

A FEASIBILITY STUDY OF AN ONLINE ADAPTATION OF A VIDEO COACHING
PARENTING INTERVENTION: FILMING INTERACTIONS TO
NURTURE DEVELOPMENT (FIND) WEB-BASED

by

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A DISSERTATION

Presented to the Department of Counseling Psychology and Human Services
and the Graduate School of the University of Oregon
in partial fulfillment of the requirements
for the degree of
Doctor of Philosophy

September 2019

DISSERTATION APPROVAL PAGE

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Title: A Feasibility Study of an Online Adaptation of a Video Coaching Parenting Intervention: Filming Interactions to Nurture Development (FIND) Web-Based

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DISSERTATION ABSTRACT

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Doctor of Philosophy

Department of Counseling Psychology and Human Services

September 2019

Title: A Feasibility Study of an Online Adaptation of a Video Coaching Parenting Intervention: Filming Interactions to Nurture Development (FIND) Web-Based

This study examined the feasibility of a web-based adaptation of a promising parenting intervention and examined preliminary data on its effectiveness. Filming Interactions to Nurture Development (FIND) is a strength-based program designed to increase developmentally appropriate, supportive, nurturing behaviors among parents of young children. FIND is also theorized to increase parent sense of competence and decrease parenting stress. The present study adapted FIND to a web-based format to explore feasibility and conduct preliminary analyses on parenting outcomes.

Oregon parents with children aged 0 through 4 were recruited through online advertisements and in-person community recruitment. Participants completed online pre- and post-intervention surveys and participated in the FIND: Web-Based intervention (including sharing videos of parent-child interactions) using a secure online app on their mobile devices. Participants' first and last videos were also coded for frequency and consistency of positive responsive parenting behaviors.

Results showed that significant changes to both research and intervention protocols must be made prior to further research and implementation of FIND: Web-Based. Despite significant recruitment efforts, the small sample size coupled with high attrition rates

demonstrated that overall, FIND: Web-Based and the current research procedures were largely not feasible.

In terms of exploration of preliminary outcomes, no statistically significant results were found for group changes in parent sense of competence or positive parenting behaviors using video coding. On the other hand, participants did report a significant decrease in parenting stress at post-intervention (small to medium effect size), specifically in parent-child dysfunctional interactions (medium effect size).

The small sample of participants who completed the study reported overall satisfaction with the intervention. Many felt the content of the intervention was useful and relevant, found the videos helpful, and enjoyed the strength-based perspective. Most liked the convenience, flexibility, and/or accessibility of the novel web-based format. On the other hand, participants had challenges filming themselves with their child(ren) and sharing videos using the online app, as well as other technological difficulties. Implications of these findings include the importance of significantly modifying the study design, procedures, and online intervention format in order to increase feasibility of any future research on FIND: Web-Based.

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ACKNOWLEDGMENTS

I wish to express sincere appreciation to my advisor and chair, Dr. Beth Stormshak, for her advising throughout my doctoral studies and her patience and invaluable input in the preparation of this manuscript. I wish to thank Director of the Stress Neurobiology and Prevention (SNAP) Lab, Dr. Phil Fisher, for his bold and creative leadership of the lab, for generating the original idea for this study, and for trusting me with it and dedicating lab resources and funding to make it possible. A special thank you to SNAP Lab members Kyndal Howell and Margie Watkins for their knowledge of the FIND intervention, creative ideas in adapting it, and persistence in carrying out the implementation of FIND: Web-Based, as well as Alex Wagnon and Dr. Shannon Peake for their help and support. Finally, appreciation is due to my former clinical supervisors Dr. Melanie Berry and Dr. Lark Huang-Storms for fostering my love of early childhood work and providing excellent supervision and caring mentorship throughout the years. This study was conducted under IRB approval (protocol number 07102017.012).

This dissertation is dedicated to the many dear friends and loved ones who have supported me through six grueling, painstaking, and ultimately rewarding years of doctoral studies. This degree is yours, too.

I also wish to dedicate this dissertation to all the children, parents, and families I have worked with throughout the years. I am so grateful to have learned from all of you; bearing witness to your struggles and successes has been truly humbling and inspiring.

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CHAPTER I

INTRODUCTION AND LITERATURE REVIEW

This dissertation has three aims. First, this research explores the feasibility of a web-based adaptation of a promising parenting intervention for parents and caregivers of young children. Second, the study examines the feasibility of online recruitment and collection of research data from the target population through exclusively online methods, including several outcome measures. Finally, preliminary data on intervention outcomes is analyzed and discussed to lay the groundwork for a larger-scale, randomized controlled pilot study in the future. Preliminary outcome analyses that demonstrate positive impacts of the intervention can serve as rationale for investing in a larger study to more rigorously examine intervention outcomes.

The original intervention upon which this dissertation study is based, Filming Interactions to Nurture Development (FIND), is a strength-based video coaching program designed to increase the frequency of developmentally-appropriate, supportive, nurturing behaviors among parents and other caregivers of young children (Fisher, Frenkel, Noll, Berry, & Yockelson, 2016). Pilot data on the FIND intervention indicate that it increases positive, responsive parenting interactions (Nese, Anderson, Ruppert, & Fisher, 2016). The intervention has also been predicted to have outcomes that include decreasing parenting stress and increasing parenting sense of competence (Fisher et al., 2016). These hypothesized parent outcomes are based on a two-generation model, in which the theory of change targets specific processes in both parents and children (Fisher et al., 2016; Shonkoff & Fisher, 2013; Ramey & Ramey, 1998). FIND is a family-based intervention

for parents or caregivers of young children, designed to impact the underlying capabilities of caregivers (e.g., increasing positive skills or behaviors, thereby increasing parents' sense of their own competence and decreasing stress), which in turn may influence child outcomes. In the present study, the FIND intervention was adapted to a web-based format to evaluate its feasibility and explore preliminary data on its effects on parenting stress, parenting competence, and positive parenting behaviors.

A Feasibility Framework

The primary purpose of this dissertation study is to explore the feasibility of a web-based adaptation of a promising parenting intervention for parents and caregivers of young children. The study also seeks to examine the feasibility of online recruitment and collection of research data from this population through exclusively online methods. Finally, preliminary data on intervention outcomes is explored in order to inform a potential larger-scale, randomized controlled pilot study in the future. Feasibility frameworks provide a rationale for conducting a study with these aims (Onken, Carroll, Shoham, Cuthbert, & Riddle, 2014; NETSCC, 2012; Eldridge et al., 2016).

Best practice guidelines for developing new interventions suggest that it is important to conduct preliminary research prior to a larger-scale definitive intervention trial (Whitehead, Sully, & Campbell, 2014). For instance, the NIH Stage Model is a six-stage model of behavioral intervention development created to identify, define, and clarify the many steps in developing effective behavioral interventions (Onken et al., 2014). This model also seeks to help move interventions beyond efficacy research to effectiveness or implementation. One important aspect of doing so is modifying interventions in early-stage development and adaptation in order to promote ease of

implementation. The NIH Stage Model proposes a Stage 0 (i.e., basic science), followed by Stage 1, which includes all activities related to the creation and preliminary testing of novel behavioral interventions. These activities can include creating novel interventions as well as modifying, adapting, or refining existing interventions (Stage 1A). According to this model, Stage 1 culminates in feasibility and pilot testing (Stage 1B). This dissertation study spans NIH Stages 1A and 1B.

