Investigating Early Childhood Trajectories of Parenting Feelings and Behavior on Outcomes for Children with Developmental Delays and Disabilities

by

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DISSERTATION ABSTRACT

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Title: Investigating Early Childhood Trajectories of Parenting Feelings and Behavior on Outcomes for Children with Developmental Delays and Disabilities

Social-emotional development is foundational to learning and has been linked to long-term academic, behavioral and mental health outcomes for children (i.e., Jones et al., 2015). In early childhood, social-emotional development is encouraged primarily through familial relationships. Children with developmental delays and disabilities (DD) are more likely to experience social-emotional delays which can impact participation in these everyday interactions and opportunities for learning. Families with children with DD may face additional stressors which compete with resources and opportunities for relationship-enhancing interactions, further impacting child social-emotional development (Chan & Neece, 2018). Parent-mediated interventions have been linked to gains in child social-communication and behavior (Stahmer & Pellecchia, 2015; Webster-Stratton & Reid, 2010; Wetherby et al., 2014), which may facilitate positive parent-child interactions. Such interventions may also support parent and family well-being. Less is known about the mechanism through which parent-mediated interventions impact child social-emotional outcomes for children with DD.

The present study of 180 caregivers enrolled in a primary prevention RCT examined (1) how positive feelings and attitudes (PFA) about their parenting role relate to parenting behaviors during parent-child play, (2) change in the context of parent-mediated early intervention, and (3) predict social-emotional outcomes at school-age for toddlers with DD. Analyses included

confirmatory factor analyses and latent growth models within a structural equation modeling framework. Results identified parent-mediated intervention as a mechanism for change in parenting play behavior and showed positive PFA as a predictor for school-age social interaction outcome. The significance of findings, study limitations, and suggestions for future research are discussed.

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CHAPTER 1

INTRODUCTION

Social-emotional development is fostered through relationship and includes building capacity for self-regulation, positive social engagement, and joint interaction. Social-emotional development in childhood provides an essential foundation for learning and has been shown to contribute to an array of long-term academic, behavioral and mental health outcomes (i.e., Jones et al., 2015). A multitude of factors play a role in a child's acquisition of social-emotional skills including development more broadly, temperament, family and parenting context, cultural and familial norms and values, as well as other environmental influences (i.e., Belsky & Pluess, 2009). Further adding to the complexity, children respond differently to similar contexts which suggests the 'match' between a child and their environment is critical to development.

Approximately 17% of children experience DDs which present in early childhood as delays or differences in learning, language, behavior, and/or physical development (CDC, 2020). Children with developmental delays and disabilities (DD) may experience barriers to participating in many social and learning environments with their families and peers, which can contribute to a widening gap in their social-emotional skill development (i.e., Ziviani & Muhlenhaupt, 2006). Behavioral difficulties commonly cooccur with DD and may be exacerbated by environmental mismatch. As compared to other aspects of DD, behavioral difficulties most notably impact family functioning, including by causing increased parenting stress and family relationship strain (i.e., Abbeduto et al., 2004; Baker et al., 2003; Estes et al., 2019; Factor et al., 2019; Quintero & McIntyre, 2010).

Decades of research has explored the impact of the parent-child relationship and parenting behaviors on child development broadly (i.e., Ainsworth, 1979; Bowlby, 1969),

however, less is known about parenting behaviors in the context of DD. The present study aims to characterize (1) how positive parenting feelings and attitudes (PFA) relate to parenting behaviors during play across early childhood, (2) change in the context of parent-mediated EI, and (3) predict social-emotional outcomes at school-age for toddlers with DD.

Parent-Child Interaction in Theory

The parent-child relationship is foundational for toddlers' social learning development. Everyday activities and routines offer interactive learning opportunities for both parents and their children to develop competence and confidence in their supportive, reciprocal engagement (Schertz & Horn, 2018). During engagement in play and family routines and activities, young children learn and practice new skills. Children observe modeled behavior, receive guided instruction, and have opportunities for supported problem-solving, embedded within these everyday situations. Several theories have conceptualized the significant of parent-child interactions on child development, including from ecological, behavioral and cognitive-developmental perspectives, which inform existing intervention practices and public policy.

Ecological Perspective

In regard to ecologically oriented perspectives, parent-child interactions may be understood through Vygotsky's (1934; 1978; 1986) sociocultural learning theory which focuses on the social landscape through which individuals construct meaning from their environment. In this framework, key components of learning include cultural context, social engagement, collaborative sharing, scaffolded practice, and developmental appropriateness. Rogoff (1990) expanded upon sociocultural learning theory by highlighting the *dynamic* nature of guided, participation-based learning. The child and parent are equal participants, and the learning process is valued over learning outcomes.

Behavioral Perspective

Parent-child interactions may also be understood through observed behavioral contingencies. From this perspective, supportive parent and child behaviors within an interaction can promote social learning just as disengaged or coercive behavioral patterns can inhibit pro-social skill development. Patterson's (1982) theory of coercive family process posits that when ineffective discipline practices are employed by parents in response to child problem behavior, the result is a mutually reinforced escalation of negative child and parent behavior. In response to their child's behavioral difficulties, parents may engage in ineffective or reactive parenting, which reinforces problematic behavior, resulting in more reactive parenting, and so on (Koegh et al., 2000).

Cognitive-Developmental Perspective

Perspectives on learning which account for behavior and cognitions may be particularly applicable for parent-mediated interventions which aim to modify the complex motivations behind parent learning and behavior change processes. Bandura's (1997) social cognitive theory, for example, introduces the importance of parenting thoughts and feelings about their child and their role as parents (i.e., self-efficacy; Webster-Stratton, 2011). Other cognitive-developmental frameworks, such as Feuerstein's (1996) mediated learning experience (MLE), operationalize specific aspects of parenting which effectively mediate child learning (i.e., focusing attention; verbal expansion; mediating meaning; reinforcing positive behaviors and feelings of competence). MLE approaches to parent-mediated intervention have been shown to promote joint engagement and child social communication across culturally diverse families (Klein & Hundeide, 2013).

Summary of Parent-Child Interaction Theory

There are many theoretical perspectives which have shaped collective understanding of early social learning, acknowledging learner characteristics as well as the social, contextual, and dynamic nature of development and behavior. Understanding the relationships between parenting thoughts and feelings, behaviors, and environments, may illuminate the complex motivations of parents and relationship to their child with DD. Further, characterizing parenting feelings and attitudes (PFA) may be particularly important for informing supports for families with children with DD, as parents' coping, adaptation to, and acceptance of their child's disability can impact broader family functioning (Kandel & Merrick, 2007).

Parenting Behaviors

In early childhood, parenting can impact a child's acquisition of pivotal developmental skills. A large body of research has identified directive and responsive parenting as two key behavioral dimensions which influence child development (i.e., Baumrind, 1971, 1991; Rothbaum & Weisz, 1994). Responsive parenting is defined by Bornstein et al. (2008) as "prompt, contingent, and appropriate reactions parents display to their children in the context of everyday exchanges." In contrast, directive parenting includes increased demands and prompts for the purpose of stimulating child activity toward a parent-defined goal (Saint-Georges et al., 2011; Wan et al., 2013).

Responsive parenting has consistently been shown to positively relate to social-emotional and developmental outcomes for children with DD (i.e., Brady, 2007; Green & Baker, 2014). Evidence suggests that for parents of neurotypical children, increased directive or intrusive parenting is positively associated with behavioral and emotional difficulties (i.e., Barnett, 2019; Burt et al., 2013; Jiang et al., 2023; Mortensen & Poehlmann et al., 2014) for both mothers and fathers (2023). Less is known about the role of directive or intrusive parenting in children with

DD. Diemer et al. (2021) found the relation between intrusive parenting and child emotional-behavioral problems was moderated by development, suggesting children with DD showed a differential response to directive parenting in the study sample. In contrast, Chan and Neece (2018) found intrusive parenting mediated the relation between parenting stress and emotion dysregulation for children with DD.

Parenting Behaviors Cross-Culturally

Notably, dimensions of parenting and impact on child developmental outcomes vary cross-culturally. The child development literature has a long-standing history of over-representing research from Majority countries, also referred to as "WEIRD" (Western educated, industrialized, rich, and democratic; Draper et al., 2022), resulting in findings which may not generalize cross-culturally. This may be particularly evident for behaviors related to authoritative parenting, such as intrusion or directiveness, shown to differ across cultures. For example, Diemer (2021) found observed parent intrusion was associated with emotional-behavioral difficulties in White and Hispanic families; however, not in Black families. Some evidence suggests that intrusive or high-support parenting behaviors may impact child development differently based on concurrent parental warmth or sensitivity. For example, Caughy et al. (2017) examined parent-child interactions within African American and Mexican American families in a national early childhood sample and found intrusive-insensitive parenting was associated with poorer academic outcomes for African American and not Mexican American children.

Additionally, the types of child behaviors parents perceive as 'problematic' may also vary cross-culturally and impact parenting response. McGuire et al. (2021) conducted a qualitative study with caregivers who identified as Black, Korean American, Latina, and White with a young child with DD. In this sample, 'physical aggression' was identified as a concern

cross-culturally, however, Korean American and Mexican American caregivers additionally endorsed ‘verbal disruptions,’ ‘aggression,’ and ‘disrespect’ as of equal or greater priority. Regarding parenting response, Black caregivers used more planned consequence strategies (i.e., privilege loss) as compared to Korean American, Latina, and White caregivers who tended to respond to child behaviors in the moment (2021).

Summary of Parenting Behaviors

Parenting a child with DD can be complicated by the common cooccurrence of behavioral difficulties which may impact family functioning (Baker et al., 2003). Further, parenting behaviors have been shown to differ for children with DD compared to neurotypical children. In some studies, parents of children with DD showed comparatively more directive parenting (Beck et al., 2004; Marfo, 1990), and less responsive parenting (Hodapp, 2002; Niccols & Feldman, 2006). Importantly, some evidence suggests children with DD benefit more from responsive parenting than their neurotypical peers (Brady, 2007). The literature shows intrusive parenting and its effects on child social-emotional development may differ based on family culture, although with inconsistent findings (Caughy et al., 2017; Diemer et al., 2021). Given children with DD are more likely to experience delays in social-emotional development, it is imperative to explore the effects of parenting on adaptive social-developmental outcomes in the context of parent-mediated intervention for children with DD.

Parenting Feelings and Attitudes (PFA)

Prior research has established that parenting feelings and attitudes (PFA) drive parenting behavior to influence the parent-child relationship (i.e., Azar et al., 2005; Easterbrooks et al., 2012). PFA can be understood from a cognitive perspective as being based in schemas, which represent sets of beliefs applied to understand one’s experience (Azar et al., 2005). Parenting

schemas are rooted in sociocultural expectations and include perceptions of parenting functioning, knowledge of children broadly, and thoughts about their own child (2005). Schemas may negatively impact parent functioning if they are rigid and colored by overly negative views, whereas adaptive schemas are flexible, balanced, and realistic.

Parents of children with DD may adapt their parenting schema as they learn about their child's diagnosis, including areas of challenge and strength, and seek support. Further, their ability to identify benefits and positive contributions related to their child's unique neurodevelopment may support adaptation (Lim and Chong, 2017), and has been associated with positive PFA, coping, self-efficacy, and social support (Higgins et al., 2022). In a qualitative examination of parent adaptation to their child's intellectual disability, Beighton and Wills (2017) found the 'positive' contributions parents identified (i.e., sense of personal strength and confidence, greater appreciation of life, more meaningful relationships) consisted of meaning-focused coping. Further research is needed to examine whether identifying the benefits of parenting their child, specifically, may similarly support parenting adaptation.

An extensive literature has explored threats to well-being disproportionately experienced by parents of children to DD, such as higher rates or parenting stress and depression (i.e., Baker et al., 2002; Singer, 2006). Mental health conditions have been shown to alter schema development as they predispose attentional bias toward negative materials and beliefs (i.e., Beck & Haigh, 2014), which may generalize to their parenting role (PFA) and familial relationships (i.e., Lickenbrock et al., 2010). Approximately 25 to 35 percent of mothers experience depression, as compared to 12 percent of women (i.e., Seifert et al., 2000). Rates further increase for mothers from low-income or other marginalized backgrounds, and who have a child with DD (2000; 2006). Maternal depression has been shown to impair parent health and well-being,

parent-child relationship quality, and has been associated with emotional-behavioral difficulties and poorer school readiness for children with DD (Schultz et al., 2013).

Given the adverse outcomes associated with maternal depression, promoting maternal mental health is imperative for the health and well-being of mothers, children and families. The recent literature reflects a trend toward understanding the beneficial impacts of fostering internal resources for parents of children with DD as well as directly supporting parent mental health through targeted interventions (i.e., Mindfulness-Based Stress Reduction; Osborn et a., 2021). Practices such as mindfulness and self-compassion have been shown to foster resiliency (i.e., Nefff et al., 2007), including the prevention of depression as well as the cultivation of internal resources such as emotion regulation and coping (i.e., Diedrich et al., 2014). Through supporting parent well-being and mental health, such interventions may indirectly promote positive PFA, responsive parenting behaviors, as well as child social emotional development (i.e., Lewallen & Neece, 2015). While negative PFA has been shown to relate to parent depression and stress, findings are inconsistent as to whether positive PFA is associated with these factors (Lim & Chong, 2017; Meleady et al., 2020; Paynter et al., 2013).

Parenting Feelings and Attitudes and Parenting Behaviors

PFA and related constructs have also been shown to impact parenting behaviors. For parents of children with DD, cultivating acceptance of their child's strengths and challenges and a sense of parenting optimism can relate to increased engagement in interventions (Durand, 2001), further adding to the benefits of parent well-being on child development. PFA can promote adaptive responses to existing stressors related to their caregiving role (Pakenham et al., 2004). For example, parents with high levels of positive PFA may be more likely to attribute their child's behavioral difficulties to external factors which, in turn, allows for less critical and

more responsive parenting (i.e., regulating emotions in response to their child's distress; Psychogiou et al., 2016). Relatedly, parent insightfulness into their child facilitates sensitive, responsive parenting practices (Klein et al., 2013). Conversely, parenting stress has been shown to relate to parenting behaviors (intrusive parenting and reduced sensitivity to their child's needs), less effective for promoting their child's social-emotional development (i.e., Chan & Neece, 2018).

Parenting Feelings and Attitudes (PFA) and Child Behaviors

Some evidence has demonstrated the impact of PFA and related constructs on child outcomes. In the context of mindfulness-based intervention, Neece (2014) found parents of children with DD showed improvements in mental health and well-being (i.e., decreased stress; increased life satisfaction) which indirectly contributed to reductions in behavioral difficulties. Similarly, parental insightfulness has been shown to relate to parent-child synchrony (Hutman et al., 2009; Oppenheim et al., 2009), an important marker of dyadic engagement and social relationship more broadly. In the context of intervention, Oppenheim et al. (2004) found parental insightfulness related to greater reductions in child disruptive behavior, thus improved response to intervention. Parental insightfulness did not differ based on child diagnosis or cognitive ability, suggesting it may function independently from clinical symptoms or behavioral challenges. Taken together, positive PFA and related parenting behaviors may be a malleable mechanism of change in the context of intervention for promoting children's social-emotional developmental outcomes.

Summary of Parenting Feelings and Attitudes (PFA)

PFA has been shown to relate to parent mental health and well-being, parenting behavior and children's social and behavioral outcomes (i.e., Lickenbrock et al., 2010; Neece, 2014;

Oppenheim et al., 2004). Given the reciprocal relationship between family functioning and child development, promoting positive PFA may enhance long-term outcomes of parent-mediated early intervention (EI). Parenting schemas such as PFA may be particularly adaptable during periods of change, such as early childhood and transition to school-age, and responsive to strength-based intervention. As PFA contributes to improved adaptation to stressors and engagement in EI (Durand, 2001), positive PFA may be particularly important to understand in the context of parent-mediated intervention for children with DD.

Child Social and Behavioral Outcomes

A primary target for parent-mediated EI is emotional-behavioral symptoms which interfere with everyday routines and family functioning. Behavioral difficulties across childhood have been shown to negatively predict interpersonal relationship skills, behavioral and emotional development for children with emotional-behavioral conditions (i.e., Moffitt 2003; Hinshaw & Lee, 2003). Similarly, for children with DD, behavioral difficulties in childhood negatively predict later social skills and friendships (Blacher et al., 2014; Estes et al., 2010) and student-teacher relationship (2014), critical facilitators for learning.

