism, negative commands) (Gardner et al., 2006; O’Shaughnessy, 2023; Scott et al., 2001; Webster-Stratton et al., 2004). It is important to note that prior to engaging in the IY-ASLD-T

intervention, parents of the children in this study had just finished working with their children's classroom teachers at the ABA early intervention school in order to assist in tele-education with their children during required remote instruction. As a result of engaging in this specific and highly focused model of providing praise directly following requested child behaviors, it is possible that parents were well-equipped with direct and highly structured sequences of prompting behaviors via asking questions and then responding with directive feedback (i.e., praise) to the child. While engaging in the IY-ASLD-T program, parents were introduced to an alternative and novel approach to engaging with their children, child-directed play, in which parents practiced following their child's lead and avoiding asking specific and directive questions to the child. Therefore, while it's possible that the overall drop from in verbal approval scores in this study may be reflective of shifts in the parents approach to engaging with their child such that they were asking less questions during play and rather following the child's lead. Given the lack of experimental support for this anecdotal information, at this time, this study indicated that there was not a relationship between maternal verbal approval at post-treatment and exposure to therapist supportive verbalizations while controlling for baseline maternal verbal approval and treatment dosage.

Parental Well-Being

Mothers in this study had marginally low levels of baseline well-being (WHO-5) ($M = 12.82$, $SD = 4.47$, cut-off is <13), with the average baseline score falling in the poor well-being range and 50% of parents obtaining scores indicating poor well-being. This finding is consistent with prior literature indicating that parents of children with ASD tend to have less positive well-being than parents of typically developing children and tend to perceive lower levels of social support which is related to overall well-being (Benson, 2010; Griffith et al., 2010; Hauser-Cram et al., 2001).

Furthermore, results from this study indicated that there were statistically significant differences in caregiver well-being across baseline, mid-treatment, and post-treatment, such that caregivers demonstrated significant improvements in well-being over the course of the intervention. More specifically, the median caregiver well-being score (WHO-5) at baseline fell in the poor well-being range (median = 12), while the median caregiver well-being scores (WHO-5) at mid-treatment (median=15) and post-treatment (median =14.50) fell in the positive well-being range. However, follow up analyses indicated that there was not a statistically significant difference in the proportion of parents at baseline and post-treatment with well-being scores that fell in the impaired range. Despite this finding, which may be related to the small sample size in this study ($N = 17$), it is important to note that 50% of caregivers reported poor well-being at baseline and only 29% of caregivers reported poor-well-being at post-treatment. Additionally, the effect size as measured by Kendall's W Coefficient of Concordance, indicated a small effect size ($W = .31$).

Therefore, results from this study indicate that caregivers who participated in the IY-ASLD-T program had significant improvements in parental well-being over the course of the pilot intervention. This finding is consistent with the strong body of research documenting the benefits of the IY-Basic Program, for parents of children with primary behavioral disorders, in improving parental psychosocial well-being. For example, Axberg et al. (2007) found a significant increase in maternal self-rated well-being from pre-treatment to post-treatment with a medium effect size ($d = .55$) for parents of children ages 3-9 years old who participated in the IY-Basic program ($N = 113$) as opposed to the control group. Similarly, in a small study of the IY-Basic Program for bereaved families ($N = 7$), Braiden et al. (2011) found a statistically significant increase in parental emotional well-being that indicated an improvement from pre-treatment to post-treatment, and enhanced well-being at a six-month follow-up (Braiden et al., 2011). In qualitative interviews with parents,

Braiden et al. (2011) found significant trends regarding improvements related to well-being that included normalizing parent experiences of coping with children with disruptive behaviors as well as experiencing support from the group and gaining a sense of hope for their future. McGilloway (2012) similarly found significant long-term gains in parental well-being from pre-treatment to post-treatment at both a six-month and one-year follow-up of parents who participated in the Incredible Years Basic Program ($N = 103$). McGilloway (2012) also identified via qualitative reports that parents reported significant psychosocial benefits, such as enhanced social networks and improved coping skills, that were sustained for one year following their participation in the program.

While the finding regarding improved maternal well-being from the current study is consistent with literature on the IY-Basic program for parents of young children with behavioral disorders, this is a novel finding in documenting improvements in maternal well-being for parents of young children with ASD who participated in the IY-ASLD intervention. There has been no prior investigation into whether the IY-ASLD program is related to improvements specifically in maternal well-being for parents of young children with ASD and language delays, a different parent population than parents of children with behavioral disorders. Rather, pilot studies of IY-ASLD have noted that parental well-being outcomes should be assessed among the outcomes of intervention effectiveness in future studies (Dababnah & Parish, 2016; Williams et al., 2020).

Treatment Dosage and Change in Parental Well-being

Treatment dosage, or the number of minutes each parent spent in the IY-ASLD-T intervention, was investigated as a variable related to improvements in caregiver well-being (WHO-5) over the course of the intervention, as it would be expected that parents who received more of the intervention would have greater positive change in well-being. There was a statistically significant

negative correlation between treatment dosage and well-being at mid-treatment, which was not significant at post-treatment, but was trending in the same direction; such that parents who had higher treatment dosage scores had lower well-being at mid-treatment and post-treatment. When baseline well-being (WHO-5) was controlled for, creating a residualized change score for well-being, there was not a statistically significant relationship between treatment dosage and change in caregiver well-being. Therefore, the extent to which parents attended the IY-ASLD-T program was not related to improvements in well-being across the intervention, as was hypothesized. Given the high degree of attendance causing a restriction in range and small sample size of this study, and therefore the low power, it is possible that with a larger sample with more variability in attendance, there would be an association between treatment dosage and improvements in caregiver well-being.

Regarding the significant negative association between treatment dosage and well-being (WHO-5) at mid-treatment, which was trending in the same direction at post-treatment, it is possible that parents who were in greater need of intervention were the parents who tended to show up consistently. Prior literature has documented mixed findings between the association of maternal mental health variables and treatment attendance. Some studies document that parents with higher levels of psychopathology, and therefore those who are in greater need of support, are less likely to attend evidence-based behavioral parenting interventions (Reyno & McGrath, 2006). Others indicate that maternal mood is unrelated to attendance, indicating that vulnerable mothers are consistent in attending parent management training and therefore able to engage effectively with evidence-based behavioral parent training programs (Peters et al., 2005). Additionally, Fernandez & Eyeberg (2009) found that maternal distress did not predict dropout from PCIT, with 60% of maternal caregivers with clinically elevated depressive and stress symptoms effectively completing the treatment. These researchers suggest that the added brief parent support component to the PCIT

intervention may have contributed to greater retention of distressed maternal caregivers, though this was not studied experimentally. Similar to these findings, results from this study indicate that parents who had lower levels of well-being, and therefore were in greater need of support, were the parents who consistently attended the intervention. This finding highlights the importance of offering parenting programs such as IY-ASLD-T, which is highly accessible to parent populations due to the online telehealth format, to parent populations who are at risk of poor well-being, such as parents of young children on the autism spectrum or with other developmental disabilities.

Exposure to Supportive Verbalizations and Change in Maternal Well-being

This study also investigated whether positive change in maternal well-being (WHO-5) was related to in-vivo therapist verbal behaviors, specifically, exposure to supportive verbalizations from the therapist to the parent. There was a statistically significant relationship between exposure to supportive verbalizations and parental well-being at post-treatment (WHO-5), such that parents who were exposed to more supportive therapist verbalizations had lower well-being at post-treatment. However, when baseline well-being (WHO-5) was controlled for, this correlation was no longer statistically significant, indicating that change in well-being from baseline to post-treatment was not related to exposure to supportive therapist verbalizations. Therefore, in-vivo supportive statements during IY-ASLD sessions were not related to improvements in well-being across the intervention, as was hypothesized, but were related to post-treatment well-being scores (WHO-5).

The unexpected finding that parents who received higher levels of exposure to supportive verbalizations in IY-ASLD-T sessions, had lower well-being at post-treatment, possibly indicates that parents with low well-being, who may have been in greater need of support from the therapist, possibly both pulled for supportive verbalizations from the therapist and/or attended more intervention sessions. Prior literature has documented that interpersonal actions are designed to

pull, draw, or evoke reactions from others, and therefore, certain behaviors are likely to pull for a corresponding response (Lillie, 2007). Therefore, parents in greater need of support may “pull” for, or request, reassurance or support from the therapist. Harwood & Eyeberg’s (2004) found that number of therapist-to-parent supportive statements, along with number of facilitative statements and closed-ended questions, predicted treatment dropout. These authors similarly considered whether the parents who dropped out, and received greater supportive statements from the therapist, tended to make statements that pulled for therapist support. In reference to findings from this study, it is possible that parents with lower levels of well-being, who were in greater need of support from therapists, may have been more likely to make statements that pulled for supportive verbalizations from the therapist. It is, therefore, recommended that future research focus on coding both parent and therapist verbalizations, in order to capture the directionality of statements and responses.