Preliminary research may include feasibility and pilot studies, as per the NIH Stage Model's Stage 1B. Researchers have diverse views about the precise definitions of feasibility and pilot studies (Eldridge et al., 2016). Many define feasibility studies as smaller-scale research done before a main study to determine if the larger study can be done (NETSCC, 2012). Feasibility studies are used to estimate important parameters needed to design the larger study (Tickle-Degen, 2013). In explaining the difference between feasibility and pilot studies, Whitehead et al. (2014) state that a pilot study may resemble the intended randomized controlled trial (RCT) in specific aspects of its research design (e.g., randomization and a control or comparison group). On the other hand, a feasibility study, the initial step in preliminary research, precedes a pilot study and therefore should not yet have all of these specific aspects. In other words, feasibility studies test smaller parts of the planned RCT first, while pilot studies are typically conducted next to test the operation of all parts together as planned in the RCT (NETSCC, 2012). Furthermore, some authors do not recommend that either type of study test treatment comparisons or estimate effect sizes of the experimental intervention (Whitehead et al., 2014).

On the other hand, other authors indicate that feasibility and/or pilot studies can include preliminary evaluation of participant responses to the intervention (Orsmond & Cohn, 2015). Bowen et al. (2009) propose that one appropriate area of focus addressed by feasibility studies is limited-efficacy testing. In other words, many feasibility studies are designed to test an intervention in a limited way. For instance, they may use a convenience sample, test intermediate rather than final outcomes, have shorter follow-up periods, or have limited statistical power (Bowen et al., 2009).

An alternative feasibility framework was developed by Eldridge et al. (2016) using broad consensus based on surveys of researchers, international meetings, and literature review. This conceptual framework defines the purpose of feasibility research as assessing whether a future study, project or development can be done. More specifically, feasibility studies are usually conducted in preparation for an RCT to assess the effects of a therapy or intervention. These authors state that feasibility and pilot studies are not mutually exclusive; instead, based on a literature review, pilot studies should be viewed as a subset of feasibility studies. The framework developed by Eldridge et al. (2016) posits that feasibility studies can include three types of studies: feasibility studies that are not pilot studies and both randomized and un-randomized pilot studies. This framework is largely consistent with one proposed by Bowen et al. (2009), described above, that includes preliminary efficacy testing as one aim of feasibility studies.

The current study is a feasibility and early-stage pilot study of an online adaptation of a parenting intervention, FIND: Web-Based. This study is based on the feasibility frameworks and guidelines outlined above. It most closely aligns with the

framework proposed by Eldridge et al. (2016) as it includes both elements of a non-pilot feasibility study and a non-randomized pilot study. The current research study has several distinct aims; all seek to provide rationale for further research on FIND: Web-Based and preliminary support for positive intervention outcomes. First, this study evaluates the feasibility of FIND: Web-Based in its novel online format. Second, it examines the feasibility of parts of a future RCT, including online recruitment, screening, data collection, and intervention implementation. Furthermore, this study explores preliminary data collected (e.g., research questionnaires from this population, videos filmed by parents or caregivers using their own mobile devices) to determine if this data is usable and therefore, if a larger-scale pilot study and/or larger RCT can be carried out in the future. Finally, several outcome measures are analyzed in order to explore the possibility of this novel intervention showing positive outcomes.

The Importance of Parenting/Caregiving Factors During Early Childhood

The original intervention that forms the basis for the current study, Filming Interactions to Nurture Development (FIND), is a strength-based video coaching program designed to increase the frequency of developmentally appropriate, supportive, nurturing behaviors among parents and other caregivers of young children (Fisher et al., 2016). The present study adapted the FIND intervention to a web-based format, evaluated its feasibility, and analyzed preliminary data to explore its effects on several aspects of parenting.

Extensive research demonstrates that sensitive and consistent caregiving during infancy and early childhood allows children to develop strong relationships with caregivers. Sensitivity of parents' interactions is often defined as interpreting the child's

needs appropriately, being alert to their signals, and responding promptly (Rosen & Rothbaum, 1993). Research from the attachment literature, with historical roots in attachment theory, has demonstrated the importance of brief, daily, sensitive caregiving interactions for young children. Ainsworth, Blehar, Waters, & Wall (1978) analyzed mother-infant interactions during activities including feeding, face-to-face play, close bodily contact, and crying and found that mothers' sensitive responses to their children during their first three months of life predicted a more harmonious relationship when the infants were 9 to 12 months old. Bowlby (1969) also claimed that maternal sensitivity during early childhood helps children develop secure attachment. Later work based on attachment theory, including Schore's work with fathers (2003), reiterated the benefits of secure attachment and broadened research on attachment development to other caregivers beyond mothers, who were the sole focus of most early attachment research.

Additionally, it is important for parents or caregivers to respond to young children's behaviors in a sensitive, nurturing manner, also known as parent responsiveness or responsivity (Bornstein, Tamis-LeMonda, Hahn, & Haynes, 2008). Much of this work has been developed into a model by the Harvard Center on the Developing Child (2016). The central concept to this model is "Serve and Return," which describes specific and important parent-child interactions. This model and concept are discussed below, in combination with other related literature. Examples of responsive parenting (i.e., "Serve and Return" interactions) include smiling in response to a child's coo or giggle, verbally acknowledging a verbal or nonverbal behavior, or interacting with a child in one or more of the above ways in a back-and-forth pattern (Fisher et al., 2016). Responsive parenting helps young children develop secure attachment (Zeanah, Berlin, &

Boris, 2011). Parental responsiveness also predicts language learning starting in infancy (Tamis-LeMonda, Kuchirko, & Song, 2014), supports children's communication and social skills (Tamis-LeMonda & Bornstein, 2002; Paavola, Kunnari, Moilanen, & Lehtihalmes, 2005), and impacts cognitive development and later intellectual achievement (van IJzendoorn, Dijkstra, & Buss, 1995). Finally, responsiveness also helps shape children's neurodevelopment (Fisher et al., 2016), including self-regulatory skills and executive function (Bernier, Carlson, & Whipple, 2010).