Student-Teacher Relationship

As children enter school-age, their relationships in the school environment with their teacher and peers become highly influential in shaping their social development and learning. The existing literature agrees that emotional-behavioral difficulties interfere with the development of supportive relationships in the school setting for students with DD (i.e., Eisenhower et al., 2007, 2015; Garbacz et al., 2014), which can contribute to a negative coercive cycle similar to that observed in family contexts (i.e., Patterson, 1982). Students with DD may be at particularly high risk for poorer student-teacher relationships due to delays in social and

communication development and commonly co-occurring emotional-behavioral difficulties. Educational environment and teacher behavior are critical to fostering classroom relationships and climate conducive to learning and inclusive of students with DD. In a school-based intervention study, teachers' non-intrusion during one-on-one special playtime with students with DD predicted positive academic and behavioral outcomes (Dolev et a., 2023).

There is some evidence that parenting behaviors in early childhood may impact student-teacher relationship for children with DD. Responsive and intrusive parenting, in particular, may impact a child's development of self-regulation core to educational functioning. Losh et al. (2019) examined parent-child interactions during a joint literacy activity with children with DD and found parental intrusiveness mediated the impact of child language development on student-teacher relationship. Given the limited existing literature, additional research is needed to examine the role of parenting behaviors on student-teacher relationship in children with DD.

Parent-Mediated Intervention

Preventative, family-centered early intervention (EI) is considered best practice for children with DD, as mandated by the Individuals with Disabilities Education Act (IDEA, 2004). Evidence-based EI for children with DD includes family collaboration and is aligned with a family's sociocultural context (Estes et al., 2019; Luckasson & Schalock, 2013). Parent-mediated interventions, in particular, promote child development by supporting the parent-child relationship and teaching parents strategies aligned with their child's unique learning style (i.e., Koegel et al., 2014).

Parent-mediated EI for children with DD utilize a family-centered framework by building a parent's capacity for promoting their child's development and achieving family goals. Parent-mediated interventions are feasible and cost-effective alternatives to clinician-delivered

approaches, as low-intensity programs have demonstrated effectiveness. There are some conflicting findings for whether parent-mediated interventions yield equivalent gains over clinician-implemented approaches, with some studies indicating greater gains with clinician delivery (Stahmer & Pellecchia, 2015). Nevertheless, parent-mediated approaches which address barriers to positive parent-child interactions demonstrate promising results, including gains in social-communication (i.e., 2015; Wetherby et al., 2014) and behavior (i.e., Webster-Stratton & Reid, 2010). Parent-mediated interventions for child behavioral difficulties have been utilized with families from a range of socio-economic, cultural and linguistic backgrounds and many show promising feasibility, acceptability and effectiveness (i.e., Safer-Lichtenstein et al., 2023; Webster-Stratton, 2019). Parent-mediated interventions are aligned with early intervention policy aims and are widely implemented and accepted in community contexts.

For children with DD, parent-mediated interventions have consistently demonstrated reductions in child behavioral difficulties (i.e., McIntyre & Kunze, 2021). Less is known about effects on adaptive social-developmental outcomes. Additional research is needed to characterize the mechanism of change, be it through increases in responsive parenting, decreases in directive parenting, child development, or other aspects of parenting adaptation. Given the potential for early parenting to support the social-emotional development of their child with DD, further investigation is needed.

Parent-Mediated Intervention and Parenting Feelings and Attitudes

Parent-mediated interventions show promising effects on supporting parents' adaptation to their complex parenting role. For example, many studies demonstrate improvements on a variety of measures of parent mental health, parenting feelings and well-being (i.e., parenting self-efficacy, parenting stress, and depression; McInnis et al., 2020). Some show that adaptive

parenting perspectives (i.e., maternal insightfulness; maternal sense of competence) moderate the effectiveness of parent-mediated intervention on parenting behavior (i.e., increased responsive; decreased negative parenting; Dekovic et al., 2010; Siller et al., 2013). For interventions which directly address parent functioning (i.e., Mindfulness-Based Stress Reduction), outcomes such as mental health, well-being and other aspects of adaptive family functioning may be monitored. For parent-mediated interventions focused on child behavior (i.e., the Incredible Years Parent Training; Webster-Stratton, 2005), parenting stress is more commonly assessed (Shalev et al., 2020). Group based parenting interventions may yield psychosocial benefits secondary to improvements in child behavior, such as social support from caregivers with similar experiences. However, less is known about potential secondary effects of parent-mediated intervention on adaptive aspects of family functioning, such as positive PFA (Wainer et al., 2017).

Parent-Mediated Intervention and Parenting Behavior

Parent-child interactions provide a meaningful context for assessing intervention progress and outcomes, particularly given the intervention is delivered indirectly through a parent's generalization and use of strategies. Direct observation is a valuable tool in parent-mediated interventions as it allows for measurable goal setting, objective progress monitoring, and observation of a parent's use of skills in a naturalistic context. Observations of parent-child interactions have long been used in clinical settings to inform intervention targets and assess response to parenting intervention (i.e., Barnett et al., 2014). Play interactions in the home environment provide a window into the parent-child relationship and a child's learning environment.

Summary of Observational Measures of Parenting Behavior in Intervention Trials

While direct observations are core to single case research, large-scale trials favor less resource-intensive parent and teacher report measures of parenting behavior (i.e., Sandbank et al., 2020). Table 1 highlights findings from several group design studies utilizing direct observational measures to assess parent-mediated intervention outcomes for young children with DD. In summary, prior studies consistently demonstrate significant effects of parent-mediated intervention on direct observation of parents' use of intervention strategies (i.e., Charman et al., 2021; Green et al., 2017; Handen et al., 2013; Shire et al., 2015; Swiezy et al., 2021; Vibert et al., 2020). Regarding parenting skills, studies primarily show increased responsive parenting (Charman et al., 2021; Green et al., 2017; Shire et al., 2015). It is inconclusive whether parent-mediated intervention impacts directive parenting, with some studies indicating no change (Gengoux et al., 2019; Green et al., 2017). This may be due to the framing of behavioral targets as their pro-social opposites (i.e., measuring 'child led' rather than 'parent led' play), consistent with the framing of intervention goals.

Findings are inconsistent with regard to the long-term maintenance of parents' use of intervention strategies. Results from post-intervention follow-up after 5-years (Pickles et al., 2016), and 2-years (Green et al., 2017), show diminished parent-mediated intervention effect on parent synchrony behavior over time. However, studies demonstrate sustained effects on child outcome at follow-up as related to child dyadic interaction behaviors (Green et al., 2017) and developmental gains in social communication (Pickles et al., 2016). Further research is needed to characterize long-term social development outcomes of preventative parent-mediated interventions with children with DD.

Table 1

Studies with Direct Observational Measures of Parenting in the Context of Parent-Mediated Intervention

Article	*n*	Age (years)/ DD	Type	Intervention	Time weeks	Observation Measure	Variable(s)	Result	Quality
Aldred et al., 2012	28	2-5/ Autism, SPCD	RCT	-Comm. PT +TAU -TAU only	24 int. 24 maint.	Parent-Child Interaction (10min) clinic	Frequency of: -synchronous verbal non-directives -asynchronous verbal directive	Effect: -Improved parent-child synchrony(.81) -Synchrony mediated int. effect on decreased autism symptoms	Blind, Rel
Carruthers et al., 2021	152	2-5/ Autism	RCT	-Preschool Autism Comm. Trial (PACT)/PT - TAU	24 int. 24 maint.	Brief Observation of Social Comm. Change (BOSCC): 12min. child-clinician	Ratings for social comm. (9 items), RRBs (4), autism symptoms total	No effect: minimal change	Blind, Rel.
Charman et al., 2021	62	4-8/ Autism	RCT	-Predictive Parenting/PT -7 C's ASD/ PDD (control)	12	Observation Schedule for Children with Autism- Anxiety, Behavior and Parenting (OSCA-ABP):18-22min -parent/ clinician-led tasks	Rates of: -child challenging behavior and compliance -parent facilitative and non-facilitative behavior	Effect: -Increased child compliance and facilitative parenting No effect: -Child challenging behavior	Blind, Rel, Fid
DeKorte et al., 2020	50	3-8/Autism	RCT	-Pivotal Response Training (PRT)	20	Parent-child intervention interaction	Frequency of functional or social child initiations	Effect: Increased functional and social initiations	Rel, Fid, Blind

				PT and PEd					
Edwards et al., 2019	11	2-7/Autism with elevated behavior problems	SS-treat	-RUBI PT	15	-Parent Instruction-Giving Game for Youngsters (PIGGY)	Frequency -parent commands, follow through, praise -child compliance	Descriptive effect of increased child compliance for 73% participants	Rel, Fid, Blind
Frost et al., 2020	52	<7/Autism	RCT	-Naturalistic Developmental Behavioral Interventions (NDBI) -TAU control	n/a	-NDBI Fidelity ratings of parent-child play interactions	-Frequency and quality of teaching episodes -Face-to-face -Following child's lead -Positive affect -Responsive to child -Using communicative temptations	-Good internal consistency (*a*=.8) -Varied reliability by item -Large effect by intervention group (*d*=1)	Rel, Fid, Blind
Gengoux et al., 2019	126	3-7/ Autism, PDD, and disruptive behavior		-PT -PEd control	24	Standardized Observation Analogue Procedure (SOAP): 16min parent-child interaction (free play, parent-led, parent demand, clean-up); clinic	Rate of: -child behaviors: inappropriate, compliance -parent behaviors: reinforcement, commands	No effect on child inappropriate behavior and compliance despite descriptive improvements	Blind
Green et al., 2017	54	9-14 months/ increased familial	RCT	- iBASIS Video Interaction for Promoting	20 int, 27 & 39 FU	Home-based -Manchester Assessment of Caregiver Child	-Caregiver non-directiveness -Child attentiveness -Parental synchrony	Effect: Increased parent non-directiveness, child attentiveness, initiation	Rel, Fid, Blind

		likelihood of autism		Positive Parenting/PT -TAU waitlist control		Interaction -Dyadic Comm. Measure for Autism	-Child initiations		
Grzadzinski et al., 2021	83	9-14 months/ elevated autism screen	RCT	- Adaptive Responsive Teaching/PT -Referral to EI and Monitoring control	n/a	-Parent responsiveness coding system	Rate of: -child-lead -parent verbal response	-Parent responsiveness mediated effect of sensory on language	Rel, Fid, Blind
Hardan et al., 2015	53	2-6/ Autism and language delay	RCT	-PRT -PEd	12	Structured clinic observation: 10min parent-child interaction	-Frequency of child speech -Parent intervention strategies	-Effect: time on increased child speech across groups -Greater effect: intervention on child speech	Rel, Fid, Blind
Pickles et al., 2015 & 2016	152, 126 FU	2-4 Autism	RCT	-PACT & TAU -TAU only	24 int, 24 maint	Dyadic Communication Measure for Autism 8 min parent-child free play coded live	-Parental synchronous acts -Child initiations	-Effect: 60% intervention effect on autism symptoms mediated by parent synchrony (2015) -No effect: intervention on parent synchrony at follow up	Rel, Fid, Blind
Schertz et al., 2013	23	4-12 months/ increased likelihood autism	RCT	-Joint Attention Mediated Learning/PT -Control	n/a	Precursors of Joint Attention Measure 10 min home parent-child free play	-Focusing Faces -Turn Taking -Joint Attention	-Effect: increased social attention and response to joint attention -No effect: turn-taking, initiating joint attention	Rel, Fid, Blind

Shire et al., 2015	61	1-8/ Autism and minimally verbal	RCT	-Joint Attention, Symbolic Play, Engagement, Regulation and Enhanced Millieu Teaching -JASPER/EMT and speech generator (SGD)	24	-Caregiver child interaction 10 min	-Child engagement: joint engagement states	Effect: -Increase in parent strategy use across groups -Increase in time in joint engagement -Decrease in time unengaged or object focused No effect: -Fidelity on child responder status	Rel, Fid, Blind
Siller et al., 2014	70	2-6/ Autism and minimally verbal	RCT	-Focused Playtime Intervention (FPI) -Parenting Advocacy Coaching	12	Separation-reunion with parent in clinic-based free play	-Proximity and Contact Seeking Behaviors (PCSB): attempt to regain parent -Avoidant Behaviors (AB):child's avoidance of parent	-Effect: decreased AB driven by worsening AB in control group -No effect: PCSB	Rel, Fid, Blind
Sweizy et al., 2021	126	3-7/ Autism and disruptive behavior	RCT	-RUBI PT -PEd control	13	SOAP clinic	Rate of: -child behaviors: inappropriate, compliance -parent behaviors: reinforcement, commands	No effect: -Child behavior Effect: - Increased parent effective commands and reinforcement -No correlation with parent ratings	Rel, Fid, Blind
Tellegan & Sanders, 2014	64	2-9/ Autism	RCT	-Primary Care Stepping Stones Triple P -TAU	8,24 FU	Family Observation Schedule, 30min, home	-Disruptive child -Aversive parent	No effect	Rel

Vibert et al., 2020	43	1-5/ Autism	RCT	-various NDBI/PT -TAU	12-32	NDBI Strategy Implementation – Caregiver Change (MONSI-CC) 10 min free play, clinic	5-pt Likert: language, play, dyadic engagement, child-led, responsive, environment, reinforcement	Effect: - Increased caregiver use of strategies	Blind, Rel

Note. Treat. Treatment-only; RCT: Randomized-Controlled Trial; PT: Parent training; PEd: Psychoeducation; Fid: Intervention fidelity; Blind: blinded observers; TAU: Treatment as usual; maint.: maintenance; FU: follow-up; SCPD: Social Pragmatic Communication Disorder

Summary of Parent-Mediated Intervention and Parenting Behavior

Research is needed to examine mechanisms of change in parenting behavior and parent-child interactions as it relates to meaningful child outcomes. It may be important to understand the role of directiveness for children with DD. The literature consistently shows directive and intrusive parenting behavior contribute to poorer social-emotional and behavioral outcomes for neurotypical children. Fewer studies examine the impact of these parenting behaviors on child developmental outcomes for children with DD and further research is needed to inform impactful intervention delivery.

Current Study Aims

The present study aims to address the following research questions:

Research Aim 1

Examine trajectories of positive parenting feelings and attitudes (PFA) and parenting behaviors during play across early childhood for parents of children with DD enrolled in a parent-mediated intervention RCT, including salient predictors and intervention effects on growth. Parent depressive symptoms are expected to significantly inversely predict positive PFA. It is hypothesized parent-led play (i.e., intrusive and directive) will decline contributing to an increase in child-led play. Randomization to the parent-mediated intervention is expected to have direct effects on trajectories of parenting play behaviors and positive PFA.

Research Aim 2

Examine the degree to which positive PFA and parenting play behavior trajectories relate across early childhood. It is hypothesized positive PFA, and parenting play behavior will significantly relate, representing complementary constructs which have reciprocal effects. For example, increases in positive PFA are expected to relate to reductions in parent-directed play.

Research Aim 3

Examine the degree to which positive PFA and parenting play behavior trajectories, as well as relevant predictors, contribute to school-age social development (student-teacher relationship and teacher-rated social skills) for children with DD. It is hypothesized positive PFA trajectory will show direct effects on social-developmental outcomes. It is hypothesized trajectory for directive parenting will inversely predict social-developmental outcomes, particularly for children enrolled in parent-mediated intervention in early childhood.

CHAPTER 2

METHOD

The proposed study is a secondary analysis of a completed study initially approved by the University of Oregon's Institutional Review Board (R01 HD059838; PI, L. L. McIntyre; Funded 6/1/11–2/28/17). The primary study was a 5-year RCT which examined the effects of group-delivered parent-mediated EI on school-age outcomes and aspects of family functioning for children with DD.

Participants

The study consisted of 180 caregivers of preschoolers receiving community-based Early Intervention/Early Childhood Special Education (EI/ECSC), who lived in the Northwestern United States. Eligibility required parents (a) to be the primary caregiver for their approximately 36-month-old child with DD, (b) live in the Northwestern United States, (c) consent to participate in study procedures, and (d) be fluent in English. They were enrolled in a longitudinal, caregiver-directed intervention randomized-controlled trial and participated in study visits every 6 months (5 timepoints) until approximately age five (*M*=59, *SD*=4.57; R01 HD059838; PI, L. L. McIntyre).