Parental Acceptance of Program and Change in Parental Well-being

Quantitative findings indicated that parents tended to report high levels of satisfaction with the program and the group leader. Across groups, parents rated therapists as highly prepared, competent, helpful, and feeling extremely satisfied with the group leaders concern for their child. Additionally, across the four therapy groups, parents reported had high ratings of connectedness to their groups. More specifically, the majority of parents reported that they felt the group was “very supportive” and that they felt the other parents in the group were “very interested” in their child. Notably, 88% reported that they would like to continue meeting with as a group, indicating that the vast majority of parents enjoyed the group and would like to continue to maintain group contact.

On the IY-ASLD satisfaction questionnaire, several parents reported that the main benefit of the program was learning to view the child from their unique developmental stage and engaging in child-directed play, which ultimately facilitated improved connection with their children. For

example, one parent stated acceptance of their child's condition ("that every child is fine as they are") and the importance of child-directed play ("that it's helpful to follow [the child's] lead [as] there is no correct way of playing but to just enjoy activities together with the child".) Other parents made similar remarks such as "this program taught me to be more child directed," and "no one child is the same," expressing both acceptance of their child's unique presentation and developmental stage along with learning a new strategy for connecting with their child (child-directed play). Additionally, one parent directly addressed that the program was "eye opening" and helped them to "see things in a different view than ABA therapy as another way to approach [their] child's behavior." These findings are aligned with the qualitative report from Dababnah & Parish's study (2016), in which they found that the biggest advantage for many of the parents in their pilot study of IY-ASLD was the focus of the program on meeting their children at their child's individual developmental stage by engaging in child-directed play, and that nearly all parents who completed the program felt it improved their relationship with their child. They also found that parents enjoyed learning about the novel child-directed play-based approach in IY-ASLD, as it served as a helpful and supportive framework for interacting with their children which starkly contrasted the typical highly structured ASD treatments.

Another report from the IY-ASLD satisfaction questionnaire indicated that several parents identified the main benefit of the program as enhanced connection with other parents and a sense of enjoyment via overall group support. Parents reported the most helpful part of the program was "feeling a sense of community," "getting support, ideas, and suggestions," engaging in "parent discussion" and connecting and "learning from other parents managing the same struggles." One parent stated that she "[loved] the parent discussion the best" and requested more time left for open-ended parent discussion. This is consistent with the findings from Dababnah and Parish's (2016)

pilot study of IY-ASLD, which noted that the large majority of parents reported enjoying the opportunity to have a platform every week to discuss challenges, which most parents found stress-reducing. Williams' et al (2020) similarly noted that a common theme of program benefits to parents were "meeting other parents, sharing ideas, and learning skills." As parents of young children with ASD are at greater risk for social isolation and disengagement from child treatment, it is beneficial to recognize the importance of implementing a group program such as IY-ASLD, which facilitates normalization of experiences along with social support, for parents in this at-risk population. It is possible that parental report of increased social support available due to the group modality of the program and the associated opportunities group discussion and connection, are responsible for the changes in parental well-being over the course of the intervention.

Parents in this study also reported the main benefit of the IY-ASLD program was gaining a sense of hope for child improvement and working towards enhancing their coping strategies. For example, parents reported that the main benefit was having a "great change to improve the life of our kids," learning "coping techniques," and learning "various exercises and training on emotion regulation." This is consistent with Dababnah & Parish's (2016) qualitative finding that the majority of parents stated a primary benefit of the program was learning about personal coping strategies in reference to learning to deal with frustrating or challenging child behaviors.

Taken together, as per parental reports on the IY-ASLD satisfaction survey, parents tended to enjoy the program and the group modality, naturally providing a space for parents to connect, share, and normalize challenging life experiences. It is possible that this underlying enjoyment of the program may lay an important and essential foundation for parental engagement in the program. Parents tended to report feeling satisfied with the telehealth adapted version of IY-ASLD, with the majority of parents stating that they would choose to participate in the telehealth version over the

in-person version of IY-ASLD. Additionally, high ratings of satisfaction of the group leader indicates that group leaders in the program may have successfully accomplished providing a “good enough” sense of support and reinforcement to parents over the course of the intervention.

Therefore, it is possible that specific therapist-to-parent supportive verbalizations were less related to improvements in parental well-being, and rather, the overall sense of support from the therapist to the parents in the group, along with support between the parents in the group, were sufficient to result in improvements in maternal well-being over the course of the intervention.

Strengths of the Study

The present study contributes to the previously limited research on the newly developed IY-ASLD program for parents of children with ASD. One major strength of this research is that the intervention used a telehealth adaptation of IY-ASLD, in which parents could easily access the program on a HIPAA-compliant Zoom video conferencing system with the continued guidance and supervision of the program developer, Dr. Webster-Stratton. Importantly, this intervention was offered via telehealth, eliminating the typical barrier of commuting to-and-from an in-person clinic, and therefore increasing access to this intervention for parents of young children. Therefore, documenting the feasibility of implementing the IY-ASLD via telehealth is an important step towards increasing access to high-quality interventions to a greater number of families who could benefit from an evidence-based behavior parent training program. Additionally, the program developer not only trained all therapists who provided the intervention, but also provided biweekly supervision for all interventionists. During the bi-weekly supervision meetings, the program developer would review segments of the intervention sessions providing close monitoring of intervention procedures and direct feedback on intervention techniques.

A critical strength of the current study was the use of multiple sources to gather information about intervention outcomes, along with multiple methods to gather data. This study not only used questionnaire for parent reports of child and parent functioning and teacher reports of child functioning, but also used direct observational procedures to capture in-vivo interactions between parents and therapists in the group sessions along with in-vivo parent-child play interactions. Notably, the parent-child interaction sessions took place in a naturalistic setting, the home of the family, allowing for a more accurate representation of the parent-child interaction. Regarding parent and teacher rating measures, all measures used were well-established tools with high levels of reliability and validity. Trained independent research assistants, who were blind to the study hypotheses, observed and coded therapist-parent and parent-child interactions, allowing for collection of accurate, specific and operationalized data via direct observation and a reduction in the bias typically associated with using questionnaire data alone.

Yet another strength includes the fact there are only a handful of studies that utilize direct observational coding procedures in evidence-based behavioral parent training program sessions, such as directly documenting and coding line-by-line therapist verbalizations to parents and of parents to their child. Most of the literature on evidence-based behavioral parent training programs do not capture the in-session therapist verbal behaviors that could be important to treatment retention and outcomes. Furthermore, this is one of the first studies to examine the relationship between in-session verbal behaviors between therapists and parents in a population of mothers of children with ASD and language delays, a group of parents whose well-being has not been a primary focus in evidence-based behavioral parent training programs.

Additionally, characteristics of the recruited sample reduced the amount of variance between families that would otherwise need to be controlled for. First, all participating children

were enrolled in a specialized full day school program for children with ASD and language delays, where they received a high level of intervention and services targeted toward their developmental delays utilizing ABA therapies. Due to the attendance at school, each of the parents also received 6 hours a weekday of time away from this child with a disability. Although these factors limit the generalizability to other populations who do not have these services, they provide strong control over potential variance between families.

Another primary strength of this study is the high acceptability of the program to parents, documented not only by direct parent report (64% of parents reporting the group was “very supportive;” 88% reported that they would like to continue meeting as a group) but also in the high rates of attendance across groups to weekly sessions. There were high levels of attendance, with parents attending, on average, 9 of the 12 intervention sessions. Additionally, parents in this intervention reported very positive assessments of all group leaders and experiencing high levels of satisfaction with the program overall along with high satisfaction with the telehealth delivery format. These are important findings, as positive experiences in the group sessions likely serve to reinforce parental attendance and likely lays an important foundation for parental engagement in evidence-based behavioral parenting programs.

Limitations of the Study

One limitation of the study is the pre-post quasi-experimental design, resulting in limiting analyses to those that are correlational in nature and do not indicate directionality or causality of outcomes based on parental participation in the IY-ASLD program. Each parent was also assigned to one of four treatment groups, each with a different group therapist, and therefore each parent was “nested” in a particular treatment group. Due to the small sample of the study, this study did not have the appropriate power to effectively assess the effects of this nested intervention design. As

this study did not include a control group, all parents who completed the program were simultaneously receiving a variety of other interventions that were not controlled for as per their enrollment in the Keller School. Therefore, it's possible that changes in parental well-being could have been the result of maturation, or naturally occurring changes in the participants over time that may have influenced changes from pre-test to post-test. It's possible that with their children's participation in the Keller School Early Intervention Program served to improve their child's behavior, and simultaneously improved parental well-being. There is an additional threat to validity, testing effects, in which parents could have been influenced on posttest measures due to practice effects of completing the same measurements at pre-treatment and mid-treatment. Additionally, as the current study was a pilot intervention, there were only 17 total participants, significantly limiting the power of the study by the small sample size. Additionally, as this was a pilot study, there were no formal fidelity-based procedures besides biweekly meetings with the program developer to ensure that each group leader was conducting the program with reliability and validity. The current study is therefore limited by the lack of formal fidelity-based procedures, a small sample size ($N = 17$) and the resultant low power to test hypotheses as seen in the way that many relationships approached statistical significance. It is therefore recommended that this study be conducted with a randomized control trial design in which a greater number of participants are randomly assigned to treatment-as-usual or IY-ASLD-T groups and formal fidelity-based procedures are utilized.