On the other hand, if parents or caregivers respond to a young child in an inconsistent or punitive manner or do not respond at all, this can result in interruptions or disruptions in neurodevelopment and may potentially lead to childhood impairments (Bakermans-Kranenburg, Van IJzendoorn, & Juffer, 2003; Fisher et al., 2016). Early adversity, such as early caregiving disrupted by neglect or trauma, is associated with neurobiological effects including disruptions in the functioning of the brain, immune system, and metabolic system (Levine, 2005; Gunnar & Fisher, 2006). These effects often result in lifelong consequences for health and well-being. Research on the development of attachment in young children in foster care supports these associations. Nurturing parenting behaviors help foster children develop organized, or secure, attachments to their foster parents or caregivers (Dozier, Stovall, Albus, & Bates, 2001). If children do not develop such organized attachments, their risk for behavioral and biological dysregulation is higher (Gunnar, Brodersen, Nachmias, Buss, & Rigatuso, 1996). This research demonstrates the importance of sensitive, responsive, and nurturing parenting for young children. Neglectful and disconnected caregiving can disrupt typical development and lay the foundation for difficulties that persist from infancy into

childhood, adolescence, and even adulthood. On the other hand, a small yet growing evidence base demonstrates the possibility of reversing some neurobiological effects of early adversity (Fisher et al., 2016), with significant evidence supporting the concept of neuroplasticity in young children (Bruce, Gunnar, Pears, & Fisher, 2013). For instance, one longitudinal study of almost 2,000 children under 2 years of age with child welfare involvement found that an increase in sensitive, stimulating caregiving predicted positive cognitive and behavioral outcomes 18 months later, when the children were toddler and preschool age (Jaffee, 2007). This was the case even despite a high level of neurodevelopmental risk during infancy and toddlerhood, providing evidence of neuroplasticity. More research on “two-generation models” is needed to explore how targeting specific underlying processes in both parents and children can improve outcomes (Fisher et al., 2016).

Furthermore, parenting interventions can be beneficial for children not exposed to early adversity and those with less risk factors as well. A review of 70 interventions for parents of young children found moderate effects on parental sensitivity and/or child attachment security to caregivers (Bakermans-Kranenburg et al., 2003). Interventions were found to be effective in families with both lower and higher levels of risk (e.g., those with multiple problems or stressors). Therefore, even families and children with less adversity and risk factors can benefit from parenting interventions during the early childhood period. Furthermore, Bakermans-Kranenburg et al. (2003) found that the child’s age at time of intervention was associated with differences in intervention effects: intervening with parents/caregivers of children between 6 months and 54 months (4 ½ years) old was most effective. Intervening with families prenatally, when children were

infants under 6 months, and when children were older than 4 ½ years were both less effective overall (Bakermans-Kranenburg et al., 2003). Overall, empirical support for the benefits of targeting caregiver behavior and parenting skills in the first several years of all children's lives is very strong.

Parenting Interventions During Early Childhood

Extensive evidence, including that reviewed above, has demonstrated the importance of parenting factors during early childhood and the potential for great positive impact of early childhood interventions. Considering the importance of parenting factors during early childhood, a variety of evidence-based interventions have been developed to specifically target the parent-child relationship. These interventions typically provide skills training and support for caregivers and have been found to be effective in improving behavioral outcomes and functioning (Gunnar & Fisher, 2006). As noted above, parental sensitivity and child/caregiver attachment are important intervention targets. Out of 70 parenting interventions targeting these outcomes, the most effective interventions consisted of a moderate number of sessions and had a specific behavioral focus (Bakermans-Kranenburg et al., 2003).

Behavioral parent training is a specific evidence-based approach that seeks to improve parenting behaviors in order to prevent and address children's disruptive behaviors (Chorpita et al., 2011; Comer, Chow, Cooper-Vince, & Wilson, 2013). Most behavioral parent training interventions are based on the social-interactional model (Patterson, 1982; Patterson, Reid, & Dishion, 1992). Often referred to as Parent Management Training (PMT), these interventions focus on teaching parents behavioral skills, primarily centered around providing children with positive reinforcement (e.g.,

praise and rewards) for appropriate behaviors while setting limits (e.g., removing attention) for inappropriate behaviors (Kazdin, 2010). An effective behavior management principle commonly taught in such programs is positive behavior support (PBS), which emphasizes using non-aversive, reinforcing adult-child interactions to promote development. PBS in children's early years includes developing a warm and trusting relationship, demonstrating attention and involvement, positively reinforcing skill development, and proactively structuring situations to promote children's self-regulation and positive behavior (Dishion et al., 2008).

Parenting interventions that can be categorized as PMT or stem from this approach include Parent-Child Interaction Therapy (PCIT), the Incredible Years parent training (IYPT), the Positive Parenting Program (Triple P), Parent Management Training – Oregon model (PMT-O), and Family Check-Up (Eyberg, Nelson, & Boggs, 2008; Webster-Stratton, Mostyn, & Marie, 2005; Menting, de Castro, & Matthys, 2013; Sanders, 1999; Fogatch & Patterson, 2010; Dishion & Stormshak, 2007). PMT and PMT-based interventions, most of which focus on positive behavior support (PBS) strategies, have been widely used and shown to be highly effective with preschool-aged children (Kazdin & Weisz, 2003; Maliken & Katz, 2013; Sanders, Markie-Dadds, Tully, & Bor, 2000).

For instance, a meta-analysis of fifty studies comparing Incredible Years to comparison groups found consistent significant effects of this intervention (Menting, de Castro, & Matthys, 2013). These included decreases in disruptive child behavior, with a mean effect size of $d = .27$ across informants. Overall, results indicated that IYPT is a

well-established intervention that improves child behavior by targeting parenting skills in a wide range of families (Menting, de Castro, & Matthys, 2013).

Similarly, the Family Check-Up (FCU) intervention (Dishion & Stormshak, 2007) was initially tested with school-aged children but has also been shown to have a range of positive significant effects with early childhood populations. After an initial session with parents, the FCU includes assessment by multiple raters and methods using an ecological focus. This assessment includes videotaping brief family interaction tasks in families' homes and coding these videos with a focus on salient domains of family management. Randomized controlled pilot studies of FCU for high-risk families of toddlers demonstrated that providing FCU intervention to caregivers when children were 2 years old reduced subsequent problem behavior at child age 3 and improved parent involvement at child age 4 (Shaw et al., 2006). Furthermore, analysis of videotaped home observations demonstrated that FCU involvement resulted in increased proactive parenting practices and reduced child negative behavior at age 3 (Gardner, Shaw, Dishion, Burton, & Supple, 2007). Finally, the Early Steps Multisite Study (Dishion et al., 2008) randomly assigned a subset of geographically and culturally diverse at-risk families to the FCU/EcoFIT intervention (i.e., Family Check-Up and additional subsequent services using an adaptive, tailored approach to intervention). This study found that intervention using positive behavior support practices when children were 2 years old prevented the growth of problem behavior at ages 3 and 4. In turn, reduction in the growth of child problem behavior was associated with greater parent/caregiver positive behavior support practices between ages 2 and 3. Intervention effect sizes were in the small range for child problem behavior ($d = .23$), but in the moderate range for

child problem behavior among the highest-risk children ($d = .3$). Effect size was in the moderate range for parent positive behavior support ($d = .33$). Therefore, this early childhood version of FCU is yet another behavioral intervention targeting parents/caregivers of young children found to have significant effects on both child and parent outcomes (Dishion et al., 2008).

Impact of Early Childhood Parenting Interventions on Parenting Stress and Competence

Parenting stress (i.e., parents' sense of stress as it relates to parenting their children) can have a negative impact on parent, child, and family outcomes and functioning (Dempsey et al., 2009; O'Connor, 2002). For instance, parenting stress has been found to significantly predict child behavior problems in a sample of typically-developing Korean preschoolers and their mothers (Kwon, 2007). Parenting stress was also found to covary significantly across time with child behavior problems in both typically developing and developmentally delayed children ages 3 to 9: a bidirectional relationship was found between parenting stress and child behavior problems, with each influencing the other (Neece, Green, & Baker, 2012). Parenting stress can even decrease or negate the positive effects of interventions. For instance, high parenting stress was found to counteract the effectiveness of early intervention for children with autism (Osborne, McHugh, Saunders, & Reed, 2008).