Caregiver Demographics

Caregiver demographics are detailed in Table 2. The sample consisted of 180 primary caregivers of young children receiving early intervention for an identified developmental delay or disability, in the Northwestern United States. The majority of caregivers were female, 91.2%, and 7.7% were male. Regarding race and ethnicity, most participants endorsed being White (87.4%), followed by Hispanic ethnicity (11.5%), Native (7.1%), Black (3.8%), Asian or Pacific Islander (1.6%), or other unspecified race or ethnicity (2.2%). Parents showed a range of

educational attainment and socioeconomic status, with regard to household income and receipt of social and financial services and supports.

Table 2.

Caregiver Demographics

	N	Percent	Mean	SD	Min	Max
Primary Caregivers	180					
Age	173		32.22	7.27	19	60
Gender						
Female	166	91.2%				
Male	14	7.7%				
Non-binary or other	0	0%				
Ethnicity Hispanic	21	11.5%				
Race (all endorsed)						
White	159	87.4%				
Native American	13	7.1%				
Black	7	3.8%				
Asian and Pacific Islander	3	1.6%				
Other	4	2.2%				
7th grade or less	2	1.1%				
Partial high school	10	5.5%				
High school	33	18.1%				
Partial college	55	30.2%				
Specialized training	17	9.3%				
Junior college	20	11%				
University	23	12.6%				
Advanced training or degree	20	11%				
High School or Higher	133	73.9%				
Income			$41,802	$36,803	$5,000	$250,000
Employment						
Full-time	34	18.7%				
Part-time	36	19.8%				
Full-time parent	68	37.4%				
Unemployed (seeking work)	16	8.8%				
Disabled	8	4.4%				
Self-employed	9	4.9%				
Student	8	4.4%				
Seasonal	1	0.5%				
Relationship Status						
Married	95	52.2%				
Living together	20	11%				

	N	Percent	Mean	SD	Min	Max
Separated	5	2.7%				
Single	17	9.3%				
Divorced	10	5.5%				
Widowed	1	0.5%				
Relationship to Child						
Biological Mother	144	79.1%				
Biological Father	18	9.9%				
Adoptive Mother	3	1.6%				
Foster Mother	10	5.5%				
Grandparent	4	2.2%				
Aunt	1	0.5%				
Number of Child's Siblings						
None	46	25.3%				
1	67	36.8%				
2	34	18.7%				
3	10	5.5%				
4 or more	8	6.1%				
Social and Financial Aid/Services						
Oregon Health Plan Insurance	111	61%				
Women Infants Children	97	53.3%				
Utilities Assistance	97	53.3%				
Medicaid	32	17.6%				
Temporary Assistance (TANF)	28	15.4%				
Child Support	26	14.3%				
Food for Lane County	23	12.6%				
Social Security	18	9.9%				
Food Stamps	16	8.8%				
Developmental Disabilities	15	8.2%				
Tribal Insurance	11	6%				
Unemployment	9	4.9%				

Child Demographics

Child demographics are presented in Table 3. Participants were 180 preschool-aged kids with a mean age of 36.97 months (*SD*=4.65) at Time 1 and 58.7 months (*SD*=4.556) at Time 5. and years. The majority of children were male, 73.6%, and 25.3% were female. Regarding race and ethnicity, most children were White (90.7%), followed by Hispanic ethnicity (14.8%), Native (11%), Black (6.6%), Asian or Pacific Islander (3.8%), or other unspecified race or

ethnicity (1.6%). Most children were classified as having a speech or language delay (53%), or other developmental delays or disabilities (34%), followed by autism spectrum (13%).

Table 3.

Child Demographics

	N	Percent	Mean	SD
Child Age (months)				
Time 1	180	100%	36.97	4.650
Time 2	171	95%	40.27	4.623
Time 3	167	92.8%	47.25	11.988
Time 4	156	86.67%	52.40	4.601
Time 5	149	82.78%	58.79	4.556
Gender				
Female	25.3	25.3%		
Male	134	73.6%		
Non-binary or other	0	0%		
Ethnicity and Race				
Hispanic	27	14.8%		
White	165	90.7%		
Native American	20	11%		
Black	12	6.6%		
Asian and Pacific Islander	7	3.8%		
Other	3	1.6%		
Developmental Delay or Disability				
Speech-language delay	95	53%		
Autism spectrum	24	13%		
Other DD	61	34%		

Procedure

Families were recruited from community early intervention agencies. Eligible families were mailed an informed consent form and packet of questionnaires to be completed prior to or during their home visit, and at subsequent timepoints. Families completed a home visit at five time points at six-month intervals beginning at 3-years old, including 180 families at baseline or Time 1, ("T1"; *M*=36.97 months, *SD*=4.65), 171 at Time 2 ("T2"; *M*=40.27 months, *SD*=4.623), 167 at Time 3 ("T3"; *M*=47.25, *SD*=11.99), 156 at Time 4 ("T4"; *M*=52.40, *SD*=4.60), and 149

at Time 5 ("T5"; *M*=58.79, *SD*=4.57). Home visits included a videotaped 15-min parent–child play interaction and parent questionnaires. Families were randomized to an intervention group (Incredible Years Parent Training) or control group (treatment as usual). At a sixth follow-up time point, parents and teachers completed behavior ratings.

Conditions

Intervention. Ninety parents (49.5%) were enrolled in the intervention group. The intervention group received the Incredible Years Parent Training developed by Webster-Stratton (2001) and adapted for parents of children with DD by McIntyre (2008; IYPT-DD). IYPT-DD is a 12–18-week group-delivered parent-mediated intervention found to be effective for prevention and treatment of challenging behaviors in young children with and without DD. Intervention content covers evidence-based parenting strategies which include encouraging child-led play, appropriate praise, contingent rewards, clear expectations, and non-harsh limit setting. Adaptations for parents of children with DD include discussion of the blessings and challenges of raising a child with DD, identifying goals, excluding the content on time out, understanding patterns of problem behavior (i.e., triggers), and providing psychoeducation and information on community supports for DD. Please refer to McIntyre (2008) for further details and description of adaptations. Although attrition is common in preventative early childhood intervention studies, some prior research has shown intervention response for families who attended less than four sessions of an evidence-based parenting program (Family Check-Up; Shaw et al., 2009).

Control. Ninety parents (49.5%) were enrolled in the control group. Families randomized to the control condition received treatment as usual. As families were recruited from community-based early intervention agencies, this included services specified on their Individualized Family Service Plan as well as any additional therapies through insurance and/or private pay.

Measures

Observational parent-child interaction assessments and parent rating measures were conducted at each of the five timepoints. Teacher-rated outcome measures were conducted at kindergarten follow-up timepoint.

Primary Study Measures and Outcomes

Parenting Play Behavior Direct Observation. The *Parent-Child Behavior Observation System* (*PC-BOS*; Phaneuf & McIntyre, 2007) is a direct observational coding system for parent-child play interactions which has been effectively utilized for assessing parenting and child behaviors in samples of children with DD (McIntyre, 2008). Measure development was informed by the Incredible Years Parent Training intervention targets for use as a proximal, objective measurement of response to intervention. Videotaped parent-child interactions occurred in the family's home repeated across four timepoints. Interactions involved a standardized set of developmentally appropriate toys and play materials across all participants and timepoints. The observation included a 10-minute free play task, utilized for the present study.

Thirty-second partial-interval coding evaluates seven parent and child behaviors. Parent behavior categories include *Directiveness* (i.e., parent selects what to play or shows related verbal directiveness), *Intrusion* on child's independence (i.e., parent instructs how to play; provides excessive physical support), *Ineffective Commands* (i.e., no clear expectation stated, repeated without child opportunity to follow directions), *Inconsistent Consequences* (i.e., fails to follow through after a command), *Praise*, and *Descriptive Commenting*. All variables were coded as a ratio of the percent of 30-second intervals the behavior was present (observed one or more times). Assessors were graduate students who received training in the manualized protocol and achieved and maintained greater than or equal to 80 percent reliability. Following initial

reliability, 24 percent of the videos were double coded to ensure inter-rater reliability above threshold.

Positive Parenting Feelings and Attitudes (PFA) Parent Ratings. The *Family Impact Questionnaire* (FIQ; Donenberg & Baker 1993) is a parent rating scale which assesses parent perceptions of their child's impact on aspects of family life. It is composed of five scales which measure (1) positive impact on parenting feelings and attitudes (seven items) and negative impact on (2) parenting feelings and attitudes (nine items), (3) social relationships (11 items), (4) finances (seven items), (5) siblings (nine items) and (6) marriage (seven items). Parents rate each statement on a 4-point Likert scale as "Not at All," "Somewhat," "Much," or "Very Much" true. For the present study, the Positive scale was examined which has been validated for use with parents of young children with neurotypical development and DD (i.e., Baker et al. 2003; Blacher & McIntyre 2006; McIntyre, 2008). Parents are instructed to rate the impact their child has had on their family as compared to children and parents of children the same age as their child. The FIQ Positive is a sum scale of items rated on a Likert from zero (not at all) to three (very much) presented in Table 3 .

Table 3.

FIQ Positive Scale Items

I enjoy the time I spend with my child more

My child brings out feelings of happiness and pride more.

It is easier for me to play and have fun with my child.

My child makes me feel more loved.

My child makes me feel more energetic.

My child makes me feel more confident as a parent.

My child does what I tell him/her to do most of the time.

Social Skills Teacher Ratings. The Social Skills Improvement System (SSIS; Gresham & Elliot, 2008) is a parent and teacher rating scale for children ages 3-18 years which assesses social, interpersonal and behavioral strengths and difficulties, and identifies risk for poor academic performance. There are 140 items rated on a 4-point scale indicating frequency of behaviors. Three domains measure (1) Social Skills (Communication 7 items; Cooperation 6 items; Assertion 7 items; Empathy 6 items; Engagement 7 items; Self-Control 7 items), (2) Competing Problem Behaviors (Externalizing 12 items; Bullying 5 items; Hyperactivity/Inattention 7 items; Internalizing 7 items; Autism Spectrum 7 items), and (3) Academic Competence (reading, math, motivation, parental support, and general cognitive functioning). This study utilized the Social Skills composite to capture multiple dimensions of social-emotional development which contribute to social engagement and learning.

Student-Teacher Relationship Scale (STRS; Pianta, 2001). The STRS is a teacher rating scale for children ages 3-12 years old which includes a composite measuring overall quality of the student-teacher relationship as well as factor-based subscales assessing Conflict, Closeness, and Dependency. Initial validation study demonstrated adequate internal consistency ranging from .86-.89 and found the STRS predictive of children's classroom behavior, grade retention as well as academic outcomes. (i.e., Hamre & Pianta, 2001; Pianta et al., 1995). Teachers rate 28 items on a Likert scale from 1 (definitely does not apply) to 5 (definitely applies). For example, an item example on the closeness scale is "If upset, this child will seek comfort from me." Select items are reverse scored. This study used the overall composite measure of student-teacher relationship.

Secondary Study Measures

Covariates indicated in the literature were gathered from a demographics questionnaire at baseline. This included family income and identifying as a marginalized ethnicity or race. Adaptive social functioning at baseline, as measured by the Vineland Adaptive Behavior Scales, Second Edition (VABS-II; Sparrow et al., 2005) parent interview Social composite, was included in models with social outcomes to control for initial status. The *VABS-II* is a semi-structured parent interview for children ages 0-5 years to assesses adaptive functioning overall and across domains for Practical, Social, and Practical skills.

Additionally, predictors were selected a priori based on the literature and included baseline parent ratings of overall child emotional-behavioral functioning and parent self-report of depressive symptoms at baseline. The ASEBA Child Behavior Checklist 1.5 – 5 years (CBCL; Achenbach, 2000) is a parent and teacher rating form which assesses emotional-behavioral difficulties overall and across domains for Externalizing and Internalizing symptoms. Completion of the CBCL involves rating 99 items with statements about their child's behavior within the past two months on a Likert scale of 0 (not true) to 2 (very true or often true). Parent depressive symptoms were assessed using the Center for Epidemiological Studies of Depression (CES-D; Radloff, 1977), a widely used depression screener in public health (i.e., primary care). The CES-D involves completing self-ratings of 20 items on a Likert scale from 0 (rarely or none of the time) to 3 (most or almost all of the time). Higher scores are indicative of more depressive symptoms and a cut-off score of 16 or higher is provided to aid in the identification of clinical depression (Lewinsohn et al., 1997).

Data Analyses

This study used structural equation modeling (SEM), specifically latent growth curve modeling (LGCM), to examine parenting behavior and positive PFA as dynamic process which

contribute to parent-child relationship overall social developmental. LGCM was selected as it models both inter- and intra-individual change over time (i.e., Bollen & Curran, 2006; Curran et al., 2010; Singer & Willet, 2003). This approach allows for the characterization of heterogeneity in DD and differential response to intervention by incorporating both group-level trends and individual differences. LGCM within a SEM framework flexibly allows for the modeling of latent variables and interactions between variables, repeatedly measured across study timepoints. In the context of this primary prevention RCT, characterizing interactions between variables and their influence on developmental trajectory may elucidate mechanisms for change.

Statistical Power

The effect of randomization to intervention or control condition was modeled using a 'group code' approach, which uses a common measurement model with added paths from a dummy coded group variable to each construct of interest (Aiken et al., 1994). This allows for the estimation of fewer parameters than separate group models, provided there is measurement model equivalence across groups. A group code approach has previously been applied in similar studies; for example, evaluating prevention-focused interventions (i.e., Spoth et al., 1998) and utilizing latent variables in second-order LGCM (i.e., Hancock et al., 2001). Analyses were conducted in R version 2024.04.1+748 (R R Core Team, 2022), including with packages for *lavaan* (Rosseel et al., 2021) as well as semPlot (Epskamp, 2015) and corrplot (Wei, 2021) for data visualization.

Regarding power, generally sample sizes with 100 or more individuals and three or more repeated measures are sufficient for SEM analyses, dependent on nuanced study specifics such as complexity of analyses, variables, and missingness (Beraldi & Enders, 2010). LGCM, specifically, is often used in smaller samples given the attrition common in data sets of

longitudinal studies with human subjects. More recent evidence suggests the primary barrier to LGCM in smaller samples is error in likelihood measurement rather than direct likelihood (McNeish, 2018). As a result, in smaller sample studies may be more vulnerable to misrepresentations of fit from chi-square and related indices (RMSEA, CFI, TLI) tend to over-reject well-fitting models (i.e., Hu & Bentler & 2009; Kenny & McCoach, 2003; McNeish, 2018). The present analyses used robust maximum likelihood (MLR) estimates and Full Information Maximum Likelihood (FIML; Beraldi & Enders, 2010) for missingness, which have been shown to address the challenges described (i.e., 2018; Shi et al., 2021).

Interpretation of Model Fit Indices

Across analyses, model fit indices were evaluated in the context of theory to inform data analyses and interpretation. Guidelines utilized for indices of absolute fit (SRMR), comparative fit (CFI and TLI), and parsimony-adjusted fit (RMSEA) are presented in Table 4. In regard to the latent variables in confirmatory factor analyses (CFA), standardized factor loadings (λ) for observed variables were evaluated based on recommended cut-off for samples of 150 to 200 of .45 and above, or .50 and above for samples of 120 to 150 (Hair et al., 1998). Given the specific limitations of many individual fit measures (i.e., Chen et al., 2008; Cheung & Rensvold, 2002), cut-off values were applied as guidelines to aid interpretation and multiple measures considered. For example, chi square (X^2) and RMSEA are sensitive to sample size and degrees of freedom; thus, may reject well-fitting models in samples under 200 or simpler models (i.e., CFA). For model comparison, difference was informed by guideline of -.01 change in CFI paired with changes in RMSEA of .015 and SRMR of .030 or .015 for metric and scalar invariance, respectively (Chen, 2007; Cheung & Rensvold, 2002). Such alternative fit indices are commonly utilized in studies with smaller sample sizes which yield less reliable chi square estimates.

Additionally, in parallel process LGCM baseline models are uninterpretable. Model comparison was aided by evaluation of AIC and BIC values with lower values indicating better fit.

Table 4.