There are several limitations to a primary variable of interest in this study, treatment dosage, which was defined in this study as the extent to which parents attended the IY-ASLD-T program. While the number of minutes each parent attended the IY-ASLD-T program is an important component of the extent to which parents received the intervention, there are several additional

factors that could have been important in understanding the extent to which parents were exposed to the program. In addition to the allotted 90-minutes of group session time, each parent received a weekly individual call from the group therapist, checking in about homework and having open-ended time to discuss parents' concerns. Data were not collected consistently on the extent to which each parent participated in these weekly individual calls, as some parents participated for weekly 15-minute individual calls, and others either missed individual calls or spent only 3-minutes engaging in this call. This individual contact with the group therapist represents an important component of parental participation in the program, as parents who had longer weekly therapist calls not only had greater opportunities for rapport-building with the therapist, likely received greater supportive verbalizations from the therapist, but also received more individual feedback from the therapist on their use of skills from the IY-ASLD program. Another important aspect of treatment dosage is the extent to which each parent completed weekly homework assignments. Parents who practiced learned skills outside of the group setting likely had more opportunities to learn from the program content and practice more nuanced skills. Therefore, it is recommended that future studies incorporate individual weekly calls along with completion of weekly homework when developing the treatment dosage variable.

Another limitation of the study is generalizability of the findings given the nature of the sample. Importantly, while 100 parents were made aware of the IY-ASLD-T intervention and asked to participate in the program, only 42 parents signed up to be screened to learn more information about the program, 20 signed consents, but only 17 successfully enrolled and completed the study. It is possible that the 42 of the 100 parents who were interested in participating represent a unique selection of parents who had the resources (time, finances, child support) and internal motivation and bandwidth to effectively participate in this intervention, thus limiting the generalizability of

these findings to the larger population of parents. Participants for this study were from a sample of parents with high levels of education (53% of sample had an advanced degree; only 6% had less than a bachelor's degree) and high income (76% of sample had a household income of \$100,000 or more, 50% \$200,000 or more), which contrasts the majority of previous pilot studies investigating IY-ASLD in which parents had lower levels of education (Williams et al., 2020 notes 55% of sample left school before the age of 17) and lower income (Lee et al., 2009 notes 59% of sample had a household income of \$70,000 or less). Additionally, as this study had parents with high rates of attendance, the average number of sessions attended by parents was 9 of the 12 sessions with a standard deviation of two sessions, it's possible that these parents represent a group of parents who had the appropriate resources to access the program. Only two parents had somewhat lower attendance scores, though both of their attendance rates fell within 2 standard deviations of the mean and therefore were not considered outliers. As the sample of mothers in this study were unique in comparison to prior studies, it's possible that the atypical low-levels of parental stress, and associated lack of improvements in parental stress, are the result of the unique population and not an accurate assessment of whether the IY-ASLD program serves to reduce parental stress in the broader population of parents of young children with ASD and language delays. The baseline average levels of stress and low levels of depressive symptoms of parents in this study may have made it challenging to show significant improvements in these variables from pre-to post-treatment. Additionally, participants for the study were from a sample of parents of children who were identified as having ASD or another significant developmental delay (e.g., language) in early childhood. In this sample, 71% of children scored above the threshold on the CARS2-ST, completed by the child's classroom teacher under supervision of an ADOS research trained PhD administrator, indicating that most children met threshold for ASD. The majority of children in this

study, therefore, received an ASD diagnosis at an earlier age relative to many children with ASD and as such began intensive treatment at an early stage (Zablotsky et al., 2017; $N = 1287$; mean age of diagnosis = 5.23; mean age of first service = 3.90). Furthermore, all children in this study were enrolled by their parents at a therapeutic preschool that provides an intensive and effective intervention shown to improve social and academic functioning (Selinske, Greer, & Lodhi, 1991). As early identification of ASD tends to be associated with a more severe presentation of the disorder, further supported by the distribution of CARS2-ST severity scores in this sample, participants in this study may not represent the full spectrum of functioning in ASD as they are likely on the more severe end of functioning. Additionally, the majority of the children in this study had clinically elevated adaptive behavior challenges at baseline (65% had scores below a standard score of 70 (mean = 100, $SD = 15$) on the Vineland ABC, indicating that this sample not only had high levels of ASD symptoms, but also low adaptive behavior functioning. However, even though low, our sample had higher average adaptive functioning than Williams et al. (2020), where the mean ABC was a standard score of 59 (vs. 70) and 83% (vs. 65%) were in the very low range. Our sample also had a lower percentage of children who met criteria for ASD than participants in the Williams RCT (71% vs. 86% in the Williams intervention group. Thus, generalizability is limited when considering the spectrum of functioning for children with ASD, as our children had higher adaptive functioning and were less likely to meet criteria for ASD than the only IY-ASLD RCT, and conclusions regarding children with ASD and their mothers should be interpreted with caution.

Finally, another limitation of this study is the lack of control regarding the directionality between therapist and parent verbalizations, as only therapist verbalizations were coded, and therefore parental requests for therapists' statements were not recorded. Regarding the unexpected correlation between higher supportive verbalizations and lower well-being at post-treatment and

parents with lower-well-being at post-treatment had higher treatment dosage scores, one explanation provided is that parents with lower well-being were “pulling” for supportive verbalizations. However, despite parents possibly “pulling” or requesting more supportive verbalizations from the therapist, these parents did not necessarily demonstrate improved well-being at post-treatment, indicating that parents who were in greater need of therapist support, and may have received additional therapist support, may have needed additional support outside of the IY-ASLD program framework. Rather than emotional support in the form of verbal reinforcement, praise, and encouragement, parents with lower well-being, who were possibly requesting more support from the therapist, may have needed additional resources, above and beyond verbal support from therapists. It’s possible that these parents may have not only been seeking increased emotional support from the therapist, but may have needed more concrete suggestions, or greater individual time with the group therapist. Therefore, one limitation to this study is the unclear directionality between parents verbalizations and therapists’ verbalizations. It is recommended that future studies incorporate a coding scheme to document parent verbalizations in order to tease apart this relationship. It is also recommended that future studies include parental well-being as a possible moderator of program effectiveness on changes in parental and child behavior.

Future Directions

Findings from this dissertation demonstrate the need for additional research to improve our understanding of the impact of IY-ASLD-T on changes in parental mental health (well-being, stress, depression) and its relationship to exposure to the program (treatment dosage) and in-session supportive therapist verbalizations. Due to the pre-post design, conclusions regarding direction or causality of the relationships between changes in parental mental health, exposure to the program, and exposure to supportive verbalizations cannot be drawn. Changes in parental well-being in this

study may be influenced by other factors occurring in parents lives not currently measured rather than the IY-ASLD-T program. Therefore, a primary recommendation for future research is to utilize a randomized control treatment protocol, in which researchers randomly place participants into either a treatment-as-usual group or IY-ASLD-T group. The interpretability of results would be greatly enhanced through a comparison to other groups of parents who do not receive the IY-ASLD-T intervention. Given the relationship found in this study between improvements in parental well-being (and possibly depression) and participation in the IY-ASLD program, it is recommended that a study with a greater sample size and an enhanced RCT design investigate in greater depth differences in parents who participate in IY-ASLD versus those that do not to determine whether the IY-ASLD intervention is responsible for improvements in parental well-being.

Future research should also expand upon the therapist supportive verbalization coding scheme to include parent verbalizations in order to assess whether certain parents were indeed pulling for certain reassuring and supportive verbalizations from therapists and also add non-verbal therapist behaviors to the coding scheme (e.g., facial expressions, gestures). As this study found that parents who received more supportive verbalizations from the therapist had lower levels of well-being at mid-treatment and post-treatment, an important next step is to not only capture and code therapist verbalizations, but also develop a coding scheme for capturing parent verbalizations (e.g., reassurance seeking, question asking) which may or may not pull for supportive verbalizations from the therapist. Additionally, a variety of non-verbal therapist behaviors were not coded in this study but anecdotally reported to be important factors in providing parents with supportive feedback during IY-ASLD-T sessions. More specifically, therapists could provide reinforcement and support to parents in the session via smiling, clapping, and raising their hands in excitement. Additionally, given the finding that parents largely felt connected to their group overall

(64% of parents reported that they felt the group was “very supportive” and 52% of parents believed the other parents in their group were “very interested” in their child,) it is important to code supportive verbalizations between parents in the group. It is possible that parent-to-parent supportive behaviors may be a more important factor than therapist-to-parent supportive behaviors in improvements in parental mental health outcomes in the IY-ASLD-T group program.