Many early childhood parenting interventions have been shown to have a significant impact on lowering parenting stress. For instance, Thomas, Abell, Webb, Avdagic, and Zimmer-Gembeck (2017) conducted a meta-analysis of 23 studies of Parent-Child Interaction Therapy (PCIT), with a total of 1,144 participants. These authors

demonstrated that across these studies, PCIT significantly reduced parenting stress as measured by the Parenting Stress Index (PSI), when compared with controls. After participation in PCIT, parent-related stress (i.e., Parent subscale of the PSI) had a mean difference of -6.98 (95% CI: -11.69 to -2.27) and child-related stress (i.e., Child subscale of the PSI) had a mean difference of -9.87 (95% CI: -13.64 to -6.09).

Parenting stress is largely influenced by parental locus of control: who or what parents believe has control of situations and stressors (Hassall, Rose, & McDonald, 2005). Parents who feel more efficacious or have a stronger sense of competence in their parenting skills or abilities likely feel that they have more control, even in stressful situations, and therefore have lower parenting stress. Thus, it is unsurprising that parenting interventions during early childhood have been shown to not only decrease parenting stress but also increase parents' or caregivers' perceived competence. For instance, two randomized control studies of a group behavioral parenting program focused on child noncompliance in preschoolers found that in addition to positive child outcomes, the parent training program also had a positive impact on parenting stress and sense of competence (Pisterman et al., 1992).

Overall, there is extensive evidence demonstrating positive outcomes of interventions for families of young children (i.e., infants, toddlers, and preschoolers). In particular, interventions targeting parenting skills and/or the parent-child relationship have been shown to be effective, as described above. This research literature forms the basis for Filming Interactions to Nurture Development (FIND), the strength-based video coaching program upon which this dissertation study is based. FIND is designed to increase the frequency of developmentally-appropriate, supportive, nurturing behaviors

among parents and other caregivers of young children (Fisher et al., 2016). Pilot data on the FIND intervention indicate that it increases positive, responsive parenting interactions (Nese, Anderson, Ruppert, & Fisher, 2016). The intervention is also predicted to have outcomes including decreasing parenting stress and increasing parent sense of competence (Fisher et al., 2016). The present study, which seeks to adapt FIND to an online format, explored preliminary data to determine if participation in this novel online adaptation of the FIND parenting preventive intervention was associated with a decrease in parenting stress and increase in parenting competence similar to that of other early childhood parenting programs.

Parenting Interventions Using Video Feedback or Coaching

Over the past two decades, an increasing number of interventions have incorporated video feedback. In video feedback interventions, parents are typically filmed interacting with their child and then watch these recordings with a therapist. The therapist draws the parent's attention to specific parenting behaviors and their effects on their child (Fukkink, 2008). Using video feedback in this way allows parents to reflect on their own parenting behaviors and watch firsthand how these behaviors affect their children (Landry, Smith, & Swank, 2006). Many video feedback or coaching interventions focus on building caregiving behaviors that are developmentally supportive and responsive. Some are based in attachment theory and posit that increasing these behaviors will lead to a more secure attachment and improved parent-child relationship (Fisher et al., 2016).

Bakermans-Kranenburg et al. (2003) conducted a meta-analysis of 70 studies examining the effectiveness of interventions that sought to improve children's attachment security ($n = 1,503$) and/or parental sensitivity to their children ($n = 7,636$). About 80%

of interventions did not include video feedback methods, while 20% included a video feedback component. These researchers found that interventions that focused on specific parent-child interaction patterns had larger effects; furthermore, interventions that included a video feedback component were more effective across outcomes (Cohen's $d = 0.44$) than interventions that did not include this component ($d = 0.31$).

Several meta-analyses of family programs with a video feedback component found empirical support for their effectiveness in improving parenting behaviors, parents' attitudes toward parenting, and child development (Fukkink, 2008; Fukkink, Trienekens, & Kramer, 2011). For instance, Fukkink (2008) conducted a meta-analysis of 29 methodologically rigorous studies ($n = 1,844$ families) of video feedback interventions with children of average age 2.3 years old ($SD = 2.7$ years). This meta-analysis included most of the studies that used video feedback methods in the Bakermans-Kranenburg et al. (2003) meta-analysis, discussed above. Fukkink (2008) demonstrated that video feedback interventions had at least moderate positive effects on parental attitude toward the child and parenting behaviors. A more recent meta-analysis examined 29 controlled studies of video feedback programs published between 1990 and 2014; all studies focused on children ages 0 to 12 years old and interventions sought improve parent and child behavior, parental sensitivity, and attachment (Balldin, Fisher, & Wirtberg, 2016). Over 40% of measurements across studies demonstrated moderate to large effects in the intervention groups as compared to the control groups, with largest effects in the areas of maternal sensitivity and child behavior (Balldin et al, 2016).

Although meta-analyses discussed above provide strong support for effectiveness of video feedback interventions, few studies separate the full intervention protocol from

its video feedback component. Smith, Dishion, Moore, Shaw, and Wilson (2013) sought to determine if adding a video feedback component to an evidence-based intervention leads to improved outcomes. In their study, the Family Check-Up (FCU) intervention (Dishion & Stormshak, 2007) was conducted with 79 high-risk families with toddlers exhibiting clinically significant problem behaviors at age 2. All caregiver-child interactions were videotaped; however, these researchers chose a quasi-random sample of families to whom they provided direct feedback on their videotaped interactions (Smith et al., 2013). Video feedback procedures consisted of caregivers viewing their interactions with their 2-year-old child and being guided by a therapist to identify effective parenting behaviors in the video. Path analysis was used to analyze relationships between variables at child ages 2, 3, and 5, including parent or caregiver negative relational schemas (i.e., networks of caregivers' beliefs and implicit interpretations that their child is purposely provoking or frustrating them) and parent-child coercive interactions (i.e., recurring negative interaction patterns during conflict that include use of an aversive behavior to end and "win" the dispute). Smith et al. (2013) found that adding the video feedback component at child age 2 predicted less parent/caregiver negative relational schemas of their children at age 3, which in turn decreased parent-child coercive interactions at child age 5 (Smith et al., 2013).

The Video-Feedback Intervention to Promote Positive Parenting (VIPP) is another video feedback intervention that seeks to enhance parents' sensitivity to their young children's signals and has had positive outcomes in a variety of childcare settings in Europe and the United States (Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2012). Yet another parenting intervention, Attachment and Biobehavioral Catch-up

(ABC), includes video coaching and targets dysregulation in young children in foster care by helping build relationships between children and their foster parents (Dozier et al., 2006). ABC helps parents provide children with an environment that enhances their regulatory capacities; the program teaches parents to follow the child's lead, provide physical support and affection (e.g., touching, cuddling, and hugging), and allow their child to express, recognize, and understand emotions (Schultz, Izard, & Bear, 2004). The ABC interventionist videotapes parent-child interactions during 10 weekly sessions so parents can see their own progress in applying new skills. Dozier and colleagues (2006) found that children whose families were randomly assigned to receive the ABC intervention had lower diurnal production of cortisol, a stress hormone, as well as lower problem behaviors as reported by their foster parents. These results indicate the promising and effective nature of video coaching within parenting interventions for young children.