Guidelines for Measures of Fit

	Fit Criteria
Absolute Fit Index	
Standardized Root Mean Square Residual	< SRMR .08 (Hu & Bentler, 1999, 2009; MacCullum et al., 1996)
Comparative Fit Indices	
Bentler Comparative Fit Index (CFI) & Tucker-Lewis Index (TLI)	>/= .90 or >/= .95 (Bentler, 1990; Hu & Bentler, 2009)
Parsimony-Adjusted Fit Index	
Root Mean Square of Approximation (RMSEA)	</= .06 (Hu & Bentler, 1999, 2009) .06-1 reasonable error (MacCallum et al., 1996)

Data Preparation and Descriptives

Data preparation and preliminary analyses assessed possible threats to internal validity. Data missingness, as a result of longitudinal attrition, was examined across groups. Data distribution and normality were visually examined using Box Plots, QQ Plots, and histograms. Non-normality shows minimal effect on parameter estimates in SEM, however, biases standard errors of estimates, chi-squared, and related fit indices (Finney & DiStefano, 2013). Maximim likelihood (ML) estimates were used to correct for subtle non-normality. ML estimates include a variety of robust corrections which better accommodate some data non-normality (i.e., Satorra and Bentler, 1994; Shi et al., 2021). Descriptive statistics assessed mean, standard deviation, range, skew and kurtosis for study measures. For skew and kurtosis statistics the acceptable range was +/- 2 and +/- 7 respectively (Byrne, 2010). Independent samples t-tests evaluated whether there were differences in baseline characteristics and study variables across randomized intervention and control groups.

Analyses for Research Aim 1

Positive Parenting Feelings and Attitudes LGCM

An LGCM was fit to determine the degree to which Positive Parenting Feelings and Attitudes (PFA; T1-T5 FIQ) demonstrated a pattern of no growth or linear growth across study timepoints. First, a latent growth model indicating no growth was run to test the null hypothesis that there was no change in PFA over time. This model included one latent variable for the intercept (baseline level) which is predicted to remain the same across timepoints, indicated by loadings at each timepoint fixed to 1. Next, a latent growth model predicting linear change was run to test the hypothesis that there is intra-individual constant change in PFA across timepoints, allowing for inter-individual differences. The model was fit as a 'multiple-indicator multiple-cause' model (i.e., McArdle & Epstein, 1987), which involves generating latent factors to represent an intercept and slope (change over time). Within the model, the intercept is indicated by fixed loadings of 1 and linear slope fitted with fixed loadings of 0 to 4 for T1 to T5 observed variables, respectively.

Fit statistics were compared to confirm selection of hypothesized linear growth model. Predictor variables specified a priori were added to assess effects on latent variables (intercept, slope) and contributions to model fit. Time-invariant covariates selected a priori were added as intercept predictors including parent-ratings of child emotional-behavioral symptoms (T1 CBCL), self-report depressive symptoms (T1 CESD), and household income. Main effects of condition on slope were added to estimate the degree to which randomization to intervention or control condition contributed to change in PFA.

Parenting Play Behavior. A two-factor model of parenting play behavior was selected a priori with correlated factors for 'Parent-Led Play' (PLP; PC-BOS Intrusion, Ineffective Commands, Directiveness, and Inconsistent Consequences) and 'Child-Led Play' (CLP; PC-

BOS Praise and Descriptive Commenting). This was informed by a body of literature supporting directiveness and responsiveness as core dimensions of parenting which may influence child outcomes (i.e., Baumrind, 1971, 1991; Maccoby & Martin, 1983; Rothbaum & Weisz, 1994). Prior to investigating trajectory via latent growth curve modeling (LGM), Confirmatory Factor Analyses (CFA) established a latent factor measurement model and assessed factor structure stability across conditions (intervention and control) and timepoints.

CFA Model Identification. CFA was used to test latent factor fit at baseline (T1) for the PLP factor independently (unidimensional CFA) before increasing model complexity by adding a CLP factor (correlated two-factor CFA). Fit statistics were evaluated and compared across models to determine whether the added complexity of the correlated two-factor model contributed to substantive and justifiable gains in model fit as compared to the more parsimonious unidimensional model.

Measurement Invariance Testing (MIT). MIT involves using a series of measurement models to systematically test whether parameters are similar across groups or repeated measurements (i.e., Kline et al., 2016; Little et al., 1997). Prior to latent growth curve modeling, MIT was used to evaluate factorial invariance across timepoints. Additionally, in order to utilize a common measurement model rather than separate models for intervention and control conditions, latent constructs must be functionally equivalent across groups. As such, this study utilized multi-group and longitudinal MIT of the parenting play behavior latent construct. Many different approaches to MIT have empirical support (i.e., Muthén and Lehman, 1985; Woods, 2011). This study utilized methods detailed in Grimm et al. (2017) which involve comparing measurement models which impose increasing constraints on observed variable covariances to

assess the stability of factor covariances and ensure any modeled change may be attributed to changes in the latent factor rather than error in measurement.

Three models were run to assess (1) configural invariance, (2) metric/weak invariance, and (3) scalar/strong invariance, which allowed the most to least covariances (or least to most constraints on observed variables). The configural model allowed unique variances and covariances. The metric/weak invariance model added factor constraints. Finally, the scalar/strong invariance model added intercept constraints for observed variables. Each level of invariance is attained if there is no significant decline in fit with increased constraints. If there is decline in fit and scalar invariance is not supported, partial scalar invariance may be examined by identifying source and adjusting construct or systematically freeing intercepts. Scalar invariance or partial scalar invariance is necessary to attribute change in observed variables to their factors and proceed to longitudinal growth modeling (2017; Millsap, 2011).

Parenting Play Behavior LGCM. A second-order latent basis growth model was run to examine the degree to which parenting play behavior factor fit a linear trajectory. In this model, the parenting play behavior factor was considered ‘first order’ and added intercept and slope factors considered ‘second order.’ The previously identified scalar model for parenting play behavior factor was built upon to allow for growth curve fitting. Specifically, An identification constraint was added to first order factors based on the estimated factor loading of the first item, arbitrarily selected for scale and interpretability. The first order latent variable variances were set to be equal across timepoints. Additionally, covariances and intercepts were fixed to zero. Second order latent variables estimated an intercept and slope factor. The intercept factor consisted of the sum of each latent variable with factor loadings of one. A slope factor consisted of the sum of each latent variable with loadings set to scale on a non-specified trajectory. This

involved setting T1 to zero and T5 to one and allowing timepoints in between to estimate. Predictors selected a priori were added to the model to test the effects of child characteristics (emotional-behavioral symptoms and adaptive behavior) and family demographics (marginalized race and household income) on baseline levels of parenting play behaviors; and the effects of condition on rate of change. Models addressing subsequent research questions retained only significant covariates for parsimony (i.e., Lunetti et al., 2020; Rothenburg et al., 2020).

Analyses for Research Aim 2

Parallel Process Growth Model

A parallel process growth model was applied to characterize the reciprocal relationship between positive PFA and parenting play behavior trajectories across early childhood. This involved combining previously identified growth models with some adaptation. The latent variable variances, covariance and means were specified. Residual variances were set for each variable (parenting play and positive PFA) to be equal across timepoint and intercepts set to scale. Important for characterizing the relation between variables and across timepoints, parameters were added to specify covariances between variable intercepts, slopes, and residuals. Next, a model was run with previously identified significant predictor and covariate variables.

Research Aim 3

Parallel Process Growth Model with Outcomes

Parallel process growth model was built upon with outcomes for social skills (SSIS) and student-teacher relationship. This involved the addition of two equations regressing slope of PFA and parenting play behavior on teacher-rated social skills and student-teacher relationship. Covariates were parent rated emotional-behavioral difficulties and adaptive social skills at baseline to control for initial levels of highly related behaviors. The model retained

independently significant predictors of parenting play behavior and PFA slope not already accounted for as covariate predictors of outcomes. Measures of fit were examined as were relevant results of model contributions.

CHAPTER 3

RESULTS

Data Preparation

Missing Data

The percent of missing data across study measures and timepoints is presented in Table 5. Post-intervention (T2; 6 months after entry), complete study engagement dropped 7.78 percent in the intervention and 4.44 percent in the control groups. At T5 (2 years after entry), study engagement dropped 18.9 percent in intervention and 20 percent in control groups from T1. Finally, at kindergarten follow-up, parent participation was 23.3 percent lower than T1 in both groups. Teacher ratings were not completed by 47.8 percent of the intervention and 46.7 percent in the control group. There was some variability across timepoints, however, overall comparable data contributions across groups. . In regard to analyses with missing data, FIML considers all available data contributions to account for an individual's missingness. In a meta-analysis which included six IYPT intervention trials, Van Aar et al. (2017) reported post-test drop-out rates from 5 to 26 percent for intervention and 25 to 46 percent for control groups; follow-up drop-out rates ranged from 19 to 28 percent for intervention and zero to 42 percent for control. Overall, participation in the present study reflected similar or lower levels of drop-out representative of strong participant engagement maintained across timepoints.

Table 5.

Sample Size and Percent Missing by Measure Type

	PC-BOS Observation Total *N (% missing)*		Parent Ratings Total *N (% missing)*		Teacher Ratings Total *N (% missing)*	
	Intervention	Control	Intervention	Control	Intervention	Control
Time 1 (Pre)	90(0%)	89(1.11%)	90(0%)	90(0%)	-	-
Time 2 (Post)	83(7.78%)	86(4.44%)	82(8.89%)	87(3.33%)	-	-
Time 3	81(10%)	79(12.2%)	80(11%)	84(6.67%)	-	-
Time 4	73(18.9%)	72(20%)	76(15.6%)	78(13.3%)	-	-
Time 5	66(26.7%)	70(22.2%)	72(20%)	76(15.6%)	-	-

Follow-up	-	-	69(23.3%)	69(23.3%)	47(47.8%)	48(46.7%)

Descriptive Analyses

Data were screened using descriptives and visualization. There were 182 total cases. Two cases were identified and removed due to dropping out prior to randomization to condition. Apparent outliers on Boxplots were indicative of true variability; thus, values retained and MLR applied in analyses to accommodate. Data were visually examined for normality using Q-Q Plots and Histograms. Skew and kurtosis fell within an acceptable range of +/- 2 and +/- 7, respectively (Byrne, 2010), for all variables except T1 PC-BOS Directiveness (2.07). Visual inspection showed a trend toward right skew on Directiveness observations across timepoints.

Primary Study Measures

Descriptives for primary study measures are provided in Table 6 by group, including means, standard deviations, skew, and kurtosis for parenting play behaviors (PC-BOS) and positive and negative parenting feelings (FIQ). As reflected in Table 6, Welch's t-tests ruled out the possibility of any differences between conditions in PC-BOS and FIQ at baseline.

Table 6.

Descriptives of Study Measures

	Intervention			**Control**		
	M(SD)	Skew	Kurtosis	*M(SD)*	Skew	Kurtosis
Parent-Child Behavior Observation of Play (PC-BOS)						
Directiveness (D)						
*T1	$t(176.8) = .38$, $p = .704$					
T1	.23(.17)	1.27	2.7	.24(.18)	1.1	1.64
T2	.13(.12)	0.78	0.02	.2(.18)	1.23	1.42
T3	.17(.16)	1.12	1.15	.21(.19	.85	.12
T4	.1(.11)	1.41	1.79	.13(.14)	**2.06	6.43

Table 6.

Descriptives of Study Measures

	Intervention			Control		
	M(SD)	Skew	Kurtosis	*M(SD)*	Skew	Kurtosis
T5	.06(.1)	2.61	7.61	.11(.12)	1.11	.83
Intrusion (In)						
*T1	$t(163.3) = 1.13$, $p = .256$					
T1	.3(.24)	.72	-.19	.27(.17)	.67	-.26
T2	.23(.19)	.91	.06	.34(.2)	.15	-.87
T3	.27(.2)	.64	-.16	.32(.21)	.73	.09
T4	.36(.24)	.53	-.62	.38(.25)	.62	.001
T5	.32(.23)	.84	.16	.41(.24)	.16	-.82
Ineffective Commands (C)						
*T1	$t(172.6) = -1.174$, $p = .242$					
T1	.29(.2)	.59	-.38	.25(.17)	.59	-.12
T2	.22(.18)	1.17	1.26	.25(.2)	1.09	1.01
T3	.23(.17)	1.1	1.13	.27(.19)	.78	.37
T4	.25(.19)	1.02	.58	.24(.19)	.99	1.27
T5	.2(.17)	1.04	.71	.27(.19)	.65	-.32
Inconsistent Consequences (IC)						
*T1	$t(173.69) = -.637$, $p = .525$					
T1	.26(.21)	.75	-0.21	.24(.18)	.35	-.89
T2	.21(.18)	.93	0.6	.24(.21)	.97	.22
T3	.23(.18)	.83	0.08	.29(.21)	.62	-.37
T4	.27(2)	.78	-0.13	.27(.21)	.86	.68
T5	.2(.16)	.87	0.39	.29(.2)	.43	-.7
Praise (P)						
*T1	$t(176.38) = 1.237$, $p = .218$					
T1	.23(.18)	1.17	1.27	.26(.18)	.43	-.87
T2	.26(.17)	.52	-.43	.24(.15)	.33	-.49
T3	.21(.15)	.74	-.22	.22(.15)	.64	-.17
T4	.23(.16)	.69	-.11	.25(.16)	.62	-.45
T5	.24(.15)	.71	.41	.21(.14)	.78	.1
Descriptive Commenting (DC)						
T1*	$t(176.4) = -.052$, $p = .958$					
T1	.31(.2)	.63	-.04	.31(.21)	0.44	-0.96
T2	.38(.2)	.2	-0.8	.31(.17)	0.53	0.07
T3	.29(.2)	.73	-.31	.29(.19)	0.52	-0.47

Table 6.

Descriptives of Study Measures

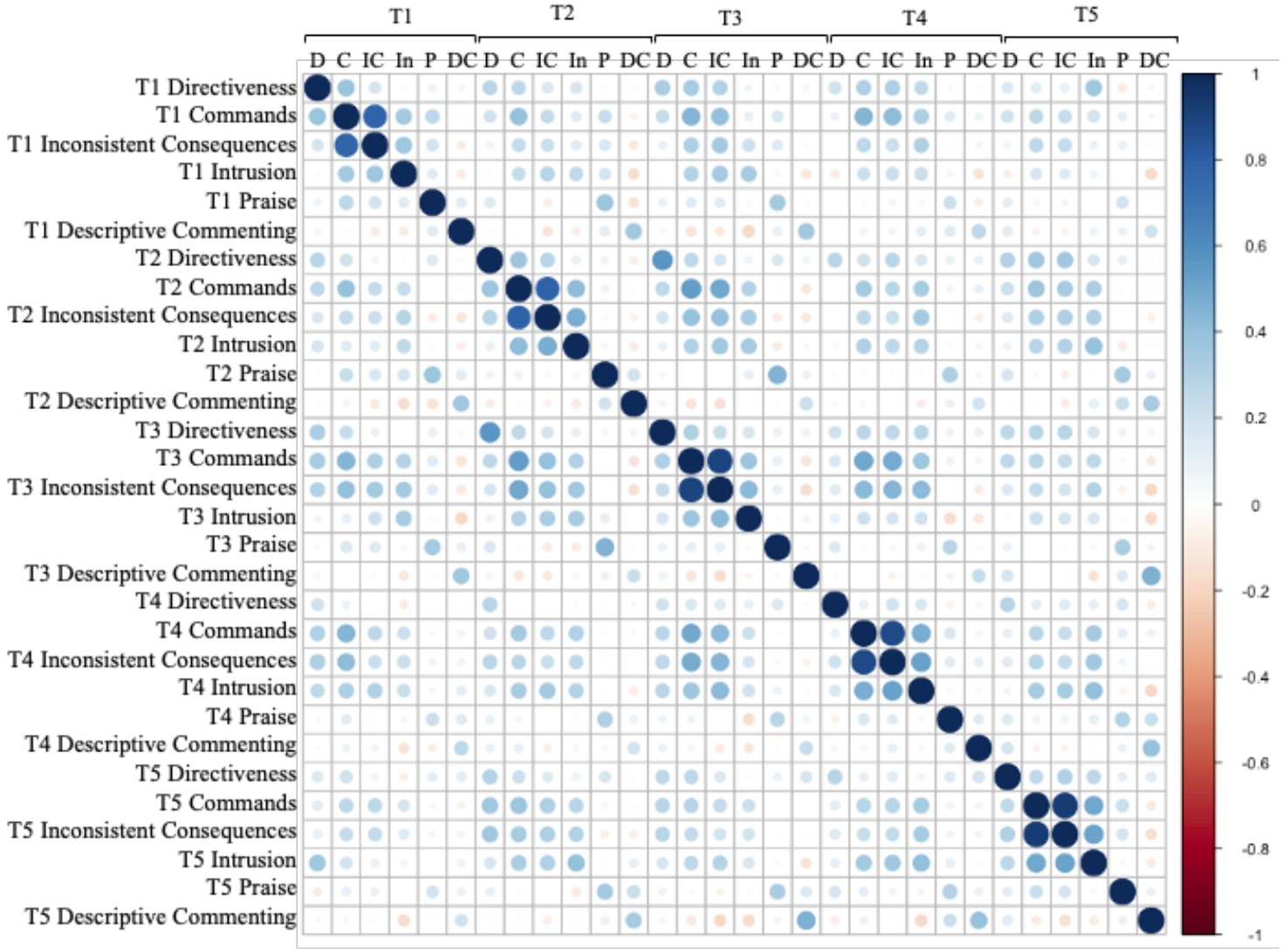
	Intervention			**Control**		
	M(SD)	Skew	Kurtosis	*M(SD)*	Skew	Kurtosis
T4	.26(.16)	.58	-.09	.25(.18)	1.39	2.6
T5	.26(.16)	1.12	1.28	.25(.16)	0.81	0.44
Parent Ratings						
FIQ Positive Parenting Feelings						
T1*	$t(173)= -.696, p= .487$					
T1	12.93(5.18)	-0.96	0.55	12.43(4.43)	-.31	-.63
T2	12.96(5.23)	-1.09	0.58	11.89(5.12)	-.24	-.87
T3	12.8(5.21)	-1.31	0.58	12.7(4.96)	-.35	-.92
T4	12.84(5.64)	-0.97	0.65	11.76(5.28)	-.22	-.73
T5	12.24(5.35)	-0.95	0.63	11.57(5.39)	-.36	-1.07