Clinical Implications

This study documents that parents of young children with ASD who participated in a pilot study of IY-ASLD, adapted for telehealth, had significant improvements in well-being over the course of the 12-week intervention, but not depressive symptoms, stress, or verbal approval to the child. The lack of change in stress and depressive symptoms are likely due to the low baseline levels of stress and depression along with low power ($N = 17$), as average depression and stress scores did trend in a declining direction over the course of IY-ASLD. Qualitative findings indicated parents had high satisfaction with the program and the group leader, with 64% of parents reporting that they felt the group was very supportive and 88% of parents reporting that they would like to continue meeting with as a group, indicating that the vast majority of parents enjoyed the group and would like to continue to maintain group contact. Qualitative results also indicated that parents found the group modality of IY-ASLD-T to be particularly enjoyable and helpful in connecting with others, normalizing their experiences parenting a young child with ASD and/or language delays, and learned new strategies to both tolerate their own emotions (e.g., emotion regulation coping skills) and engage with their children (e.g., child-directed play). As data from this study was conducted in a specialized preschool for children with disabilities, this study is uniquely situated to inform intervention guidance for the participating population. Therefore, programs that work with parents at-risk for poor well-being (children with developmental disabilities) could benefit from

proactively offering an evidence-based behavioral parenting program, such as IY-ASLD-T, which parents will likely enjoy and result in improved well-being of the parent. Additionally, the finding from this study that parents with lower well-being tended to show up more frequently to the IY-ASLD-T sessions, further emphasizes the strong desire for this type of supportive and skills-based programs for parents of young children with ASD and language delays, particularly those who may have lower levels of well-being and are in greater need of parental support. It is recommended that programs who work with this parent populations both assess parental well-being with a simple, short, and reliable measure such as the WHO-5, in order to better identify which parents may be in greater need of intervention, and work towards increasing access to services such as IY-ASLD-T for this population.

Conclusion

This dissertation extends the literature on IY-ASLD by providing a pilot study intervention on the newly developed IY-ASLD telehealth-adapted program, with a focus on assessing parental mental health outcomes over the course of treatment. Parents in this sample demonstrated low levels of depressive symptoms, average levels of stress, and low levels of overall well-being. Over the course of the intervention, mothers demonstrated significant improvements in their overall well-being. While exposure to treatment and to supportive verbalizations from therapist to parents were not related to residualized change in well-being, these seem to be important factors in understanding the needs of parents with young children with ASD (e.g., parents with low well-being had higher attendance, parents with low well-being received more supportive verbalizations from the therapist). Taken together, the results suggest maternal well-being is an important and promising target for evidence-based behavioral parenting interventions. It is recommended that

future studies utilize a randomized control trial approach in order to facilitate our understanding of whether IY-ASLD-T can work to both improve child behavior and parental well-being

References

- Abidin, R. R. (2012). *Parenting Stress Index (4th edition: Professional manual)*. Psychological Assessment Resources.
- Achenbach, T. M., & Rescorla, L. A. (2000). *Manual for the ASEBA Preschool Forms & Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families.
- Ainsworth, M. D. S., Bell, S.M., Stayton, D.J. (1974). Infant-mother attachment and social development: Socialization as a product of reciprocal responsiveness to signals. *The integration of a child into a social world* (pp. 99-135). Cambridge University Press.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC; Author.
- Axberg, U., Hansson, K., & Broberg, A. G. (2007). Evaluation of the Incredible Years Series – An open study of its effects when first introduced in Sweden. *Nordic Journal of Psychiatry*, 61(2), 143–151. <https://doi.org/10.1080/08039480701226120>
- Ban, Y., Sun, J., & Liu, J. (2021). Social support and subjective well-being in Chinese parents of children with autism spectrum disorder: The mediating role of perceived discrimination. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.781794>
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall, Inc. Englewood Cliffs, New Jersey.
- Barkley, R. (1987). *Defiant children: A clinician's manual for assessment and parent training*. Guilford Press.

Barkley, R. (2013). *Defiant children: A clinician's manual for assessment and parent training*. Guilford Press.

Baydar, N., Reid, M.J., Webster-Stratton, C., (2003). The role of mental health factors and program engagement in the effectiveness of a preventive parenting program for head start mothers. *Child Development*, 74(5), 1433-1453, <https://doi.org/10.1111/1467-8624.00616>

Bearss, K., Burrell, T. L., Stewart, L., & Scahill, L. (2015). Erratum to: Parent training in autism spectrum disorder: What's in a name? *Clinical Child and Family Psychology Review*, 18(2), 183–183. <https://doi.org/10.1007/s10567-015-0183-9>

Beck, A.T., Ward, C.H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561-571.

Benson, P. R. (2010). Coping, distress, and well-being in mothers of children with autism. *Research in Autism Spectrum Disorders*, 4(2), 217–228. <https://doi.org/10.1016/j.rasd.2009.09.008>

Bowlby, J. (1980). *Loss: Sadness & depression. Attachment and loss*. Hogarth Press.

Braiden, H., McDaniel, B., Duffy, J., & McCann, M. (2011). A pilot study of the Incredible Years BASIC parenting programme with bereaved families. *Journal of Children's Services*, 6(3), 141–155. <https://doi.org/10.1108/17466661111176015>

Brobst, J. B., Clopton, J. R., & Hendrick, S. S. (2008). Parenting children with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities*, 24(1), 38–49. <https://doi.org/10.1177/1088357608323699>

Bywater, T., Hutchings, J., Daley, D., Whitaker, C., Yeo, S. T., Jones, K., Eames, C., & Edwards, R. T. (2009). Long-term effectiveness of a parenting intervention for children at

- risk of developing conduct disorder. *British Journal of Psychiatry*, 195(4), 318–324.
<https://doi.org/10.1192/bjp.bp.108.056531>
- Celia, T., Freyestinson, W., Fredland, N., & Bowyer, P. (2020). Battle weary/battle ready: A phenomenological study of parents' lived experiences caring for children with autism and their safety concerns. *Journal of Advanced Nursing*, 76(1), 221–233.
<https://doi.org/10.1111/jan.14213>
- Chamberlain, P., Davis, J.P., Forgatch, M., Frey, J., Patterson, G.R., Ray, J. (1986). The Therapy
Therapy
Process Code: A multidimensional system for observing therapist and client interactions.
Eugene: Oregon Social Learning Center.
- Chamberlain, P., & Ray, J. (1988). The Therapy Process Code: A multidimensional system for observing therapist and client interactions in family treatment. *Advances in Behavioral Assessment of Children and Families*, 4, 189–217.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.
- Dababnah, S., & Parish, S. L. (2016). Incredible Years Program tailored to parents of preschoolers with autism: Pilot results. *Research on Social Work Practice*, 26(4), 372–385. <https://doi.org/10.1177/1049731514558004>
- Davis, N.O., & Carter, A.S. (2008). Parenting stress in mothers and fathers of toddlers with autism
spectrum disorders: Associations with child characteristics. *Journal of Autism and Developmental Disorder*, 38(7), 1278–1291. <https://doi.org/10.1007/s10803-007-0512-z>
- Dabrowska, A., & Pisula, E. (2010). Parenting stress and coping styles in mothers and fathers of

pre-school children with autism and Down Syndrome. *Journal of Intellectual Disability Research*, 54(3), 266–280. <https://doi.org/10.1111/j.1365-2788.2010.01258.x>

Eames, C., Daley, D., Hutchings, J., Whitaker, C. J., Bywater, T., Jones, K., & Hughes, J. C. (2010). The impact of group leaders' behaviour on parents acquisition of key parenting skills during parent training. *Behaviour Research and Therapy*, 48(12), 1221–1226. <https://doi.org/10.1016/j.brat.2010.07.011>

Everett, Y., Martin, C. G., & Zalewski, M. (2021). A systematic review focusing on psychotherapeutic interventions that impact parental psychopathology, child psychopathology and parenting behavior. *Clinical Child and Family Psychology Review*, 24(3), 579–598. <https://doi.org/10.1007/s10567-021-00355-3>

Eyberg, S. M., & Robinson, E. A. (1982). Parent-child interaction training: Effects on family functioning. *Journal of Clinical Child Psychology*, 11(2), 130–137. <https://doi.org/10.1080/15374418209533076>

Eyberg S. M. (1988). Parent-Child Interaction Therapy: integration of traditional and behavioral concerns. *Child & Family Behavior Therapy*, 10(1), 33-46. https://doi.org/10.1300/J019v10n01_04

Faso, D. J., Neal-Beevers, A. R., & Carlson, C. L. (2013). Vicarious futurity, hope, and well-being in parents of children with autism spectrum disorder. *Research in Autism Spectrum Disorders*, 7(2), 288–297. <https://doi.org/10.1016/j.rasd.2012.08.014>

Funderburk, B. W., & Eyberg, S. (2011). Parent–Child Interaction therapy. In J. C. Norcross, G. R.