Finally, the Marte Meo Method has strongly influenced the FIND intervention, on which the current study is based. Marte Meo is a video coaching program developed by Maria Aarts in the Netherlands and used by psychologists, family therapists, social workers, and early childhood nurses and teachers in over 30 countries, primarily throughout Europe (Aarts, 2000; Vik & Rohde, 2014). Marte Meo centers around improving the quality of interactions between caregivers and their children, which can in turn support children's social, emotional, and communication development and enhance the family's quality of life (Maughan, 2008). Marte Meo therapy includes caregivers viewing, analyzing, and discussing films of their moment-by-moment interactions with their children (Aarts, 1996). This program has been shown to facilitate healthy mother-

infant interactions in order to combat postnatal depression (Vik & Rhode, 2014). One qualitative study found that viewing their videos helped caregivers establish, re-establish, and support their attachment relationships with their children (Maughan, 2008). Marte Meo has also been used to effectively provide support for parents who recently adopted a child (Osterman, Moller, & Wirtberg, 2010). In addition, the program leads to reductions in child problem behavior at school as reported by teachers (Axberg, Hansson, Broberg, & Wirtberg, 2006), demonstrating effectiveness in addressing more distal child outcomes in addition to its positive impact on the parent-child relationship and interactions.

All the literature reviewed above indicates the effectiveness of using video feedback interventions in order to promote positive interactions between parents or caregivers and their children. Furthermore, the literature reviewed provides especially strong support for the effectiveness of such interventions with caregivers of young children under 5 years of age.

The “Filming Interactions to Nurture Development” (FIND) Intervention

Building on these interventions, and on the body of microsocial interaction research conducted at the Oregon Social Learning Center (Patterson, Reid, & Dishion, 1992) and more recently, the Stress Neurobiology and Prevention (SNAP) Lab, Dr. Philip Fisher and colleagues have developed a strength-based video coaching intervention (Fisher et al., 2016). The intervention, Filming Interactions to Nurture Development (FIND), is an individualized, strength-based program. FIND highlights brief “microsocial” video clips of parents or other caregivers engaged in interactions with their child as models of responsive, sensitive parenting behaviors (Fisher et al., 2016). The goal of FIND is to help caregivers recognize when and how they are responding to their

child in a developmentally supportive manner. This recognition of positive parenting behaviors is hypothesized to reinforce these behaviors so that they occur more frequently. By viewing their own positive interactions in the form of short video clips, caregivers may also enhance their ability to recognize their children's specific desires and needs and respond appropriately.

Caregivers following their child's lead has been associated with self-regulatory abilities in children (Barnard, 1999; van den Boom, 1994, 1997), a more distal outcome that FIND is hypothesized to improve. The FIND program encourages caregivers to wait for their child's initiation, share their focus of attention, and then to respond in a "serve and return" pattern of interaction. Ways of "returning a child's serve" include skills such as naming objects, people, actions, or feelings; or supporting and encouraging the child. Many of these skills have been associated with improving behavioral regulation in children, including support in the form of physical affection (Field et al., 2004; 2005) and naming and understanding emotions (Schultz, Izard, & Bear, 2004). FIND builds on these initial skills by encouraging caregivers to also engage in back and forth interactions with their children and notice cues that signal when a child is ready to end an activity and begin a new one (Center on the Developing Child, 2016; Fisher et al., 2016).

FIND also stems from a group of behavioral parent training interventions that focus on reinforcing parent and/or child strengths, including the KEEP ("Keeping Parents Supported") program (Buchanan, Chamberlain, Price, & Sprenghelmeyer, 2013). FIND uses a similar strength-based approach. Parent coaches or therapists highlight and reinforce behavioral skills that parents already use and prompt parents in specific ways in order to encourage their generalization of those skills (Nese et al., 2016). By focusing on

parents' strengths, the FIND program seeks to increase caregivers' sense of competence: their "beliefs that they are or can become good parents and that, despite any difficulties they experience, they have innate parenting capacities and know how to support their children" (Fisher et al., 2016). As their parenting competence increases, their parenting skills will likely improve; as these factors improve, their stress related to parenting will likely decrease (Fisher et al., 2016). Therefore, it is important that research on any novel parenting intervention, including adaptations of FIND, measure parents' perceived competence in addition to parenting stress. The current study includes preliminary outcomes to explore if participation in the novel online FIND adaptation is associated with an increase in parenting sense of competence and a decrease in parenting stress.

Additionally, the hypothesis that FIND may affect more distal outcomes such as child behavior (e.g., decreased problem behaviors) by improving child self-regulation is currently being tested in pilot studies. Because responsive parenting has been widely associated with improved child behavior, it is anticipated that children's behavior will also improve as a result of more responsive, sensitive parenting. Although this outcome is beyond the scope of the current study, its consideration is important for future studies of this novel adaptation of FIND.

Thus far, FIND has been tested and implemented in community samples using video-based, in-person coaching typically conducted in the family's home (Fisher, 2012). Several pilot studies that explore the effects of delivering FIND to at-risk families are currently ongoing; several other studies of FIND for childcare providers in early childhood education settings have recently completed data collection (Stress Neurobiology and Prevention Research Lab, 2017).

A preliminary study of FIND within the context of supervised child welfare visitation included coding videos of four at-risk mother-child dyads throughout their participation in FIND. Results indicated that developmentally supportive parenting behaviors, namely, “serve and return” interactions, increased systematically after each mother participated in FIND (Nese et al., 2016). Typically, the FIND element that was taught most recently was observed to increase in each subsequent video; many but not all of these increases carried through to a “maintenance” observation one week after the intervention was completed (Nese et al., 2016). Additionally, the mothers reported that they enjoyed the video coaching aspect of FIND because it clarified the parenting behaviors being discussed and they could directly see the impact of these developmentally supportive parenting behaviors on their children (Nese et al., 2016). These qualitative data are in line with previous literature, reviewed above, about the benefits of video coaching parenting interventions. It is important to measure changes in parenting behavior and interactions between parents and children in any adaptations of FIND in order to determine if the novel intervention results in changes to caregiving behavior and interactions. The present study seeks to do so by including a video coding component similar to the study described above to closely examine changes in parenting behavior. It also seeks to collect quantitative and qualitative feedback data about the novel intervention in order to ascertain participants’ own sense of the impact of intervention on their behavior and interactions with their children.

Adapting Interventions and Research to Web-Based Formats

The current study examines if it is possible to deliver the FIND program using primarily web-based technology, without in-person coaching. This was the first study to

adapt the FIND intervention to an online format. The internet has much to offer researchers as a research tool: Online methods can provide a way to pre-screen research participants and allow researchers to conduct studies without the expense of administering mailed or in-person surveys (Martinez, 2017). Online recruitment can also facilitate recruiting participants from larger pools of individuals with specific characteristics or experiences that may be difficult to find in local communities (Martinez, 2017). For example, developing mobile Internet technologies allows researchers to reach a wider and younger audience using mobile phones (Deering, Siminerio, & Weinstein, 2013). In this study, online methods allowed for the possibility of recruiting a more diverse sample that can be more easily generalized to the national population.