Note. * indicates *t-test* results for Time 1variables; ** indicates skew result outside acceptable range +/- 2 (T4 *PC-BOS* Directiveness)

Pearson correlations were run for PC-BOS observed parenting variables within and across timepoints to explore whether data are likely to reflect existing literature on responsive and directive dimensions of parenting which informed hypothesized latent variable. Correlation matrix is presented in Figure 1. All variables showed positive correlation with repeated measurements at subsequent timepoints suggestive of reliable measurement across time. Proposed variables for responsive, or 'Child-Led Play' factor (CLP; Praise and Descriptive Commenting) did not show a pattern of significant correlation. Proposed variables for directive or 'Parent Led Play' factor (PLP; Intrusion, Ineffective Commands, Inconsistent Consequences, and Directiveness) consistently showed positive correlation within and across timepoints, likely supporting proposed underlying factor construct.

Figure 1.

Pearson Correlation Matrix of PC-BOS Parenting Play Variables



Secondary Study Measures

For baseline measures used as covariates as well as teacher-rated outcomes, descriptives are provided in Table 7. Welch's t-tests ruled out any potential differences in child and parent functioning across groups at baseline, which could otherwise impact change in primary outcomes. There were no significant differences in parent-rated measures used as covariates, including child emotional-behavioral symptoms (CBCL; $t(176.2)=-1.018$, $p=.31$), child adaptive

behavior (VABS Adaptive Behavior Composite; $t(171.5)=-.657$, $p=.512$), or self-report of parent depressive symptoms (CESD; $t(175.1)=-1.65$, $p=.1$).

Table 7.

Descriptives and T-tests for Covariates (T1)

	Intervention *M(SD)*	**Control** *M(SD)*	*T-test*
T1 Household Income	34,665(29,884)	45,479(36,482)	$t(133.25)=1.951$, $p= .053$
T1 Emotional-behavioral symptoms (*CBCL*)	56(29.26)	51.77(36.45)	$t(176.2)= -1.018$, $p=.31$
T1 Adaptive behavior (*VABS ABC*; *SS*)	82.17(11.08)	80.99(12.75)	$t(171.5)= -.657$, $p=.512$
T1 Social adaptive behavior (*VABS Social*; *SS*)	84.0(11.0)	84.4(13.6)	$t(171.28)= -.326$, $p=.745$
T1 Parent depressive symptoms (*CESD*; Sum 0-60; clinical >/=16)	19.04(6.37)	17.57(5.6)	$t(175.1)=-1.65$, $p=.1$

Descriptives of Teacher Report Outcomes

Teacher Ratings of Child Behavior	**Intervention** *M(SD)*	**Control** *M(SD)*
Emotional-behavioral symptoms (*CBCL*) (*T*, *M*=50, *SD*=10)	56.3 (8.5)	58.04(12.51)
Social skills (*SSIS*) *(SS*, *M*=100, *SD*=15)	91.65(15.14)	88.57(15.71)
Student-Teacher Relationship Scale (Percentile rank)	43.68(25.92)	38.06(26.72)

Research Question 1

Positive Parenting Feelings and Attitudes Trajectory

LGCM was used to assess whether FIQ Positive parenting feelings and attitudes (PFA) showed a trajectory of no growth or linear growth across timepoints. Results are presented in Table 7, Figure 2, and Figure 3.

Positive Parenting Feelings and Attitudes LGCM. An LGCM indicating no growth in PFA showed adequate fit (CFI Robust=.960; TLI Robust=.976; X^2 (17, 180) = 38.533). Next, a model was run showing linear growth in PFA. As compared to the no growth model, the linear model showed improvements across fit measures (CFI Robust=.996; TLI Robust=.997; X^2 (17, 180) = 16.567), including lower AIC and BIC values. As such, a pattern of linear growth for PFA trajectory was supported and utilized in subsequent models. Linear LGCM revealed a mean FIQ Positive scale score of 12.541 with significant variance (p=<.001), which suggests variability in caregivers' PFA levels at baseline. On average, PFA decreased at a rate of -.095 (p=.085) per timepoint which was not a statistically significant change. There was significant variability in PFA change (p=.005), which suggests change in parents' positive feelings about their parenting role differed across individuals. The covariance between initial status and linear change was -.202 (p=.630) which suggests the rate of change of PFA did not significantly differ based on caregivers' level of PFA at baseline.

In the final LGCM, a priori predictors were added which assessed the impact of parent depressive symptoms, child emotional-behavioral symptoms and household income on initial levels of PFA, as well as the effect of condition on change in PFA. Results indicated significant effects of parent depressive symptoms (β(.054)= -.113, p=.037), such that higher levels of PFA was associated with lower levels of parent-endorsed depressive symptoms. Finally, lower levels of child emotional-behavioral symptoms significantly predicted higher levels of PFA (β(.104)= -.043, p<.001). Household income did not significantly predict initial levels of PFA nor did condition predict change in PFA. Finally, intervention did not show significant effects on change (slope) although a positive trend was observed the intervention group.

Table 8.

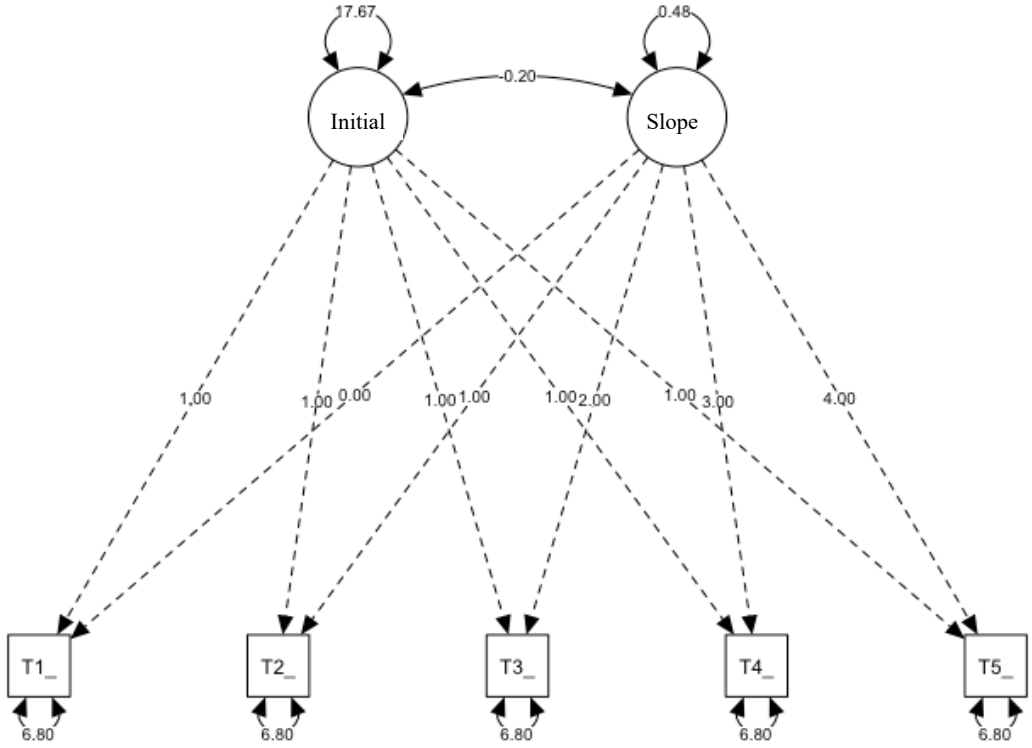
FIQ Positive Feelings and Attitudes LGCM

	Unconditional No Growth	Unconditional Linear Growth	Conditional Linear Growth
N	180	180	179
df_M	17	14	30
X^2_M Scaled	38.533	16.567	49.669
Yuan-Bentler correction	1.070	1.080	1.057
Approximate fit indexes			
RMSEA(90% *CI*)	.084(.05-.118)	.032(.00-.080)	.061(.029-.089)
RMSEA Robust	.093(.053-.132)	.033(.00-.091)	.067(.031-.100)
CFI	.947	.994	.962
CFI Robust	.960	.996	.964
TLI	.969	.995	.962
TLI Robust	.976	.997	.964
SRMR	.078	.054	.054
AIC	4445.098	4427.758	4389.682
BIC	4454.677	4446.916	4421.556
	Estimate(SE)	Estimate(SE)	Estimate(SE)
Mean & Covariance Structure			
Initial status (intercept)	12.541(.336)***	12.722(.349)***	18.252(1.312)***
T1		0	0
T2		.693(.14)	.698(.141)
T3		1.386(.274)	1.397(.276)
T4		2.079(.396)	2.095(.399)
T5		2.772(.502)	2.794(.505)
Linear change (slope)	-	-.095(.085)	-.154(.124)
Var(Initial status)	18.381(1.743)***	17.668(1.863)***	15.440(1.690)***
Var(Linear change)	-	.480(.172)**	.484(.173)
Cov(Initial, Linear)	-	-.202(.419)	-.217(.422)
Regressions (Predictors)			
Intercept			
T1 Parent depressive symptoms (*CESD*)			-.113(.004)*
T1 Child emotional-behavioral symptoms (*CBCL*)			-.043(.012)***
T1 Household income			-.179(.104)
Slope			
Condition			.123(.165)

Note. Significance indicated by *p</= .05; ** p</= .01; *** p</= .001

Figure 2.

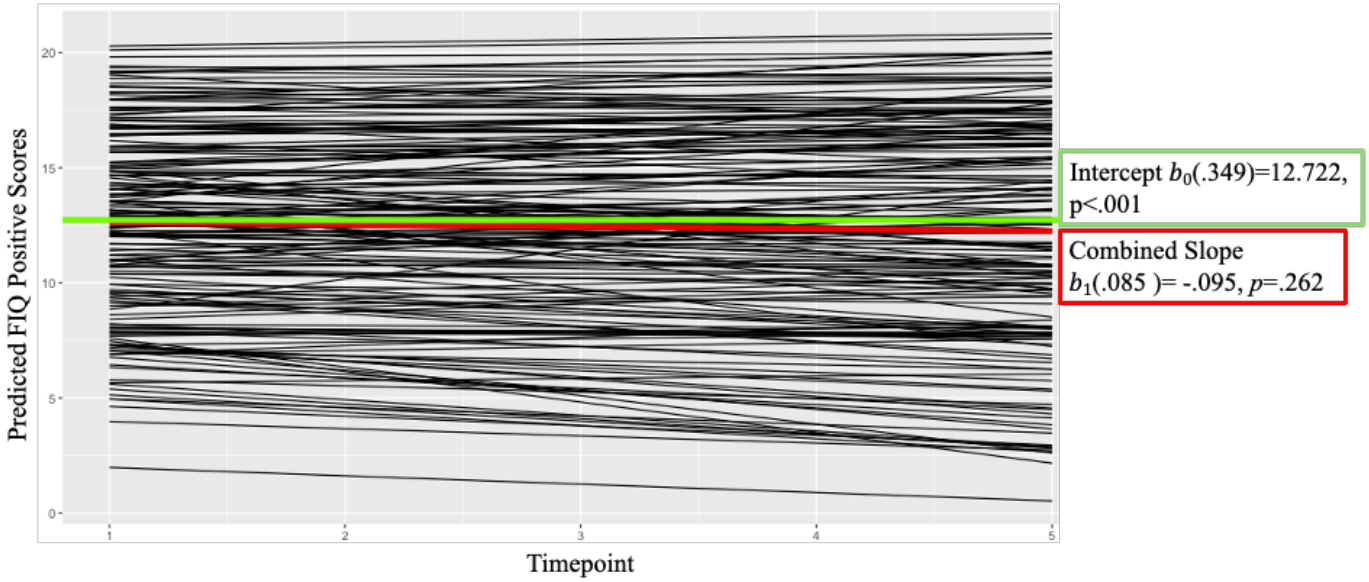
FIQ Positive Feelings and Attitudes Linear LGCM



Note. Variances are omitted.

Figure 3.

Predicted FIQ Positive Score Trajectories



Parenting Play Behavior Trajectory

First, a measurement model was established for the latent variable representing parenting play behavior. This involved confirmatory factor analyses to identify the factor and test measurement invariance across conditions and timepoint. Next, a second-order latent basis growth model was fitted.

Measurement Model. Results are presented in Table 9 and Figure 4 and 5. Initial hypotheses guided the testing of a single order structure with two correlated factors representing Parent Led Play (PLP; Intrusion, Ineffective Commands, Directiveness, and Inconsistent Consequences) and Child Led Play (Descriptive Commenting and Praise). Results from a CFA with UVI constraints, maximum likelihood estimator, and FIML showed acceptable model fit (CFI Robust=.952; TLI Robust=.910; X^2 (8, N=179) = 20.428), significantly better than the 'worst-fitting' baseline model. Contrary to initial hypothesis, factors for PLP and CLP did not show significant correlation (p=.290) which suggests they may represent distinct aspects of parenting. Regarding factor loadings, observed variable for PLP showed significant loadings at a level of p <.01 which supports an over-arching latent construct. For CLP, Descriptive Commenting yielded a significant loading (p=.032), however, Praise did not significantly contribute to a common construct (p=.166). Overall, results from the correlated two-factor model did not support hypothesized CLP factor; thus, subsequent analyses further evaluated PLP as a unidimensional parenting construct.

Parent Led Play (PLP; Intrusion, Ineffective Commands, Directiveness, and Inconsistent Consequences) at baseline was assessed as a unidimensional parenting construct using CFA with UVI constraints, maximum likelihood estimator, and FIML. Additionally, variance for Ineffective Commands was constrained to 0 due to marginally negative value which was not

significant (p=.588). Results supported PLP as a unidimensional parenting construct given acceptable model fit indices (CFI Robust=.959; TLI Robust= .918; X^2 (3,N=179) = 9.191). Standardized factor loadings for all observed variables showed statistically significant contributions to the construct at p<.001, ranging from the lowest loading for Directiveness of λ(.011)=.066 to the highest loading for Ineffective Commands λ(.010)=.185.

Table 9.

Correlated Two-Factor Model with Parent-Led and Child-Led Play at T1

	Correlated Two-Factor PLP & CLP	Unidimensional PLP (4-items)
N	179	179
df_M	8	3
X^2_M Scaled	20.428	9.191
Yuan-Bentler correction	.989	.1.475
Approximate fit indexes		
RMSEA	.093(.043-.144)	.107(.045-.175)
RMSEA Robust (90*% CI*)	.089(.033-.144)	.129(.034-.232)
CFI	.939	.960
CFI Robust	.952	.959
TLI	.910	.920
TLI Robust	.910	.918
SRMR	.052	.050
Baseline Model		
X^2_B Scaled	219.965	161.655
df_B	15	6

Figure 4.