- VandenBos, & D. K. Freedheim (Eds.), *History of psychotherapy: Continuity and change* (2nd ed. pp. 415–420). American Psychological Association.
<https://doi.org/10.1037/12353-021>
- Furlong, M., McGilloway, S., Bywater, T., Hutchings, J., Smith, S. M., & Donnelly, M. (2012). Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years. *Cochrane Database of Systematic Reviews*. <https://doi.org/10.1002/14651858.CD008225.pub2>
- Gardner, F., Burton, J., & Klimes, I. (2006). Randomised controlled trial of a parenting intervention in the voluntary sector for reducing child conduct problems: Outcomes and mechanisms of change. *Journal of Child Psychology and Psychiatry*, 47(11), 1123–1132.
<https://doi.org/10.1111/j.1469-7610.2006.01668.x>
- Gardner, F., Hutchings, J., Bywater, T., & Whitaker, C. (2010). Who benefits and how does it work? Moderators and mediators of outcome in an effectiveness trial of a parenting intervention. *Journal of Clinical Child & Adolescent Psychology*, 39(4), 568–580.
<https://doi.org/10.1080/15374416.2010.486315>
- Giallo, R., Wood, C. E., Jellett, R., & Porter, R. (2011). Fatigue, wellbeing and parental self-efficacy in mothers of children with an autism spectrum disorder. *Autism*, 17(4), 465–480.
<https://doi.org/10.1177/1362361311416830>
- Giannotta, F., Özdemir, M., & Stattin, H. (2019). The Implementation integrity of parenting programs: which aspects are most important? *Child & Youth Care Forum*, 48(6), 917–933. <https://doi.org/10.1007/s10566-019-09514-8>
- Greer, R. D., & Ross, D. E. (2008). Verbal behavior analysis: inducing and expanding complex communication in children with severe language delays. Boston: Allyn & Bacon.

- Griffith, G. M., Hastings, R. P., Nash, S., & Hill, C. (2010). Using matched groups to explore child behavior problems and maternal well-being in children with down syndrome and autism. *Journal of Autism and Developmental Disorders, 40*(5), 610–619.
<https://doi.org/10.1007/s10803-009-0906-1>
- Harwood, M. D., & Eyberg, S. M. (2004). Therapist verbal behavior early in treatment: relation to successful completion of Parent–Child Interaction Therapy. *Journal of Clinical Child & Adolescent Psychology, 33*(3), 601–612.
https://doi.org/10.1207/s15374424jccp3303_17
- Hauser-Cram, P., Warfield, M.E., Shonkoff, J.P., Krauss, M.W., Sayer, A., Upshur, C.C., Hodapp, R.M., (2001). Children with disabilities: a longitudinal study of child development and parent well-being. *Monographs of the Society for Research in Child Development, 66*(3).
- Hayes, S. A., & Watson, S. L. (2013). The impact of parenting stress: a meta-analysis of studies comparing the experience of parenting stress in parents of children with and without autism spectrum disorder. *Journal of Autism and Developmental Disorders, 43*(3), 629–642. <https://doi.org/10.1007/s10803-012-1604-y>
- Hutchings, J., Bywater, T., Daley, D., Gardner, F., Whitaker, C., Jones, K., Eames, C., & Edwards, R. T. (2007). Parenting intervention in Sure Start services for children at risk of developing conduct disorder: Pragmatic randomised controlled trial. *BMJ, 334*(7595), 678. <https://doi.org/10.1136/bmj.39126.620799.55>
- Hutchings, J., Bywater, T., Williams, M. E., Lane, E., & Whitaker, C. J. (2012). Improvements in maternal depression as a mediator of child behaviour change. *Psychology, 03*(09), 795–801. <https://doi.org/10.4236/psych.2012.329120>

- Hutchings, J., Lane, E., & Kelly, J. (2004). Comparison of two treatments for children with severely disruptive behaviours: A four-year follow-up. *Behavioural and Cognitive Psychotherapy*, 32(1), 15–30. <https://doi.org/10.1017/S1352465804001018>
- Hutchings, J., Pearson-Blunt, R., Pasteur, M.-A., Healy, H., & Williams, E. (2016). A pilot trial of the Incredible Years® Autism Spectrum and Language Delays. *Good Autism Practice*, 17(1), 15-22.
- Jones, K., Daley, D., Hutchings, J., Bywater, T., & Eames, C. (2007). Efficacy of the Incredible Years Basic parent training programme as an early intervention for children with conduct problems and ADHD. *Child: Care, Health and Development*, 33(6), 749–756. <https://doi.org/10.1111/j.1365-2214.2007.00747.x>
- Ji, S.I., Park, H., Yoon, S.A., Hong, S.B. (2023). A validation study of the CARS-2 compared with the ADOS-2 in the diagnosis of autism spectrum disorder: A Suggestion for Cutoff Scores. *Soa Chongsonyon Chongsin Uihak*, 34(1), 45-50. <https://doi.org/10.5765/jkacap.220027>
- Kaehler, L. A., Jacobs, M., & Jones, D. J. (2016). Distilling common history and practice elements to inform dissemination: Hanf-model BPT programs as an example. *Clinical Child and Family Psychology Review*, 19(3), 236–258. <https://doi.org/10.1007/s10567-016-0210-5>
- Karst, J. S., & Van Hecke, A. V. (2012). Parent and family impact of autism spectrum disorders: a review and proposed model for intervention evaluation. *Clinical Child and Family Psychology Review*, 15(3), 247–277. <https://doi.org/10.1007/s10567-012-0119-6>

- Korest, R., & Carlson, J. S. (2021). A meta-analysis of the current state of evidence of the Incredible Years Teacher-Classroom Management Program. *Children, 9*(1), 24. <https://doi.org/10.3390/children9010024>
- Kotchick, B. A., & Forehand, R. (2002). Putting parenting in perspective: a discussion of the contextual factors that shape parenting practices. *Journal of Child and Family Studies, 11*(3), 255–269. <https://doi.org/10.1023/A:1016863921662>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of General Internal Medicine, 16*(9), 606–613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Larsson, B., Fossum, S., Clifford, G., Drugli, M. B., Handegard, B. H., & Morch, W.T. (2009). Treatment of oppositional defiant and conduct problems in young Norwegian children: Results of a randomized controlled trial. *European Child & Adolescent Psychiatry, 18*(1), 42–52. <https://doi.org/10.1007/s00787-008-0702-z>
- Lee, G. K., Lopata, C., Volker, M. A., Thomeer, M. L., Nida, R. E., Toomey, J. A., Chow, S. Y., & Smerbeck, A. M. (2009). Health-related quality of life of parents of children with high-functioning autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 24*(4), 227–239. <https://doi.org/10.1177/1088357609347371>
- Lees, D. G., & Ronan, K. R. (2008). Engagement and effectiveness of parent management training (Incredible Years) for solo high-risk mothers: A Multiple Baseline Evaluation. *Behaviour Change, 25*(2), 109–128. <https://doi.org/10.1375/behc.25.2.109>
- Leijten, P., Gardner, F., Landau, S., Harris, V., Mann, J., Hutchings, J., Beecham, J., Bonin, E.-M., & Scott, S. (2018). Research review: harnessing the power of individual participant

- data in a meta-analysis of the benefits and harms of the Incredible Years parenting program. *Journal of Child Psychology and Psychiatry*, 59(2), 99–109.
<https://doi.org/10.1111/jcpp.12781>
- Leitão, S. M., Seabra-Santos, M. J., & Gaspar, M. F. (2021). Therapist factors matter: a systematic review of parent interventions directed at children's behavior problems. *Family Process*, 60(1), 84–101. <https://doi.org/10.1111/famp.12550>
- Lloyd, S., Osborne, L. A., & Reed, P. (2019). Personal experiences disclosed by parents of children with Autism Spectrum Disorder: A YouTube Analysis. *Research in Autism Spectrum Disorders*, 64, 13–22. <https://doi.org/10.1016/j.rasd.2019.03.009>
- Maliken, A. C., & Katz, L. F. (2013). Exploring the impact of parental psychopathology and emotion regulation on evidence-based parenting interventions: a transdiagnostic approach to improving treatment effectiveness. *Clinical Child and Family Psychology Review*, 16(2), 173–186. <https://doi.org/10.1007/s10567-013-0132-4>
- McGilloway, S., Furlong, M. (2012). The Incredible Years parenting program in Ireland: a qualitative analysis of the experience of disadvantaged parents. *Clinical Child Psychology*, 17(4), 616-630. <https://doi.org/10.1177/1359104511426406>
- McMahon, R. J., Forehand, R., & Griest, D. L. (1981). Effects of knowledge of social learning principles on enhancing treatment outcome and generalization in a parent training program. *Journal of Consulting and Clinical Psychology*, 49(4), 526–532. <https://doi.org/10.1037/0022-006X.49.4.526>
- Menting, A. T. A., Orobio de Castro, B., & Matthys, W. (2013). Effectiveness of the Incredible Years parent training to modify disruptive and prosocial child behavior: A meta-analytic