In addition, the ubiquity of smartphones and mobile applications, combined with health care providers' increasing use of electronic health records, patient portals, and secure messaging, offer many opportunities to connect clients with service providers and strengthen client or patient engagement in their own health and care in novel ways (Deering et al., 2013). For instance, recent surveys in the U.S. have found that over 30% of adults were eager to use their smartphones or tablets for health management or services (Shah, 2015). Over 60% of respondents to another survey indicated a desire to communicate with their providers electronically (Optum, 2012). Abowd (2011) projected that by 2016, the majority of clinically relevant data would be collected outside of traditional clinical settings, including via personal computers and mobile devices.

This rapidly expanding context of mobile, online collection of clinical information and delivery of health care services should include behavioral and

psychosocial interventions. Delivering a parenting intervention such as FIND in an online format can have several benefits and potentially fill gaps in services that remain with in-person interventions. First, a web-based format can increase access to interventions for families that live in more remote, inaccessible, or dangerous areas to which it may be difficult for interventionists to travel. In addition, a web-based format may be more appealing for families whose schedules are too busy to allow for a weekly in-person appointment, but who are willing to complete the intervention at their own pace and during times that are most convenient for them. Similarly, a web-based format may be more practical for parents who work long hours and/or during times that interventionists are typically available. Such a format would allow parents to complete the intervention during any time that is convenient for them (e.g., early morning hours, late night hours), even if these times would not be realistic for in-person services.

Online Family or Parenting Interventions

Other strength-based parenting interventions delivered online have produced promising results. For instance, several recent studies have demonstrated effectiveness of an online adaptation of the Triple P-Positive Parenting Program (Triple P Online, or TPOL). Sanders, Baker, and Turner (2012) found that parents who received TPOL rated problem child behavior, dysfunctional parenting styles, and parental anger lower, and rated confidence in their parenting role higher than those in a control group. Most of these changes were maintained, and in some cases, even increased, six months after program completion; most parents were also highly satisfied with TPOL (Sanders et al., 2012). The same team found similar results, with small to medium effect sizes, for the Triple P Online Brief, a low-intensity adaptation. At post-assessment, parents in the

intervention group showed improved parenting skills and greater confidence in dealing with their children's behavior concerns; child behavior problems did not change at post-assessment but interestingly, had a delayed effect and decreased in number and frequency at follow-up (Baker, Sanders, Turner, & Morawska, 2017).

On the other hand, some parenting interventions seem to be more effective in person than online. For instance, two versions of an intervention for parents of children ages 2 to 4 with a recent ASD diagnosis were studied (Keen, Couzens, Muspratt, & Rodger, 2010). The in-person version was delivered by professionals via a workshop and ten home visits with parents, while the online version consisted of a self-directed, video-based online intervention. The professionally supported intervention had greater effects than the online version in some outcomes, including children's development in social communication, children's improvements in adaptive behavior, decreased parenting stress, and increased parenting self-efficacy (Keen et al., 2010). It is logical to assume that in-person interventions may have greater effects on certain outcomes or for certain populations than online interventions. For this reason, online parenting interventions for families with young children should be studied further.

Rationale for the Current Study: Gaps in Literature

Of the studies of online parenting interventions (Sanders et al., 2012; Owen, Griffith, & Hutchings, 2017; Turner et al., 2015), the majority have focused on families of school-aged children (e.g., 5-10 years old). Sometimes, preschool-aged children (i.e., 3- to 4-year-olds) are included but are typically grouped together with older children rather than studied on their own (e.g., Baker & Sanders, 2017; Baker et al., 2017). There is a significant gap in research on web-based interventions for parents of younger

children (i.e., under 4 years of age). FIND: Web-Based focuses on serving parents and other caregivers of infants, toddlers, and preschoolers from 0 to 4 years old, filling a crucial gap in the literature.

Furthermore, the FIND intervention is unique in that it is strength-based and uses video clips of parents' and caregivers' own interactions with their young children in order to reinforce positive parenting behaviors. This study tested how feasible and possible it was to recruit participants, complete screening and informed consent, collect research data, and deliver the FIND intervention using a novel web-based approach. It sought to identify any difficulties and barriers in the above tasks in order to inform future research. The study addressed a gap in knowledge by exploring the feasibility of the FIND: Web-Based intervention and its acceptability to parents. The data collected in this study, including participant feedback, can be used to further develop the online implementation and lay the groundwork for further implementation and evaluation of FIND: Web-Based using more rigorous research methodology and larger sample sizes in future studies.

Additionally, very few online parenting interventions target families of young children *and* include a video coaching component. For instance, an ongoing randomized controlled trial is currently being conducted to study Family Check-Up (FCU) Online: an online adaptation of the FCU intervention for families of early adolescents (Danaher et al., 2018). The FCU Online includes pre-recorded videos but no video feedback or coaching component using families' own recorded videos (Danaher et al., 2018), such as those used in studies of in-person FCU/Early Steps interventions discussed previously (Dishion et al., 2008; Gardner et al., 2007; Shaw et al., 2006; Smith et al., 2013).

Alternatively, videoteleconferencing (VTC) methods have been used in several studies over the last five years to explore the delivery of child telemental health (TMH) care in real-time (Chou, Comer, Turvey, Karr, & Spargo, 2016), including several family-based TMH interventions (Crum & Comer, 2016). For instance, several trials have been conducted to explore the feasibility and effects of Internet-delivered Parent-Child Interaction Therapy (I-PCIT; Comer et al., 2015). These studies draw on VTC methods to deliver PCIT to families in their own homes. A live, interactive, web-based approach to family-based cognitive-behavioral therapy (CBT) for early-onset obsessive-compulsive disorder (OCD) has also been developed by Comer et al. (2014). Similarly to I-PCIT, this adaptation uses a VTC format for remote delivery of real-time therapy that includes both children and parents interacting with the remote therapist; this intervention has been explored using a single-case study (Comer et al., 2014).

Although such approaches can greatly increase access to intervention because families can be served regardless of their geographic proximity to providers, they do not address other barriers. For instance, delivery of interventions via live videoconferencing still requires scheduling live sessions during times that both a clinician and family are available. Furthermore, these approaches still rely on the availability and presence of highly-trained clinicians. While such an approach may be more appropriate for specific interventions and/or presenting concerns, it may not be necessary for a more broadly used preventive intervention such as FIND.

There are no known studies on online parenting programs for parents of young children that include video coaching or video feedback. Therefore, the hope of this study is not only to establish the feasibility of FIND: Web-based, but also to lend support for an

emerging but still very limited evidence base for web-based video coaching with parents of young children.