Correlated Two-Factor Model with Parent-Led and Child-Led Play

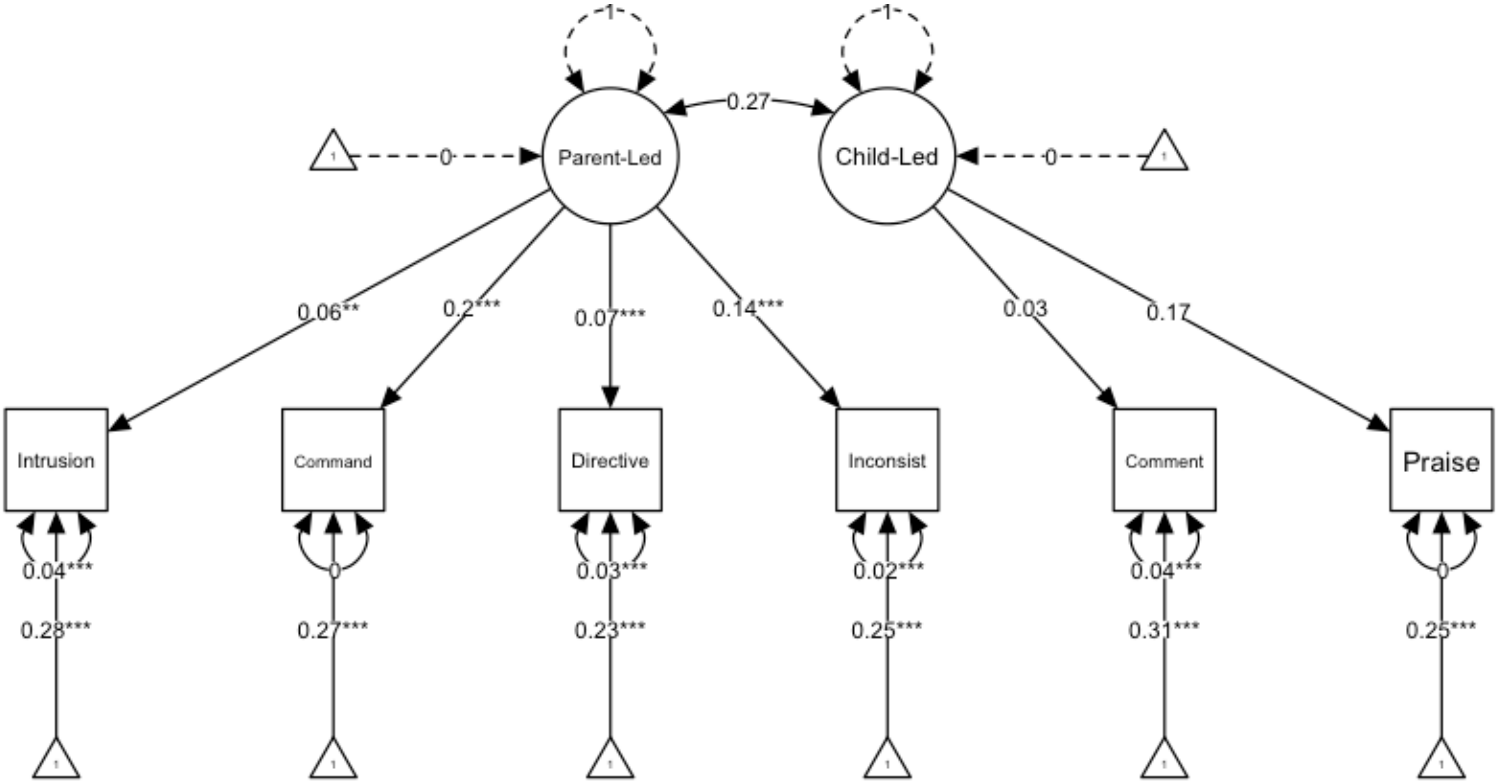
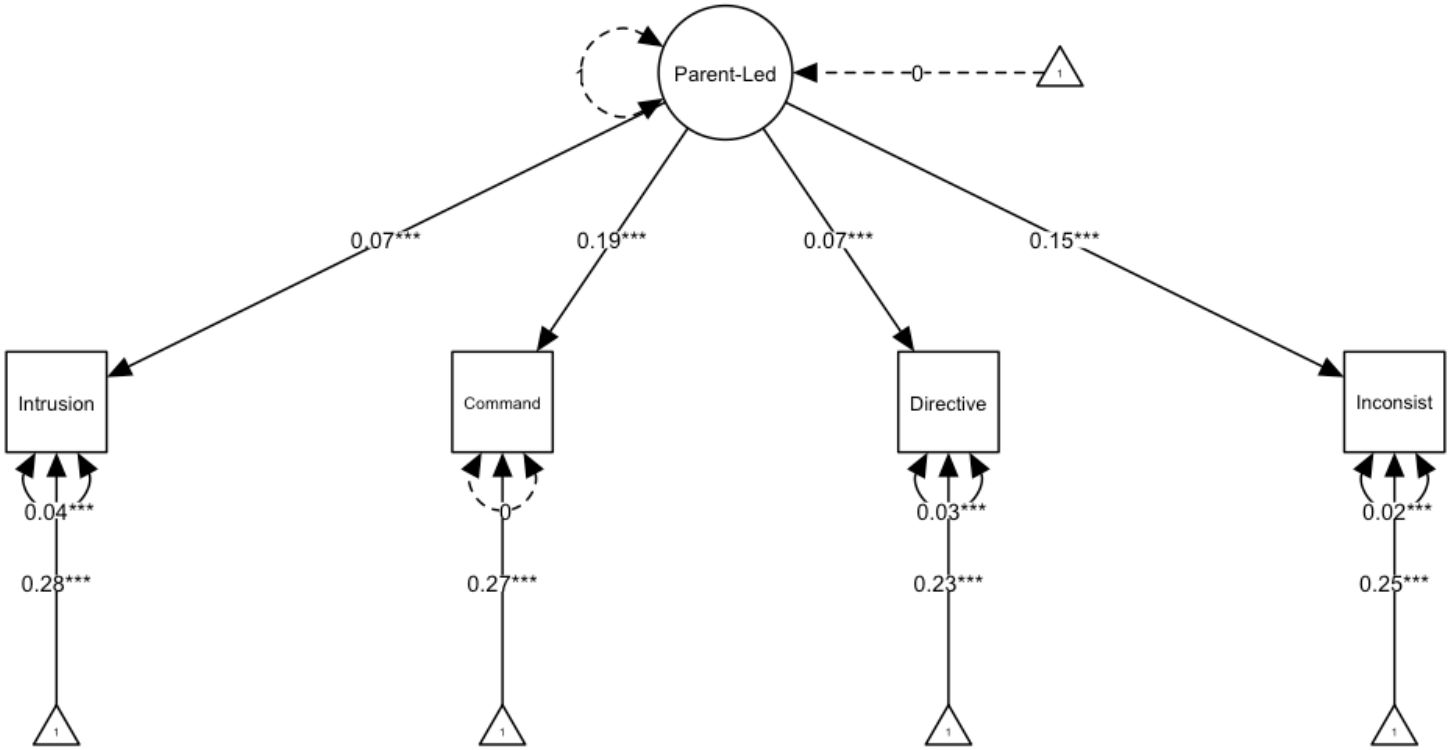


Figure 5.

Unidimensional 4-item Factor Model of Parent-Led Play at T1



Note. Significance indicated by *p</= .05; ** p</= .01; *** p</= .001

Measurement Invariance Testing of Parent-Led Play Latent Variable

A series of models were run, from least to most restrictive, to assess the degree to which the PLP factor previously identified was equivalent across conditions and timepoints.

Measurement Invariance Testing of Conditions. Results are presented in Table 10. Findings from CFA MIT across intervention and control conditions at baseline suggested the PLP model fit groups equally well as there was no evidence of decline in fit with increasing constraints (Configural CFI Robust=.962; TLI Robust=.923; X^2 (6, N=89, N=90) = 13.144; Metric CFI Robust=.966; TLI Robust=.955, X^2 (9, N=89, N=90) = 16.157; Scalar CFI and TLI Robust=.973, X^2 (12, N=89, N=90) = 18.340). Taken together with prior results (*t-tests* for secondary study measures), findings suggest equivalence across intervention and control groups with regard to latent-variable PLP construct and baseline characteristics. This supports the use of

a common measurement model using group code variable with paths to proximal intervention outcomes.

Table 10.

Parent-Led Play 4-item Factor: Measurement Invariance Across Conditions at T1

	Configural	Metric/Weak (loadings)	Scalar/Strong (loadings & intercepts)
N (control)	89	89	89
N (intervention)	90	90	90
df_M	6	9	12
X^2_M Scaled	13.144	16.157	18.340
Yuan-Bentler correction	1.302	1.178	1.124
Approximate fit indexes			
RMSEA	.115(.038-.090)	.094(.000-.161)	.077(.000-.140)
RMSEA Robust (90*% CI*)	.125(.000-.232)	.096(.000-.181)	.075(.000-.150)
CFI	.957	.957	.962
CFI Robust	.962	.966	.973
TLI	.913	.942	.962
TLI Robust	.923	.955	.973
SRMR	.052	.061	.064
Baseline Model			
X^2_B Robust	177.096	177.096	177.096
df_B	12	12	12

Note. Difference was informed by guideline -.01 change in CFI paired with changes in RMSEA of .015 and SRMR of .030 or .015 for metric and scalar invariance, respectively (Chen, 2007; Cheung & Rensvold, 2002)

Longitudinal Measurement Invariance. Measurement invariance was assessed longitudinally using a common measurement model to evaluate stability of the PLP 4-item factor across timepoints. Results are presented in Table 11 and Figure 6. Findings from the configural model, which allowed loadings, intercepts and residuals to freely vary, indicated acceptable model fit overall (Configural CFI Robust=.953; TLI Robust=.926; X^2 (120, *N*=179) = 199.445). Examination of standardized factor loadings revealed Directiveness was disproportionately

contributing to poor model fit due to factor loadings well below minimum acceptable cut-offs and which vary significantly across timepoints indicative of variance not explained by the PLP factor. Directiveness held the following factor loadings across timepoints: T1 λ(.013)=.053, p<.001, T2 λ(.018)=.043, p=.015, T3 λ(.015)=.038, p=.015, T4 λ(.007)=.012,p=.115, and T5: λ(.007)=.019, p=.008. Directiveness was removed from factor and measurement invariance testing conducted with indicated 3-item PLP factor (Intrusion, Ineffective Commands, and Inconsistent Consequences). Results indicated adequate model fit with no significant decline from configural to metric models, with no significant decline in fit (Configural CFI Robust=.979, TLI Robust=.957, X^2 (50, N=179) = 80.180; Metric CFI Robust=.976, TLI Robust=.957, X^2 (58, N=179) = 93.621). Scalar invariance model showed some decline in fit given CFI decrease of .02 and RMSEA change of .02; SRMR did not show significant decline and overall model fit remained adequate (Scalar CFI Robust=.954, TLI Robust=.927, X^2 (66, N=179) = 135.281). As such, partial scalar invariance was supported, and subsequent growth modeling conducted with 3-item PLP factor.

Table 11.

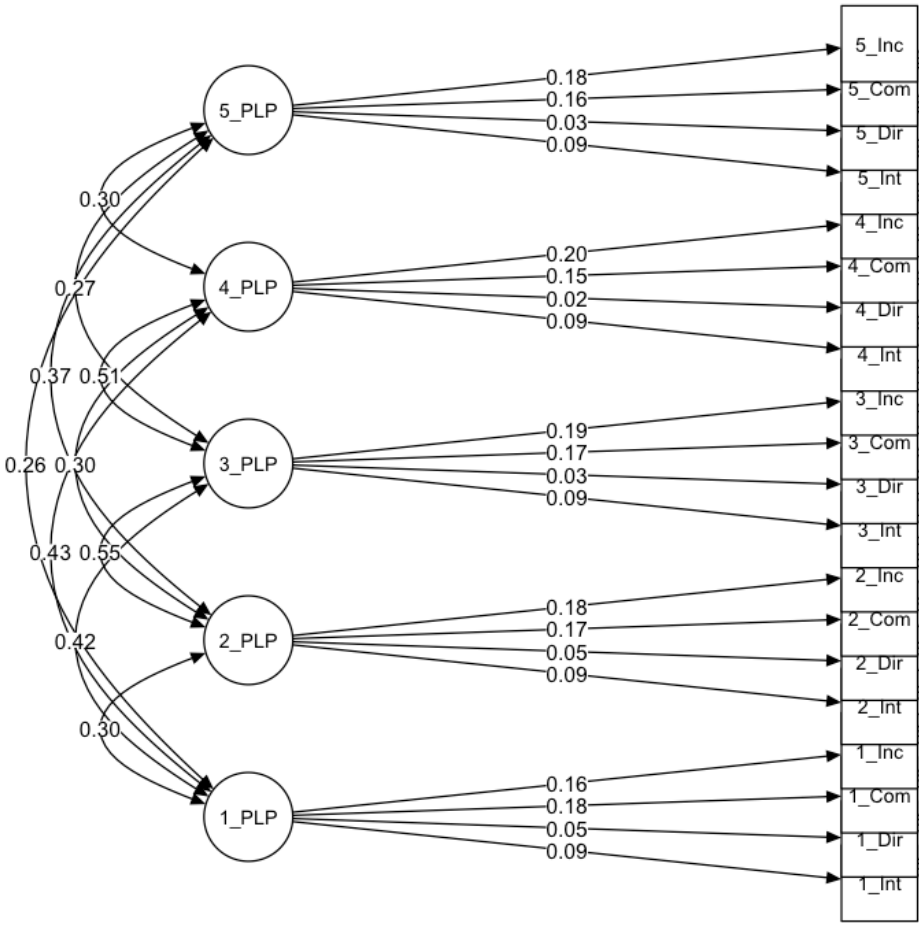
Longitudinal	Configural 4-item	Configural 3-item	Metric/Weak 3-item (loadings)	Scalar/Strong 3-item (loadings & intercepts)
N	179	179	179	179
df_M	120	50	58	66
X^2_M Robust	199.445	80.180	93.621	135.281
Yuan-Bentler correction	1.050	.982	1.001	.998
Approximate fit indexes				
RMSEA	.061(.046-.075)	.058(.033-.081)	.059(.035-.080)	.077(.058-.095)
RMSEA Robust (90% *CI*)	.065(.045-.083)	.063(.032-.089)	.063(.034-.088)	.082(.060-.103)
CFI	.944	.976	.972	.945
CFI Robust	.953	.979	.976	.954
TLI	.912	.949	.949	.912
TLI Robust	.926	.957	.957	.927
SRMR	.095	.080	.085	.091
Baseline Model				
X^2_B Robust	1620.869	1359.912	1359.912	1359.912
df_B	190	105	105	105

Note. Difference was informed by guideline -.01 change in CFI paired with changes in RMSEA of .015 and SRMR of .030 or .015 for metric and scalar invariance, respectively (Chen, 2007; Cheung & Rensvold, 2002)

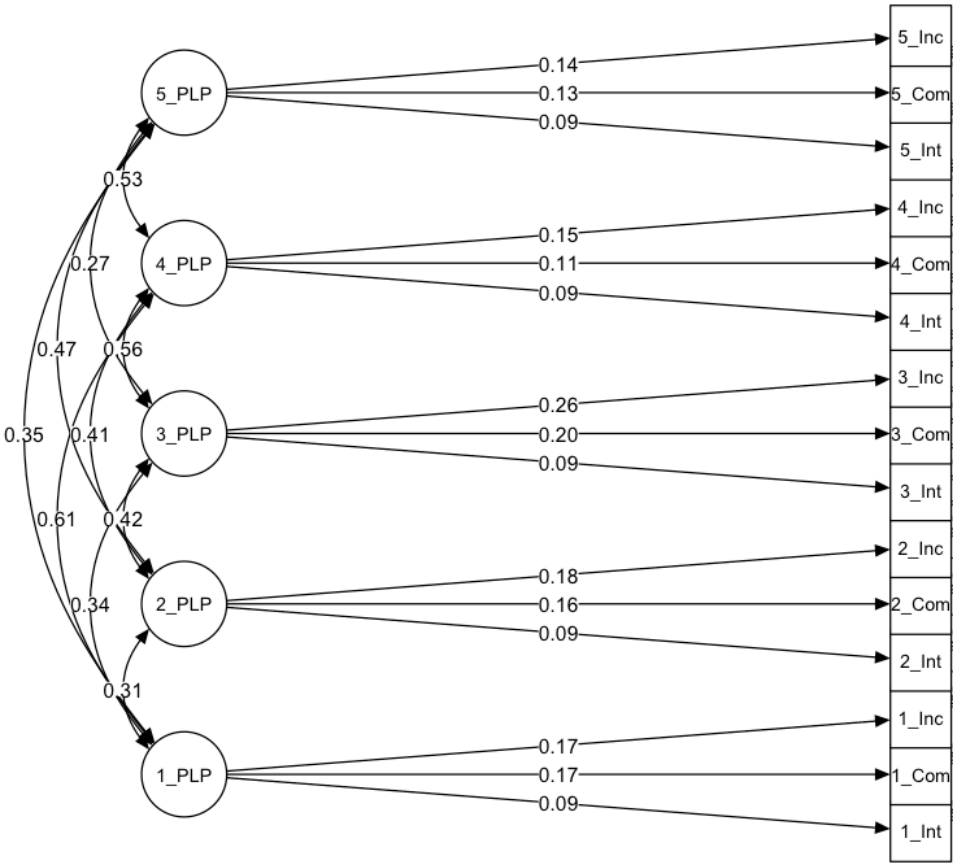
Figure 6.