- review. *Clinical Psychology Review*, 33(8), 901–913.
<https://doi.org/10.1016/j.cpr.2013.07.006>
- Miller, G. E., & Prinz, R. J. (2003). Engagement of families in treatment for childhood conduct problems. *Behavior Therapy*, 34(4), 517–534. [https://doi.org/10.1016/S0005-7894\(03\)80033-3](https://doi.org/10.1016/S0005-7894(03)80033-3)
- Muschietti-Piana, V., (2020). *Changes in parental self-efficacy following "Autism Spectrum Disorder and Language Delay Incredible Years" parenting programme*. [Unpublished doctoral dissertation]. Middlesex University London.
- Nock, M. K. & Kazdin, A. E. (2005). Randomized controlled trial of a brief intervention for increasing participation in parent management training. *Journal of Consulting and Clinical Psychology*, 73(5), 872-879. <https://doi.org/10.1037/0022-006X.73.5.872>
- Olsson, M.B., Hwang, C.P. (2001). Depression in mothers and fathers of children with intellectual disability. *Journal of Intellectual Disability Research*, 45(6), 535-543.
<https://doi.org/10.1046/j.1365-2788.2001.00372.x>
- Patterson, G.R. (1982). *Coercive Family Process*. Castalia Publishing Company.
- Patterson, J. (2002). Improving mental health through parenting programmes: Block Randomised Controlled Trial. *Archives of Disease in Childhood*, 87(6), 472–477.
<https://doi.org/10.1136/adc.87.6.472>
- Patterson, G. R., & Forgatch, M. S. (1985). Therapist behavior as a determinant for client noncompliance: A paradox for the behavior modifier. *Journal of Consulting and Clinical Psychology*, 53(6), 846–851. <https://doi.org/10.1037/0022-006X.53.6.846>
- Peters, S., Calam, R., & Harrington, R. (2005). Maternal attributions and expressed emotion as predictors of attendance at parent management training. *Journal of Child Psychology and Psychiatry*, 46(4), 436–448. <https://doi.org/10.1111/j.1469-7610.2004.00365.x>

Piaget, J., & Inhelder, B. (1969). *The Psychology of the Child*. Basic Books.

Postorino, V., Sharp, W. G., McCracken, C. E., Bearss, K., Burrell, T. L., Evans, A. N., &

Scahill, L. (2017). A systematic review and meta-analysis of parent training for disruptive behavior in children with autism spectrum disorder. *Clinical Child and Family Psychology Review*, 20(4), 391–402. <https://doi.org/10.1007/s10567-017-0237-2>

Prinz, R.J. & Miller, G.E. (1994). Family-based treatment for childhood antisocial behavior:

experimental influences on dropout and engagement. *Journal of Consulting and Clinical Psychology*, 62(3), 645-650. <https://doi.org/10.1037/0022-006X.62.3.645>

Reyno, S. M., & McGrath, P. J. (2006). Predictors of parent training efficacy for child externalizing

behavior problems - a meta-analytic review. *Journal of Child Psychology and Psychiatry*, 47(1), 99–111. <https://doi.org/10.1111/j.1469-7610.2005.01544.x>

Riley, P., Lewis, R., & Brew, C. (2010). Why did you do that? teachers explain the use of legal aggression in the classroom. *Teaching and Teacher Education*, 26(4), 957–964.

<https://doi.org/10.1016/j.tate.2009.10.037>

Samadi, S. A., McConkey, R., & Bunting, B. (2014). Parental wellbeing of Iranian families with

children who have developmental disabilities. *Research in Developmental Disabilities*, 35(7),

1639–1647. <https://doi.org/10.1016/j.ridd.2014.04.001>

Schwartzman, J. M., & Corbett, B. A. (2020). Higher depressive symptoms in early adolescents

with Autism Spectrum Disorder by self- and parent-report compared to typically-developing peers. *Research in Autism Spectrum Disorders*, 77,

<https://doi.org/10.1016/j.rasd.2020.101613>

Scott, S., Spender, Q., Doolan, M., Jacobs, B., Aspland, H., & Webster-Stratton, C. (2001).

Multicentre controlled trial of parenting groups for childhood antisocial behaviour in clinical practice commentary: Nipping conduct problems in the. *British Medical Journal*, *323*(7306), 194–194. <https://doi.org/10.1136/bmj.323.7306.194>

Selinske, J. E., Greer, R. D., & Lodhi, S. (1991). A functional analysis of the comprehensive application of behavior analysis to schooling. *Journal of Applied Behavior Analysis*, *24*(1), 107–117. <https://doi.org/10.1901/jaba.1991.24-107>

Shepherd, D., Landon, J., Goedeke, S., & Meads, J. (2020). The cold shoulder or a shoulder to cry on? mechanisms of formal and informal social support in the ASD parenting context. *Journal of Autism and Developmental Disorders*, *50*(12), 4331–4343. <https://doi.org/10.1007/s10803-020-04487-3>

Singer, G.H.S. (2006) A meta-analysis of comparative studies of depressive symptoms in mothers of children with and without disabilities, *In Pursuit of Dignity and Autonomy*, 189-218, JAI Press Inc.

Stahmer, A. C., & Pellecchia, M. (2015). Moving towards a more ecologically valid model of parent-implemented interventions in autism. *Autism*, *19*(3), 259–261. <https://doi.org/10.1177/1362361314566739>

Thijssen, J., Albrecht, G., Muris, P., & de Ruiter, C. (2017). Treatment fidelity during therapist initial training is related to subsequent effectiveness of parent management training—oregon model. *Journal of Child and Family Studies*, *26*(7), 1991–1999. <https://doi.org/10.1007/s10826-017-0706-8>

Troutman, B. (2015). *Integrating behaviorism and attachment theory in parent coaching*.

Springer International Publishing. <https://doi.org/10.1007/978-3-319-15239-4>

Topp, C.W., Ostergaard, S.D., Sondergaard S., & Bech, P. (2015). The WHO-5 well-being index:

a systematic review of the literature. *Psychotherapy and Psychosomatics*, *84*, 167-176.

<https://doi.org/10.1159/000376585>

Wahdan, M. M., Malak, M. Z., Al-Amer, R., Ayed, A., Russo, S., & Berte, D. Z. (2023). Effect of incredible years autism spectrum and language delays (IY-ASD) program on stress and behavioral management skills among parents of children with autism spectrum disorder in Palestine. *Journal of Pediatric Nursing*, *72*, 45–52.

<https://doi.org/10.1016/j.pedn.2023.03.018>

Wainer, A. L., Hepburn, S., & McMahon Griffith, E. (2017). Remembering parents in parent-mediated early intervention: An approach to examining impact on parents and families.

Autism, *21*(1), 5–17. <https://doi.org/10.1177/1362361315622411>

Webster-Stratton, C. (1981). Modification of mothers' behaviors and attitudes through a videotape modeling group discussion program. *Behavior Therapy*, *12*(5), 634–642.

[https://doi.org/10.1016/S0005-7894\(81\)80135-9](https://doi.org/10.1016/S0005-7894(81)80135-9)

Webster-Stratton, C. (2001a). The Incredible Years: parents, teachers, and children training series. *Residential Treatment for Children & Youth*, *18*(3), 31–45.

https://doi.org/10.1300/J007v18n03_04

Webster-Stratton, C. (2001b). The Incredible Years: parents, teachers, and children training series. *Residential Treatment for Children & Youth*, *18*(3), 31–45.