Similarly to the in-person version of FIND, the FIND: Web-Based intervention had a strength-based, targeted focus on parent-child interactions and developmentally supportive parent behaviors (i.e., “serve and return” interactions). FIND: Web-Based employed strength-based video coaching through an online platform in order to promote attentive and responsive interactions in parents and caregivers of young children (ages 0-4). It was proposed that doing so could have a positive impact on parents’ sense of competence and stress. Promising preliminary results that indicate the possibility of such intervention outcomes could provide rationale for further research on FIND: Web-Based. Additional research could seek to further examine the effectiveness of this novel intervention on these parent outcomes and explore its impact on child development.

Research Questions

This research study sought to address the following questions. The first set of research questions were related to online recruitment and data collection: Is it possible and feasible to recruit parents and other caregivers of young children for an online intervention study primarily through online methods? Is it feasible to collect usable research data from these participants online in a timely manner? More specifically, (a) How possible and feasible is online recruitment? What is the nature of attrition between participants’ initial expression of interest and full enrollment in the study? (b) How do participants engage with the technology and self-guided nature of online research? (c) Do participants complete the research questionnaires promptly on their own, or do they need

multiple reminders from the research team to do so? and (d) Does the data collected via online questionnaires include significant missing data?

The second set of research questions related to the feasibility of online intervention delivery, seeking to answer if it is possible and feasible to deliver the FIND intervention in a novel online format (i.e., “FIND: Web-Based”). More specifically: (a) How do participants engage with the technology and self-guided nature of the intervention? (b) Are the videos filmed by the parents or caregivers submitted in a timely manner? and (c) Are videos usable (e.g., have adequate lighting and sound) to edit in order to conduct the FIND intervention?

The third set of research questions related to feasibility and acceptability of FIND: Web-Based: (a) How do participants rate their satisfaction with various aspects of FIND: Web-Based, including its online format and delivery? (b) What positive feedback do participants provide that supports feasibility and satisfaction with the intervention? and (c) What constructive feedback do participants provide that can help this team improve the online delivery of the FIND: Web-Based adaptation for future studies?

The last set of research questions related to preliminary intervention outcomes using both quantitative and qualitative measures. First, do preliminary quantitative results of self-report questionnaires that participants complete before and after participation in FIND: Web-Based add to promising preliminary evidence for the positive impact of FIND on parenting? Are these results similar to those found in other video coaching parenting interventions? Specifically, is full participation in the FIND: Web-Based intervention associated with (a) an increase in parenting sense of competence? and (b) a decrease in parenting stress? The last questions sought to investigate the effect of the

intervention on positive, responsive parenting behaviors and parent/child interactions:

Does participation in the FIND: Web-Based intervention increase frequency and consistency of “Serve and Return” interactions? More specifically, is intervention participation associated with an increase in parent-child interactions demonstrating (a) affection, (b) responsiveness, (c) encouragement, and (d) teaching?

CHAPTER II

METHODS

Study Recruitment

Participants were recruited for this research study by a combination of online and in-person methods. Initially, recruitment primarily focused on online methods in order to explore feasibility thereof. Online recruitment methods included Facebook ads, posts in Facebook groups related to parenting, and posts on relevant Craigslist pages throughout the state of Oregon. Following a period of recruitment focused on the above channels, families on the contact database of the Stress Neurobiology and Prevention (SNAP) Lab were emailed. Classified advertisements were also placed in both online and paper versions of several local newspapers. Part of this study's aim was using web-based methods whenever possible, leading to an initial focus on online recruitment.

However, after about two months of difficulty recruiting and retaining adequate numbers of participants using only online methods, the recruitment focus changed to in-person local recruitment methods in and around Eugene, Oregon; limited recruitment was also completed in Portland, Oregon. Local recruitment methods included posting flyers at many local businesses, organizations, and parks, as well as providing flyers to staff at several organizations that provide services for young children (e.g., Child Development and Rehabilitation Center (CDRC) Eugene, CDRC at Oregon Health and Sciences University (OHSU) in Portland, Early Childhood Cares, Parenting Now, La Leche League). Furthermore, this author also met and worked with many community partners,

primarily preschools and daycare centers in Eugene, Oregon, in order to conduct in-person recruitment. These partners included university-based preschools (e.g., Moss Street, Vivian Oleum, Family Co-Op Center), private preschool or daycare centers (e.g., Big Little School, New Dream Daycare, EWEB Child Development Center, Unity Preschool), and church-based preschools (i.e., Congregational Preschool, O'Hara Catholic Preschool). Permission was sought from directors of daycare centers and preschools to engage in in-person recruitment of parents or caregivers on-site. Once permission was obtained, recruitment consisted of tabling, typically during child drop-off and/or pick-up time. In addition, outreach was conducted at a weekly Saturday playgroup for young children in Eugene, Oregon and at several community events for children and families and in Eugene and Portland.

In-person recruitment efforts primarily consisted of speaking to parents and caregivers, handing out paper flyers, and answering any questions about the research study. Preliminary screening was conducted (e.g., asking if the interested adult had at least one child within the appropriate age range). Next, parents or caregivers were referred to the online link to complete the full eligibility questionnaire and, if eligible and interested, enroll in the study.

In addition to in-person recruitment, in-person consent, enrollment, and/or completion of pre-assessment questionnaires was also proposed. However, this was not found to be feasible due to most parents' and caregivers' time constraints, inability, or unwillingness to complete informed consent, study orientation, or questionnaires at the above settings and times. A lab iPad was available on-site at most recruitment events in case parents or caregivers wished to complete any online steps during in-person

recruitment. Paper copies of materials were also available if this was preferred. Finally, this author also provided parents and caregivers with her contact information in case they wished to schedule a later meeting to complete screening, informed consent, and/or study enrollment in person (e.g., at the community setting, at their home, or at the research lab). However, no one requested a follow-up meeting in person; therefore, in-person contact was limited to recruitment of participants and in very few cases, eligibility screening via the lab iPad using the procedures noted above.

Participants

Participants who completed all parts of the study, including enrollment, pre-intervention assessment, FIND: Web-Based intervention, and post-intervention assessment, were 11 consenting adults (age 18 years or older) who were parents or primary caregivers of children ages 0 through 4 years (i.e., 0 through 59 months). All participants met the inclusion and exclusion criteria specified below. They were recruited using various methods described in detail above. Eligibility was determined using an online screening questionnaire via Qualtrics. Participants were required to attest that they were the legal guardian of the participating child and any other children who would appear in the videos, and that they could consent for the child(ren)'s participation.

Inclusion Criteria

Participants were required to be 18 years or older, be a parent or primary caregiver of a child aged 0 through 4 years (0 through 59 months), and live with their child(ren) in the state of Oregon. Due to the availability of an English-speaking FIND coach/editor and online materials only in English, participants were required to speak English as a primary language with their child(ren). Additionally, they were required

meet the following technological requirements: have access to an iPhone and/or an iPad; a working camera and microphone on one of these devices (e.g., capable of both capturing and playing video with sound); capability on their mobile device to download (via Apple's App store), install, and run the free "Box" app; a mobile operating system of a version current enough to be compatible with the Box app; enough free memory to support downloading, running, and uploading film on Box; and access to a reliable, secure Wi-Fi internet connection (e.g., a password-protected home network).