Longitudinal Parent-Led Play Factor Models

A. Initial 4-item PLP



B. Final 3-item PLP



Note. Residuals, variances, and observed variables covariances in model are omitted in figure. Abbreviations are Int: Intrusion, Dir: Directiveness, Com: Ineffective Commands, Inc: Inconsistent Consequences.

Second-Order Latent Basis Growth Model of Parent-Led Play Factor

Results are presented in Table 12 and Figure 7. A second-order latent basis growth model was fit with a linear slope and model showed adequate fit (CFI Robust=.952; TLI Robust=.934; X^2 (77, 179) = 150.756). The variance in initial levels of PLP was .488 (p=.001), with suggests significant variability in caregivers' PLP levels at baseline. On average, PLP decreased at a rate of -.101 (p=.161) per timepoint with a standard deviation of .427. The covariance between initial status and linear change was -.163(p=.161) which suggests the rate of change of PLP did not significantly differ based on caregivers' level of PLP at baseline.

A priori predictors were added to the model. Results indicated initial levels of PLP did not significantly differ based on child behavior (clinical symptoms and adaptive) or parent demographics (marginalized race and household income). Condition contributed to significant differences in PLP linear change (β(.167)= -.510, p=.002), such that caregivers randomized to the intervention group showed greater overall reductions in PLP than the control group. Parent demographics (marginalized race and household income) did not significantly contribute to differences in PLP change. Models addressing subsequent research questions retained only significant covariates for parsimony, in this case condition (i.e., Lunetti et al., 2020; Rothenburg et al., 2020).

Table 12.

Parent-Led Play LGCM	Unconditional Linear Growth	Conditional Linear Growth
N	179	177
df_M	77	145
X^2_M Scaled	148.798	239.111
Yuan-Bentler correction	1.007	.990
Approximate fit indexes		
RMSEA(90*% CI*)	.073(.056-.090)	.061(.046-.074)
RMSEA Robust	.078(.057-.099)	.062(.046-.078)
CFI	.942	.931
CFI Robust	.952	.942
TLI	.920	.914
TLI Robust	.933	.928
SRMR	.097	.082
AIC	-2259.122	-2244.978
BIC	-2071.067	-2038.528
	Estimate(SE)	Estimate(SE)
Mean & Covariance Structure		
Initial status (intercept)	0	0
Linear change (slope)	-.101(.083)	.288(.306)
T1	0	0
T2	.755(.521))	.768(.345)*
T3	.117(.451)	.333(.338)
T4	-.105(.366)	-.010(.243)
T5	1	1
Var(Initial status)	.488(.149)***	.521(.151)***
Var(Linear change)	.309(.231)	.300(.219)
Cov(Initial, Linear)	-.163(.116)	-.200(.127)
Regressions		
Intercept		
T1 Child emotional-behavioral symptoms (*CBCL*)		-.001(.002)
T1 Child adaptive behavior (*VABS ABC*)		-.005(.006)
Parent marginalized race		.188(.182)
T1 Household income		.004(.019)
Slope		
Condition		-.510(.167)**
Parent marginalized race		-.023(.226)
T1 Household income		-.024(.027)

Note. Significance indicated by *p</= .05; ** p</= .01; *** p</= .001

Figure 7.

Parent-Led Play Latent Basis Growth Model

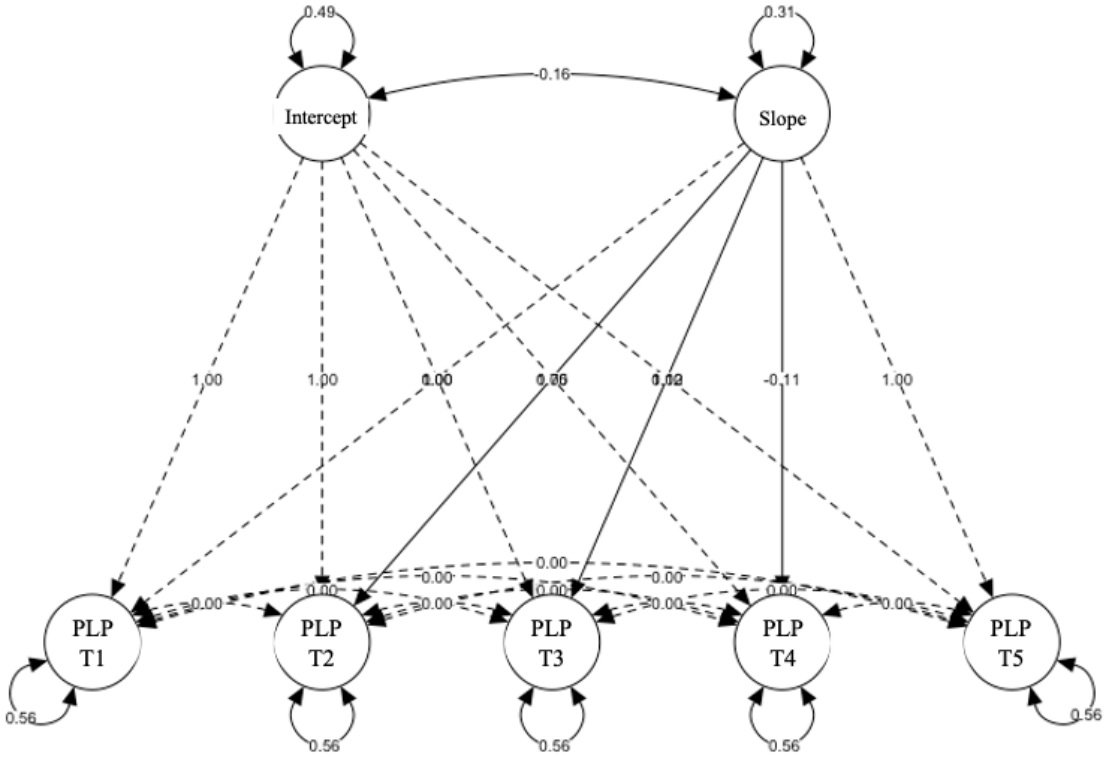
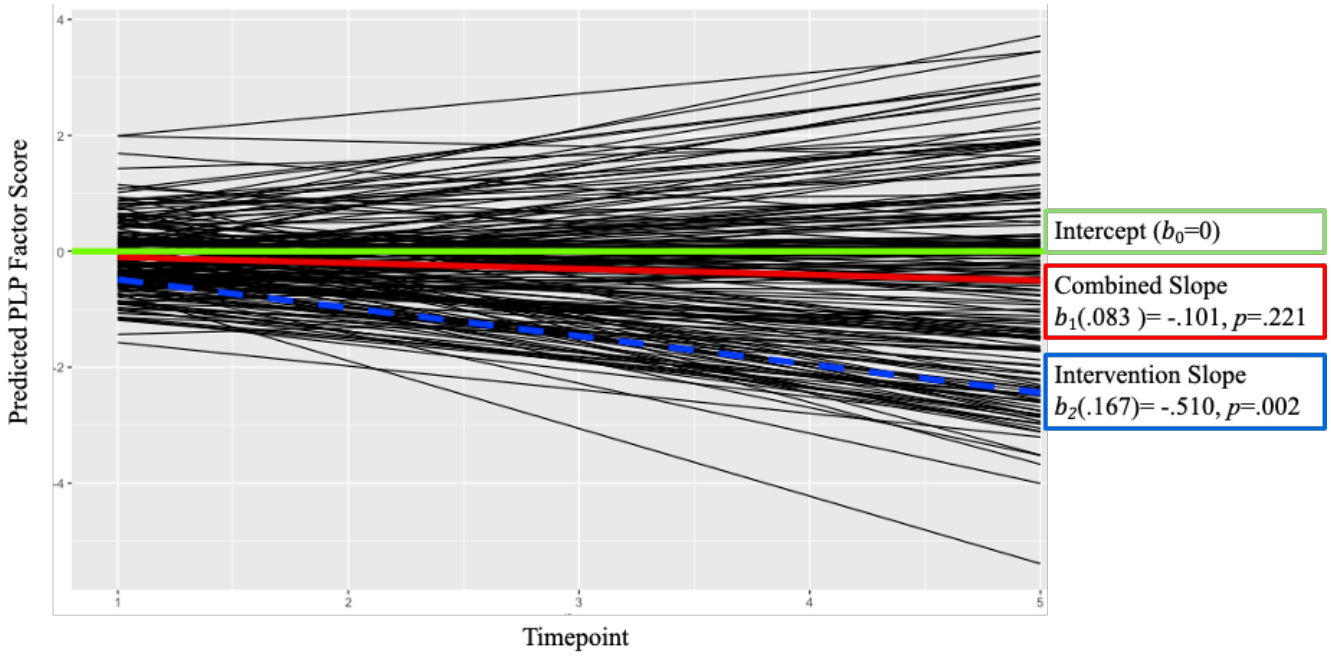


Figure 8.

Predicted Parent-Led Play Factor Score Trajectories



Parallel Process LGCM

Parallel process LGCM was applied to assess the degree to which Parent-Led Play factor and FIQ Positive parenting feelings and Attitudes (PFA) trajectories relate across early childhood and predict kindergarten social development. Results are presented in Table 13 and Figure 9.

Parallel Process (Model 1). The initial parallel process model without identified predictors indicated adequate fit (CFI Robust=.955; TLI Robust=.954; X^2 (161, 180) = 245.185). There was significant variance in initial levels of PLP (p=.002) and PFA (p<.001), as well as change in PFA (p=.005), which suggests individual differences among caregivers. Baseline levels of PLP and PFA significantly covaried (p=.026) which suggests variability in caregivers' initial level of PLP differed based on PFA. Initial levels of PLP or PFA did not significantly covary with change over time.

Parallel Process with Predictors (Model 2). A model was run with previously identified significant predictors of PFA (Intercept: T1 parent depressive and child emotional-behavioral symptoms) and PLP (Slope: Condition). This model showed adequate fit (CFI Robust=.958; TLI Robust=.952; X^2 (218,180) = 313.025). As compared to Model 1, Model 2 showed slight improvement in model fit statistics including AIC and BIC values. Regarding predictor stability, condition randomization continued to significantly predict PLP change (p=.001) such that caregivers enrolled in the intervention showed marked reductions in PLP behaviors, a proximal target given intervention curriculum. With the added predictors, the post-intervention timepoint (T2) in particular showed significant change in PLP (p=.009) which suggests immediate gains with intervention which contribute to more subtle gains over time. Child emotional-behavioral symptoms continued to show a significant effect on baseline levels of PFA (p=.001), such that parents of children with higher levels of internalizing and externalizing symptoms endorsed

lower levels of positive feelings for their caregiving role. In this parallel model, depressive symptoms did not show significant effects on baseline PFA or differentially contribute to model fit (p=.106). This may suggest that caregivers' positive thoughts and feelings about their parenting role may be distinct from depressive cognitions more broadly, particularly when considering other aspects of their interactions with their child.

Parallel Process with Predictors and Outcomes (Model 3). A model was run with previously identified significant predictors of PLP and PFA, as well as hypothesized outcomes of kindergarten social development. This model showed adequate fit (CFI Robust=.953; TLI Robust=.948; X^2 (255,179) = 364.294). As compared to Model 2, AIC and BIC values were higher which suggests decline in model fit with the addition of outcomes. Predictors from Model 2 retained significance. The two outcomes, student-teacher relationship (STRS) and teacher-rated social functioning (SSIS) showed significant variance and covariance (p<.001). Within this parallel model, FIQ PFA trajectory showed significant direct effects on STRS outcome (p=.007) suggesting more positive slope trajectories of PFA uniquely contributed to higher STRS ratings. Additionally, baseline child behavioral-emotional symptoms significantly contributed to STRS ratings (p=.047) such that lower levels of behavioral symptoms related to stronger student-teacher relationship. PLP and PFA trajectories did not show direct effects on teacher-rated social skills outcome (SSIS).

Table 13.

Parallel LGCM Parent-Led Play and FIQ Positive Parenting Feelings and Attitudes

	Model 1 Parallel PLP & PFA	Model 2 Add Predictors	Model 3 Add Outcomes
N	180	180	179
df_M	161	218	255
X^2_M Scaled Yuan-Bentler correction	245.185 .978	313.025 .998	364.294 .983