https://doi.org/10.1300/J007v18n03_04

- Webster-Stratton, C., Dababnah, S., & Olson, E. (2018). The Incredible Years® Group-Based Parenting Program for Young Children with Autism Spectrum Disorder. In M. Siller & L. Morgan (Eds.), *Handbook of Parent-Implemented Interventions for Very Young Children with Autism* (pp. 261–282). Springer International Publishing.
https://doi.org/10.1007/978-3-319-90994-3_17
- Webster-Stratton, C. (2019). Parent program satisfaction questionnaire autism spectrum & language delays program, *The Incredible Years: A Troubleshooting Guide for Parents of Children Aged 3-8 Years (3rd Edition)* Incredible Years.
- Webster-Stratton, C., Kolpacoff, M., & Hollinsworth, T. (1988). Self-administered videotape therapy for families with conduct-problem children: Comparison with two cost-effective treatments and a control group. *Journal of Consulting and Clinical Psychology, 56*(4), 558–566. <https://doi.org/10.1037/0022-006X.56.4.558>
- Webster-Stratton, C. (2015). Manual for the Incredible Years® Autism Spectrum and Language delays programme for parents with preschool children. Seattle, USA: Incredible Years® Inc.
- Webster-Stratton, C., & McCoy, K. P. (2015). Bringing The Incredible Years® Programs to Scale: Bringing The Incredible Years® Programs to Scale. *New Directions for Child and Adolescent Development, 2015*(149), 81–95. <https://doi.org/10.1002/cad.20115>
- Webster-Stratton, C., & Reid, M. J. (2010). The Incredible Years® parents, teachers, and children training series: a multifaceted treatment approach for young children with conduct problems. In *Evidence-Based Psychotherapies for Children and Adolescents*.
- Webster-Stratton, C., Reid, M. J., & Hammond, M. (2004). Treating children with early-onset conduct problems: intervention outcomes for parent, child, and teacher training. *Journal*

of Clinical Child & Adolescent Psychology, 33(1), 105–124.

https://doi.org/10.1207/S15374424JCCP3301_11

Werba, B. E., Eyberg, S. M., Boggs, S. R., & Algina, J. (2006). Predicting outcome in parent-child

interaction therapy. *Behavior Modification*, 30(5), 618–646.

<https://doi.org/10.1177/0145445504272977>

Wolf, L. C., Noh, S., Fisman, S. N., & Speechley, M. (1989). Brief report: psychological effects of

parenting stress on parents of autistic children. *Journal of Autism and Developmental*

Disorders, 19(1), 157–166. <https://doi.org/10.1007/bf02212727>

World Health Organization. (1998). Well-Being measures in primary health care/the depcare project. WHO Regional Office for Europe: Copenhagen.

Williams, M. E., Hastings, R. P., & Hutchings, J. (2020). The Incredible Years Autism Spectrum and Language Delays Parent Program: a pragmatic, feasibility randomized controlled

trial. *Autism Research*, 13(6), 1011–1022. <https://doi.org/10.1002/aur.2265>

Wilson, D. B., & Lipsey, M. W. (2001). The role of method in treatment effectiveness research:

Evidence from meta-analysis. *Psychological Methods*, 6(4), 413–429.

<https://doi.org/10.1037/1082-989X.6.4.413>

Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., & Stewart-Brown, S. (2007). The Warwick-Edinburgh mental well-being scale

(WEMWBS):

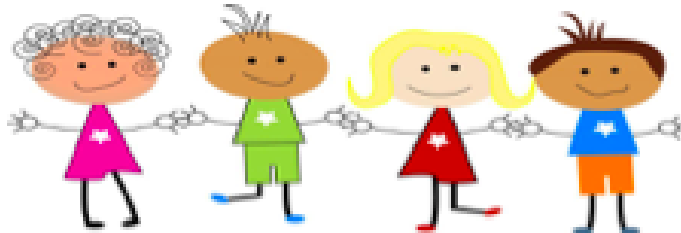
Development and UK validation. *Health and Quality of Life Outcomes*, 5(1).

<https://doi.org/10.1186/1477-7525-5-63>

Zablotsky, B., Colpe, L. J., Pringle, B. A., Kogan, M. D., Rice, C., & Blumberg, S. J. (2017).
Age

of parental concern, diagnosis, and service initiation among children with autism spectrum
disorder. *American Journal on Intellectual and Developmental Disabilities*, 122(1), 49–61.

<https://doi.org/10.1352/1944-7558-122.1.49>

Appendix A: Recruitment Material for Spring 2021

Sign up for Virtual Parent Groups

Dear Keller Parents,

In 2021 we are launching a new parent program at the Fred S Keller School. Parents are invited to enroll in an evidence-based VIRTUAL parenting program that will provide training for parents of children with autism and language delays. Training will be offered online weekly in a supportive small group. Join us to learn practical skills and connect with other parents in our school community!

Groups are facilitated by trained leaders from Teachers College Columbia University, who will be conducting research on the program's outcomes at our school.

TO PARTICIPATE:

Visit our website to sign up: <https://sites.google.com/view/tc-parent-training/about-the-program>

OR SCAN QR CODE with a smartphone to add your name to the list:

- QR code directions
1. Open your smartphone camera
 2. Hover over the square (without taking a photo)
 3. A link that says, "open Qualtrics" will pop up!
 4. Complete the form



Space will be limited, please sign up early!

This study has been approved by the Fred S. Keller School IRB
IRB#1/ IRB 00006219

Appendix B: Pyramid Graphic Shared with Parents (used with permission of the author)



Appendix C: Parent Child Interaction (PCI) Video Instructions

Instructions for Brief At-Home Activity & Play Session

Step 1: Setup: Please sit at a table with your child in an enclosed room with minimal distractions. Place your laptop or tablet across from where you and your child are seated so that you are both in the frame of the camera. Please do your best to remain seated and in frame of the camera while you play.



Step 2: First Task

- **What Do I Need?**
 - o Crayons and two sheets of blank paper.
- **What To Do?**
 - o Spend 5 minutes teaching your child how to draw the picture the researcher has given you.
 - o The researcher will tell you when to begin and when to end!

Step 3: Second Task

- **What Do I Need?**
 - o A bunch of toys your child would like to play with (suggestions: shape sorter, pop-up, magnet tiles, connect four, paper & crayons, toy vehicles)
- **What To Do?**
 - o Play with your child as you normally would for 5 minutes.
 - o The researcher will tell you when to begin and when to end!

Step 4: Clean Up

- **What Do I Need?**
 - o A bag or bin/ container to put toys back in (eg any small bag, bin, box, ziplock that will be visible on camera, not in a different room)
- **What To Do?**
 - o Tell your child to clean up. Please don't clean up by yourself.
 - o The researcher will tell you when to begin and when to end!

THANK YOU!

Appendix D: Therapy Process Coding Guide Used by Research Assistants

Transcribing Instructions & Procedures

Transcript: What is said by therapist and parents.

Name key will be on the assignment sheet

Use "New Blank Template" to Create your Vocal Transcript

Label at top Session number and include link to video.

How to Begin:

- Find the Assignment sheet for the therapist you are assigned to on the spreadsheet.
- Enter the status for the video you are working on "In Progress"; "Done"; "Not Started". As you complete each transcript and coding sheet, **please update this sheet with the current status** so we can keep track of what is complete and what still needs to be done.
- Duplicate the "New Blank Template" tab. Then enter the information for your session.
- Each Tab will contain the Check-In, Mid-Section, Check- Out.

How to transcribe:

- note in first column speech from Therapist or Parent
- write down everything the therapist says vocally; e.g. "Ummm"; "Ahhhhh"
- write down everything that parent says vocally
- write [x] a for clear listener response (describing the x is often helpful, e.g. x - parent or therapist nodded head; smiling; laughing).
- use placeholder code [u] for anything unintelligible, describing the [u] is helpful ... can include [u] laughing, [u] "reeee" or unclear word attempts] **ADD TIME STAMP**
- When overlapping speech, do your best to capture the back and forth between the two speakers. Please note that the speech is overlapping with [O].] **ADD TIME STAMP**
- If the session you are transcribing includes a small excerpt from videos you do not have to transcribe the video just note that a video was played. **ADD TIME STAMP**

Format the transcript

- Add punctuation as much as possible. (question marks, periods, etc)
- Line break to new transcript cell when:
 - You are noting a break in the group, e.g. breakout rooms, video shown.
 - OR when the speaker changes

Appendix E: VBDT Language Coding Guide Used by Research Assistants

Transcribing
First pass) Transcript What was said and done by either mother and child
Use "New Blank Template" to Create your Vocal Transcript
<p>How to transcribe</p> <ul style="list-style-type: none"> ● note in first column speech or action is from mom (m) or child (c) ● write down everything the mom says vocally; ● write down everything that child says vocally; ● write [x] as its own line for clear listener response (describing the x is often helpful, e.g. x - child looks at mom); ● use placeholder code [u] for anything unintelligible, describing the [u] is helpful ... can include [u] laughing, [u] "reeee" or unclear word attempts] ADD TIME STAMP
<p>Format the transcript</p> <ul style="list-style-type: none"> ● Add punctuation as much as possible. (question marks, periods, etc) ● Line break to new transcript cell when: <ul style="list-style-type: none"> ○ there is a 3 second pause ○ OR when speaker changes ○ OR if the child emits <i>clear listener response</i>, <ul style="list-style-type: none"> ■ <i>What is a clear listener response?</i> >>> <i>CLEARLY looking at object being discussed or clearly looking at a speaker</i> >>> <i>complying with a direction (picking up a crayon when asked);</i> >>> <i>clear non compliance with direction (push away)</i>
<p>Add Vocal Verbal Operant Codes</p> <ul style="list-style-type: none"> ● Code # mands, tacts, approvals, disapprovals, during transcription. ● These codes should appear on the line of transcript they are describing ● There will be multiple codes in this section