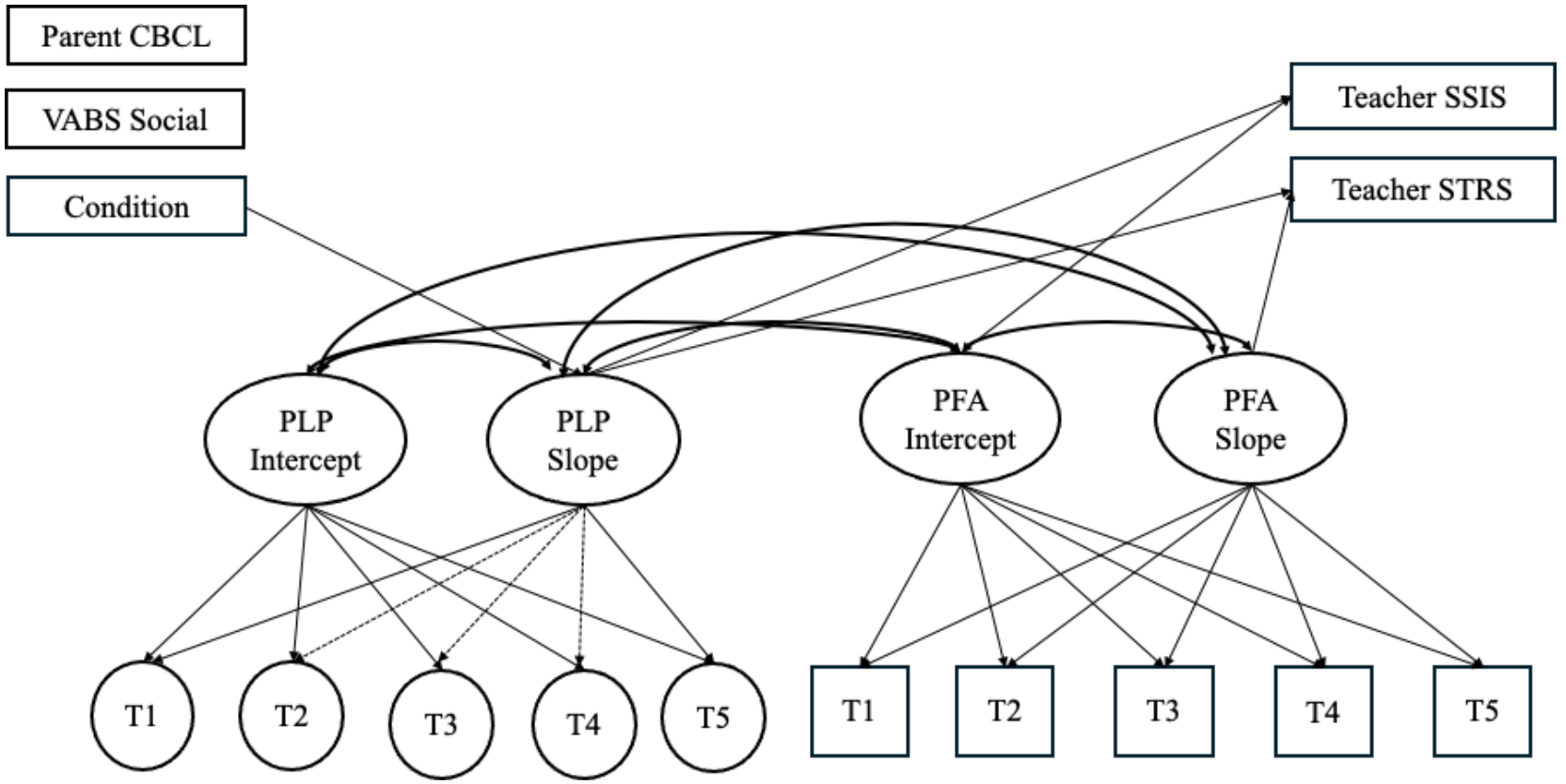
Approximate fit indexes			
RMSEA(90% *CI*)	.054(.040-.067)	.049(.036-.061)	.049(.037-.060)
RMSEA Robust	.057(.040-.072)	.051(.036-.065)	.051(.035-.065)
CFI	.955	.951	.947
CFI Robust	.961	.958	.953
TLI	.947	.944	.938
TLI Robust	.954	.952	.945
SRMR	.084	.082	.081
AIC	2163.137	2139.104	3737.611
BIC	2383.451	2368.996	4011.726
	Model 1 Estimate(SE)	Model 2 Estimate(SE)	Model 3 Estimate(SE)
Mean & Covariance Structure			
Parent-Led Play			
Initial status (i_1)	0	0	0
Linear change (s_1)	-.105(.079)	.144(.127)	.151(.131)
T1	0	0	0
T2	.781(.483)	.760(.292)**	.737(.281)**
T3	.114(.444)	.308(.283)	.297(.269
T4	-.110(.457)	.016(.261)	-.003(.262)
T5	1	1	1
Var(Initial status)	.488(.155)**	.521(.154)***	.529(.157)***
Var(Linear change)	.308(.265)	.323(.218)	.325(.229)
FIQ Positive			
Initial status (i_2)	12.720(.349)***	16.307(1.084)***	15.046(.699)***
Linear change (s_2)	-.100(.085)	-.100(.085)	-.092(.086)
Var(Initial status)	17.649(1.861)***	15.276(1.671)***	15.28(1.712)***
Var(Linear change)	.487(.174)**	.488(.174)**	.481(.173)**
Covariances			
i_1, s_1	-.160(.133)	-.207(.122)	-.212(.122)
i_1, i_2	.675(.304)*	.618(.285)*	.628(.280)*
i_1, s_2	.101(.073)	.096(.074)	.104(.075)
s_1, i_2	-.468(.389)	-.297(.379)	-.391(.378)
s_1, s_2	.012(.112)	.032(.113)	.032(.116)
i_2, s_2	-.218(.420)	-.031(.382)	.057(.375)
Regressions (Predictors)		Model 2 Estimate(SE)	Model 3 Estimate(SE)
FIQ Positive Intercept (i_2)			
T1 Child emotional-behavioral symptoms (*CBCL*)		-.039(.012), *p*=.001***	-.044(.011), *p*<.001***
T1 Parent depressive symptoms (*CESD*)		-.084(.052), *p*=.106	-
PLP Slope (s_1)			
Condition		-.509(.158), *p*=.001***	-.516(.157),*p*=.001***
Model 3 Regressions (Outcomes)			Model 3 Estimate(SE)

Social Skills (SSIS Teacher)	
PLP Slope (s_1)	-3.3(4.324), *p*=.445
FIQ PFA Slope (s_2)	5.613(3.408), *p*=.10
T1 Emotional-behavioral symptoms (CBCL)	-.097(.05), *p*=.052
T1 Social-adaptive functioning (VABS Social)	.101(.128), *p*=.432
Student-Teacher Relationship (STRS)	
PLP Slope (s_1)	-9.48(6.62), *p*=.152
FIQ PFA Slope (s_2)	19.842(7.316), *p*=.007**
T1 Emotional-behavioral symptoms (CBCL)	-.172(.087), *p*=.047*
T1 Social-adaptive functioning (VABS Social)	.088(.308), *p*=.776

Note. Significance indicated by *p</= .05; ** p</= .01; *** p</= .001

Figure 9.

Parallel Process Growth Model 3



Note. First order latent factor observed variables are omitted from figure. Variances and manifest covariances are not displayed.

CHAPTER 4

DISCUSSION

The primary goal of the present study was to examine observable parenting behaviors during play as well positive parenting feelings and affect (PFA) across early childhood and as joint facilitators of social-emotional development in children with DD. This study aimed to explore the dynamic nature of parenting behaviors and PFA, including sensitivity to change in the context of parent-mediated EI. Specifically, it examined early childhood trajectories of positive PFA and parent-led play (PLP) for parents of children with DD enrolled in a primary prevention RCT. Analyses examined salient predictors, intervention effects on positive PFA and PLP trajectories, as well as impact on children's school-age social development from the perspective of their kindergarten teacher.

Positive Parenting Feelings and Attitudes Findings

Parents' endorsements of positive PFA reflected significant inter-individual differences regarding baseline ratings as well as change over time. These differences were in part explained by parents' ratings of their mental health (CESD) and their child's emotional behavioral symptoms (CBCL), similar to prior research (i.e., Lickenbrock et al., 2011; Neece, 2014; Oppenheim et al., 2004). Baseline ratings of child emotional-behavioral symptoms inversely predicted positive PFA; for example, parents who endorsed higher levels of depressive symptoms showed lower ratings of positive feelings about their parenting role. This suggests parents' mood impacted perceptions of their child and their parenting role, in addition to their child's behavioral difficulties. Family income did not predict ratings of positive PFA. Future investigations may consider a more nuanced measure of socio-econoic status which accounts for

the distinct impact of material hardship and considers the mediating role of stress (Gershoff et al., 2007), as it relates to parent well-being and PFA.

It was hypothesized that positive PFA would increase over time with acclimation to their child's identification of DD and initiation of community-based services. Some prior literature has suggested parents may identify benefits to their child's diagnosis and engage in meaning-focused coping following a developmental diagnosis such as autism or intellectual disability (Beighton & Wills, 2017; Higgins et al., 2020). In this sample, linear LGCM showed no significant change in trajectory at the group level, and a trend toward decline in positive PFA on average. Given significant inter-individual differences, the linear model showed improved fit as compared to the no-growth model. Intervention did not significantly predict the variability in trajectories, however, those enrolled in the intervention group did show a trend toward positive trajectory. Similarly, prior research has shown interventions must directly target parent well-being to effect change (i.e., MBSR; Osborn et al., 2021).

Regarding the overall decline in positive PFA, families with young children experience numerous changes and stressors related to their child's early development, even more for families with children with DD. For example, stressors experienced by some families with young children with DD may include acclimating to identified developmental needs, navigating complex service systems (medical, community, school), managing co-occurring behavioral or medical needs, balancing care for siblings, and transitioning to school or care outside the home. The stressors themselves, as well as a family's experience of stressors, can be highly individualized. Given the impact of child emotional-behavioral symptoms on positive PFA, a child's adaptation to such stressors may reciprocally impact parent and family adaptation, thus positive PFA. Additionally, prior research which guided hypothesis that positive PFA would

increase with adaptation across early childhood included children with identified developmental diagnoses, such as autism or intellectual disability (Beighton & Wills, 2017; Higgins et al., 2020). As this study sample included children with developmental disabilities as well as delays, future research may examine whether variability in positive PFA may relate to differences in parent adaptation based on child development and diagnosis.

Direct Observations of Parenting Play Behavior Findings

Findings of direct observation of parenting behaviors during parent-child free play interactions supported the development of a latent construct of parent-led play (PLP). PLP consisted of observed variables for *Intrusion* on their child's independence, *Ineffective Commands*, and *Inconsistent Consequences* after giving directions, which held stable across timepoints and conditions. This differed from initial hypotheses that presumed (1) parenting play behavior would be captured by two correlated factors representing parent-led play and child-led play (*Praise* and *Descriptive Commenting*), and (2) that parent-led play would consist of 4-items (*Directiveness*, *Intrusion*, *Ineffective Commands*, and *Inconsistent Consequences*). In the correlated two-factor model, the factor for child-led play was poorly represented by the data. This is likely related to the inclusion of only two items in proposed CLP factor.

Prior literature has supported measures of responsive parenting which include items measuring positive comments (i.e., Praise and Descriptive Commenting) in addition to other positive behavior support strategies (i.e., effective commands; Charman et al., 2017) and aspects of parent-child synchrony (i.e., Green et al., 2017). Future research may consider a more robust CLP composite which includes variables representing child behavior (i.e., social initiation) as well as dyadic engagement (i.e., DeKorte et al., 2020; Pickles et al., 2015, 2016), to capture the relational aspect off early social development. Theoretically, *Directiveness* fits well within a

construct of PLP. However, in this sample, *Directiveness* showed evidence of measurement error such as non-normality and instability across timepoints, which contributed to poorer model fit. Future research may consider CLP and directiveness constructs which include both partial-interval direct observational items as well as global impression coding, as constructs are multi-dimensional and complex. For example, the inclusion of items assessing global impressions of parental sensitivity may alter the impact of PLP on child outcomes, and vary cross-culturally (i.e., Caughy et al., 2017).

In unconditional and conditional linear growth models with the 3-item PLP factor, caregivers showed significant variability in PLP at baseline. These individual differences in PLP were not significantly predicted by their child's level of emotional-behavioral symptoms or adaptive behavior, considered a proxy for global developmental level for some children. In this study sample, baseline levels of PLP were also not significantly predicted by parent demographic covariates (marginalized race or ethnic identity and household income). Limitations regarding income measurement were previously described (p. 72) and this study included primarily White families. Of note, PLP items directly correspond to skills taught in the IYPT curriculum. The IYPT has been shown to be effective across families from a range of socio-economic and cultural backgrounds (Leijten et al., 2015). Additionally, child externalizing behaviors such as physical aggression may be priority concerns for families cross-culturally (McGuire et al., 2021). As such, there may be some parenting strategies particularly effective for reducing externalizing behaviors which show cross-cultural acceptability. Further research is needed, however, to investigate parenting behaviors favored by families from diverse cultural and linguistic backgrounds to inform culturally-responsive EI practices.

Intervention Effects Findings

Across early childhood, trajectories of PLP were significantly predicted by condition, such that caregivers enrolled to receive parent-mediated intervention showed significantly more decline in PLP over time as the control condition (community-based EI and any additional parent-driven resources). In contrast, parents enrolled in the control condition evidenced a non-significant trend toward increased PLP trajectory. The change over time in PLP between parents enrolled in the intervention versus the control, was significant at the post-intervention timepoint (T2), diminishing at follow-up. This finding was consistent with initial hypothesis that families enrolled to receive IYPT would show a decline in PLP. PLP is a proximal intervention target for IYPT as factor items reflect curriculum-based strategies, such as giving clear and effective commands, consistent follow through (i.e., praise cooperation; consequences), and positive engagement through child-led play. Considering, PLP may serve as an indirect representation of parent engagement and uptake of intervention strategies.

Findings are consistent with the literature which shows increased use of curriculum-based strategies following parent-mediated interventions (i.e., Charman et al., 2021; Green et al., 2017; Handen et al., 2013; Shire et al., 2015; Swiezy et al., 2021; Vibert et al., 2020). Also consistent with some prior literature (i.e., Green et al., 2017; Pickles et al., 2016), intervention effects may diminish over time. Overall, findings support IYPT in the context of primary prevention. To sustain the beneficial effects of intervention over time, it may be important to maintain family support over time including through follow-up or booster sessions.

Teacher-Rated Social Skills and Interaction Findings

Finally, this study aimed to examine the degree to which positive PFA and parenting play behavior trajectories relate across early childhood and contribute to school-age social interaction outcomes (SSIS Social Skills and STRS student-teacher relationship). PLP trajectory did not

significantly predict teacher rated social skills or student-teacher relationship. Teacher-reported and observational measures are rarely included in parent-mediated intervention trials (Tarver et al., 2019), including due to the well-documented differences across settings and informants. Although these differences may dilute effect size, inclusion of multiple informants, settings, and measurements allows for the consideration of ecological context critical for supporting children and families.

Results indicated positive PFA trajectory did not predict teacher-rated social skills, however, significantly predicted student-teacher relationship. Given the inclusion of child emotional-behavioral symptoms in the model, this effect likely exceeds the expected contributions of behavioral difficulties. There are various pathways through which positive PFA across early childhood may be hypothesized to affect student-teacher relationship. For example, the existing literature has identified student self- and emotion-regulation as contributing to student-teacher relationship for children with DD (Eisenhower et al., 2007). Positive PFA may be reflective of effective coping and adaptation (Beighton and Wills, 2017) as well as affect regulation (Lickenbrock et al., 2010), important for parent self-regulation. Parents indirectly teach developmental skills, such as self-regulation, through modeling effective strategies. Additionally, evidence suggests a transactional relationship between parent and child emotion regulation (Norona and Baker, 2017) which could contribute to sustained effects on child regulation in kindergarten. Further research is needed to investigate parent and child emotion regulation as a pathway through which positive PFA may impact student-teacher relationship in kindergarten. It is important to consider student-teacher relationship may be built on interactions with the student as well as their parents, particularly in early elementary grades. Future studies may examine home-school partnerships as a potential moderator of positive PFA on student-

teacher relationship. Positive PFA and parent well-being may allow for effective advocacy and partnership (i.e., Durand et al., 2001) and obtaining educational supports important for student success.

Strengths, Limitations, and Future Directions

This study showed strength in RCT design, methods, as well as impact. It incorporated data sources which included perspectives from teacher and parent informants, rating scales and direct observational measures, as well as measures of child behavior at school (teacher ratings) and home (free play observation, parent ratings), allowing for ecological consideration of child and family functioning. Methods allowed for the modeling of dynamic processes over time and the maximum use of available data, representing all study participants regardless of expected attrition. Through key findings, this study may inform future strengths-based intervention targets which may drive adaptive social-emotional development. The present study identified parent-mediated intervention as a mechanism for change in parent-child interactions, highlighting the utility of direct observational measures in large-scale RCTs. Further, his study showed positive PFA in early childhood as predicting school-age student-teacher relationship, an important outcome for academic and social success at school.

It is critical to highlight that findings from the present study and parenting literature may not generalize to parents from cultural backgrounds not represented in the research. Additionally, interventions supported by research, such as the IYPT, may similarly be biased by the systemic exclusion of Minority countries from child development research (Draper et al., 2022). Replication of community-based prevention trials in diverse communities may inform cultural adaptation to existing interventions. However, development of parent-mediated interventions as community-research partnerships is needed to embed culture in all aspects of intervention (i.e.,

goal setting, content, progress monitoring, meaningful outcome selection, delivery) align with family cultural context.

Intervention showed initial effects on PLP with diminishing gains over time, consistent with other primary prevention intervention research. This study utilized an intent-to-treat approach where all participants who were enrolled in intervention were included in the condition. Further research is needed to characterize participant engagement and impact on outcomes. For example, additional research may characterize the minimum engagement needed to attain meaningful gains, factors which contribute to engagement, as well as parent perceptions of intervention, important for community-based implementation.

There was no effect of intervention on positive PFA, and positive PFA proved to be predictive of student-teacher relationship. Future research may consider alternate mechanisms through which positive PFA may influence student-teacher relationship, which may inform intervention targets. Further, research may examine aspects of family functioning which may be more proximal to parent-mediated intervention as intervention targets, such as building community and a network of social support. Additionally, research is needed to explore the potential additive effects of directly targeting children's behavioral difficulties as well as parent well-being such as through blended interventions, sequential or simultaneous delivery of parent-directed (i.e., MBSR) and parent-mediated (i.e., IYPT) intervention approaches.

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