Second pass) Code Reinforcement as Speaker or Listener Responses --

- How did the other person respond to this line of transcript (speech or behavior)
 - Was it reinforced with speaker behavior, listener behavior, or not reinforced at all?
-
- Determine how transcribed speech was reinforced:
LOOK AT THE LINE IMMEDIATELY BELOW IN THE TRANSCRIPT, THIS WILL HELP YOU CODE THE REINFORCEMENT RESPONSE. Immediately next in the transcript was it...
 - 1) reinforced with "speaker" behavior in the form of vocal verbal words, vocal nonlexical sounds, or nonvocal verbal communications (physical/ body language)
 - 2) reinforced with "listener only" behavior, observing, compliance
 - 3) not reinforced (no clear observable listening, attending)
 - Pick only 1 consequence type, Only 1 code in this section
 note the hierarchy; verbal vocal > nonlexical > nonvocal > listener > no response

Coding Guidelines

I. Vocal Verbal Operants (VVO) Codes: includes Mands, Tacts, Approvals, Disapprovals

Approvals

Approvals = vocal or non vocal verbal behavior to endorse, commend, and praise the correct, or desired behaviors, or a positive attempt to engage the child
 These actions function to reinforce behavior.

ONLY CODE MOM APPROVALS -- NOT CHILD

- Vocal approvals were approvals delivered vocally with audible sounds (e.g., "You are playing so nicely," "You are awesome at this," "I love you").
- Non-lexical approvals were vocal responses that did not contain real words/ word attempts, such as laughs or approving sounds (e.g., "Weee!").
- Non-vocal approvals were defined as approvals delivered through, gestures, or physical contact. For example,, a gesture thumbs up, claps), or physical contact (e.g., high fives, fist bump, hugs, tickle, kiss).
- Code approval when one repeats what the other says (e.g. after they ask for the name of something), or when an echoed statement functions like approval to reinforce behavior/what was said.
- M: what's this? (mand)
 C: baby (tact)
M a baby! (approval)
- C: Let's try again (tact)
 M: Let's try again! (approval)

Do not double code approvals as tacts/mands. Approval/Disapproval trumps tacts/mands.

Disapprovals

Disapprovals were defined as Vocal and NonVocal verbal behavior in attempt to reprimand or punish inappropriate behaviors OR express overt disagreement, noncompliance.

ONLY CODE MOM DISAPPROVALS -- NOT CHILD

- A vocal disapproval was defined as a reprimand delivered vocally with audible sounds (e.g., "No," "Stop that," "Don't do that," "That's not right").
- Non-lexical disapprovals were vocal responses that did not contain real words/ word attempts, such "Uh-uh" (to indicate "no don't do that")
- Non-vocal disapprovals were defined as reprimands delivered in the form of gestures(e.g., finger or hand held up to represent "No" or "Stop"), or physical contact (e.g., slaps, hits, kicks, or pushing hands away).

Do not double code disapproval as tacts/mands. Disapproval trumps those codes.

Mand

Mands = vocal verbal speaker behaviors that attempt to evoke a behavior or response from another person (e.g. request for action, attention, object, information,)

Look here. -- mand for attention

Take the crayon -- mand for action

Let's go come on -- mand for action

Which one do you want? --- mand for information

How are you doing? -- mand for information

Is that wet? -- mand for information

Give me that one. -- mand for object

Hint: Ask, what is the purpose of this speaker's behavior? To get someone to do something

Tact

Tact = vocal verbal description of something in the environment (objects, actions). Includes neutral commenting on one own's behavior or someone else's behavior

That's a square

Mommy is opening the book

Here is a flower, so pretty

You have the black crayon

I found it!

We are going to play!

Hint: Ask, what is the purpose of the speaker's behavior? To label or describe something

Code tact when, child responds with "yes" to a question from mom.

MORE INFO on VVO Codes

- FILLER WORDS vs APPROVALS: Filler words do NOT need to be coded. "Ready?" sounds like a mand, but can be typically grouped with whatever comes right after it. "Yea" or "ok" sometimes seems like an approval but do not code as such, if it is used as a filler word. Only if it is used as clear praise should it be an approval
- APPROVALS vs MANDS: Wow!/(gasps) Will sometimes be an approval but occasionally is grouped along with a mand get the child's attention back or ask a question
- MANDS: "Look" if used alone can be it's own mand, but typically it will be grouped into one mand with whatever comes next.
- MAND VS TACT: Statements describing a joint activity can sometimes be a mand, sometimes a tact. ("We are picking out crayons!") (tacting the activity)// ("Let's sit down please Liam") (manding for sitting) Ask yourself, is mom just describing what she is doing? Or is she really trying to get the child to do something?
- MULTIPLE MANDS: "Look look look!" in rapid succession is (code one mand).
- "Do you want red? ---pause --- Do you want blue?" (2 mands)
"Do you want red or blue?" (1 mand)

II. REINFORCEMENT CODES: includes: "Speaker" (vocal verbal lexical, vocal non lexical verbal, non vocal verbal) or Listener or No Response

"SPEAKER" BEHAVIOR

(these count toward conversation units, or intraverbals)

Vocal Verbal (Lexical) Behavior

- Vocal verbal behaviors consist speaker responses emitted across verbal operants. These are communicative responses that function as either *initiations* or *responses* between two or more persons in the same verbal community (ie conversation) or by one's self aloud (i.e., self-talk).
- Vocal verbal responses are emitted in an audible form with lexical vocalizations (i.e., containing words, phrases, or sentences).
- Example, spoken sentences, words, AND clear word attempts***
NOTE: Word attempts should be captured phonetically in the transcript (e.g. attempt are "car" looks like "kaa----" on transcript),
- Word attempt were considered "non lexical" category in prior study. We have updated that criteria, to better capture speech level of these children. There are many word attempts (audible vocalization of identifiable phonemes) and the parent responds as though it IS a full word (aka they can "translate" the speaker behavior of their child.)
- How to spot something that is "Reinforced with vocal verbal speaker behavior": When a child complies with a request (listener behavior eg, looking at mom, picking up toys), mom does not have to specifically verbally praise that exact compliance. If she simply continues conversing, you can still code that she has reinforced with vocal verbal.

Vocal Non-Lexical Verbal Behavior

- Non-lexical vocal verbal behaviors consist of communicative speaker responses emitted across verbal operants with the same controlling variables and reinforcing functions as vocal verbal behavior.
- The differences are exhibited in the form of the responses in which the audible vocalizations do not contain lexicons.
- Example. Laugh, hmmm, grunts, a cry, whine, whimper

Non-Vocal Verbal Behavior

- Non-vocal verbal behaviors consist of communicative speaker responses emitted across verbal operants with the same controlling variables and reinforcing functions as vocal verbal behavior.
- The differences are exhibited in the form of the responses. Gestures and actions are used as non-vocal functions to communicate, but no audible response is emitted.
- Examples:
- pushing object away= "I dont want that"
- wave = "hello" ;
- head nod/shake = "yes/no" ;
- points/reachers to object = "I want that/ look at that";
- reaching for parent hugging= "pick me up/ hug me")
- Exclude facial expressions/ smiles/ frowns (unfortunately a lot of our videos did not capture fully parents and child's whole faces, and thus we cannot accurately code facial expressions in this category)

LISTENER BEHAVIOR

(these do not count toward conversation units, or intraverbals)

Listener Behavior

- Observing, Orienting, Looking to parent to toward shared activities,
- Includes compliance without speech,
- Can include "physical" "Body language" and hand-over-hand compliance

NOT REINFORCED

(aka NonVerbal, NonSocial)

No social interaction, no communication function present

Includes:

- no listener response
- babble that is ongoing, self-reinforcing
- palilalia, scripting, self-reinforcing speech
- Stereotypy (verbal or physical)

UNKNOWN Use this code when the subsequent reinforcement is unclear/ not immediate/ not obvious

Appendix H: The Patient Health Questionnaire (PHQ-9)

Over the **last 2 weeks**, how often have you been bothered by any of the following problems?

	Not at all	Several days	More than half the days	Nearly every day
Little interest or pleasure in doing things	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling down, depressed, or hopeless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble falling or staying asleep, or sleeping too much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling tired or having little energy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Poor appetite or overeating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all	Several days	More than half the days	Nearly every day
Feeling bad about yourself -- or that you are a failure or have let yourself or your family down	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Trouble concentrating on things, such as reading the newspaper or watching television	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Moving or speaking so slowly that other people could have noticed? Or the opposite-- being so fidgety or restless that you have been moving around a lot more than usual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thoughts that you would be better off dead or hurting yourself in some way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

- Not at all difficult
- Somewhat difficult
- Very difficult
- Extremely difficult