Furthermore, this study was limited to participants who had access to Apple mobile devices (i.e., iPhones and iPads). The possibility of also including Android users was considered. However, after exploring current technical limitations of the Box app, the secure file sharing application used to implement the intervention, it was concluded that parents or caregivers with Apple mobile devices would be able to complete the video-based coaching component of the program much more easily than those with Android devices. At the time of study design, the Box app for Android required much larger amounts of free memory to store video files. Therefore, it was decided that once the feasibility of FIND: Web-based is established for Apple mobile devices in the current study, future studies could explore the program's feasibility for Android and potentially, for other mobile operating systems. Because Box for Android has been developed more recently than the same app for Apple mobile devices (i.e., iOS), the research team hoped that the functionality of Box for Android would advance in the coming years, such that the video capabilities would become comparable to those in Box for iOS. Regardless, future studies could include non-Apple users in order to expand the reach and

accessibility of FIND: Web-Based to a wider range of families.

Exclusion Criteria

Potential participants were excluded from this study if they were under the age of 18, were not parents or primary caregivers or did not have at least partial custody of their child, were parents or caregivers only of children 5 years or older, lived outside of the state of Oregon, or reported that their primary language was not English. Additionally, families with current Child Welfare involvement were excluded from the study. Potential participants who did not own or have regular access to the required technology (see Inclusion Criteria, above) were excluded. Finally, potential participants who had previously participated in any other parenting intervention study with the SNAP Lab, as well as those who were unable or unwilling to participate in the FIND: Web-Based intervention were excluded.

Participant Attrition and Retention

33 participants were found to be eligible for the study and initially provided electronic consent via the online consent form to participate. However, of these 33 participants, eight (24.2%) were unable to be reached for the study orientation phone call or expressed that they were no longer interested before completing the call. One participant (3.0%) dropped out of the study during the orientation phone call, upon hearing further details about the study. 24 participants (72.7%) successfully completed the informed consent process with a researcher by phone and completed their orientation phone call. Finally, of the 24 who completed their orientation phone call, one participant (3.0% of those who had initially consented online) did not join Box after the orientation phone call and discontinued participation in the study. Therefore, between initial

electronic consent and initial study procedures (i.e., installing Box and joining their secure Box folder), 10 potential participants (30.3%) were lost to attrition.

23 participants began study procedures by joining their Box folder, as described above. Of these, 22 participants completed the pre-intervention assessment questionnaire, which included collection of child and family demographic data. 11 participants completed all study procedures, including pre-intervention assessment, FIND: Web-Based intervention, and post-intervention assessment. Further analysis of attrition and engagement at each stage after joining Box will be detailed in the first section of *Chapter III. Results*.

Participant Demographics

All participants consisted of parent-child dyads (or at times, triads, when an additional child within the study's target age range was a secondary participant). Each parent provided demographic information about themselves and their child(ren).

Parent participants. Of the 11 parent participants who completed the study with their child(ren), all parents identified as female. Ten participants (90.9%) described themselves as the participating child(ren)'s mother, while one (9.1%) described herself as an adoptive mother. The age of parent participants ranged from 27 to 46 years ($M = 34.9$, $SD = 6.38$). In terms of race/ethnicity of the parent participants, nine (81.8%) identified as White, one (9.1%) identified as Hispanic/Latina, and one (9.1%) identified as African American/Black. In terms of education level, three participants (27.3%) had completed a doctorate or other professional degree, three (27.3%) had completed a Master's degree, three (27.3%) had completed a Bachelor's degree, and two (18.2%) had completed some

college, but no post-secondary degree. Of note, all participants had completed at least some college.

Child participants. All participants were asked to list one child within the research study's target age range as the primary child participant. However, five participants (45.5%) also had a second child within the target age range living in their home. Detailed demographic information was not collected for additional children (i.e., siblings of the target child participant). However, these additional children were permitted to also participate in intervention activities if they were within the target age range and if the parent participant desired.

Of the target child participants ($n = 11$), parents identified six (54.5%) as being male and five (45.5%) as being female. Child participants ranged from 15 months to 4 years old at the time of pre-assessment ($M = 2.52$ years, $SD = 0.85$). However, secondary child participants (additional children within the target age range) were as young as three weeks and as old as 4 years, 7 months ($M = 1.38$, $SD = 1.84$). Of the primary child participants, parents identified eight (72.7%) as being White, one (9.1%) as Hispanic/Latino, one (9.1%) as African American/Black, and one (9.1%) as mixed-race.

Family demographics. In terms of household composition, all children ($n = 11$) lived with their mother, who participated in the study as the parent participant. Ten children (90.9%) also lived with their father, and one child (9.1%) lived with two mothers. All participants were part of two-parent households. Eight participants (72.7%) were married, two (18.2%) were cohabitating with a romantic partner, and one (9.1%) was not in a romantic relationship but living with the participating child's father. Six children (54.6%) lived with one sibling and one child (9.1%) lived with two siblings; the

remaining four children (36.4%) did not live with any siblings. In addition to the above family members living in the home, one participant (9.1%) also identified a grandmother living outside of the home as a regular caregiver. When asked after intervention completion, five parent participants (45.5%) named their partner, spouse, or husband as an adult in the household who would have also liked to participate in FIND: Web-Based. The remaining six participants did not identify any other adult who would have liked to participate with them.

In terms of socioeconomic status (SES), well over half of this sample was likely middle class or above, based on the Oregon median family income (U.S. Census Bureau, 2017) and a common definition of a middle-income family making 67-200% of an area's median income (Pew Research Center, 2015). Participants reported their income by choosing one of several income ranges. Five participants (45.5%), or almost half of the sample, reported a total annual household income over \$75,000. One participant's (9.1%) annual household income was \$60-74,000 and two participants' (18.2%) was \$45-59,000. Therefore, eight participants (72.7%) of those who completed the study were likely to be at least middle class. The remaining three participants (27.3%) reported an annual household income in the \$15-29,000 range.

In order to complete a more thorough analysis of SES factors, likelihood of family poverty was calculated based on the total annual income range and household size (i.e., number of members) reported by each participant. These calculations were completed using 185% of the 2018 federal poverty guidelines (FPG) as a cutoff for poverty (U.S. Department of Health and Human Services, 2018). 185% of the FPG is a cutoff level used in Oregon to determine family eligibility for food benefits (e.g., WIC and SNAP)

and child care assistance (Partners for a Hunger-Free Oregon, 2018; Pearce, 2017). Because participants did not specify their exact household income, but rather chose from multiple \$14,000 ranges, total annual household income was estimated to be in the middle of each range for all participants. Based on these calculations, three (27.3%) participants who completed the study were likely part of low-income families living in poverty. Furthermore, of the 11 participants who completed the study, five (45.5%) reported that they were receiving some form of government assistance, typically some combination of health care (i.e., Oregon Health Plan), food assistance (i.e., Supplemental Nutrition Assistance Program (SNAP) and/or the Women, Infants, and Children (WIC) Program), and/or child care assistance.

In terms of employment status, five participants (45.5%) reported that they were working outside of the home full time and three (27.3%) worked part time. Three participants (27.3%) reported that they were raising their child(ren) full time and not working outside of the home.

Consistent with study eligibility requirements, all families spoke English as a primary language in the home. Two families (18.2%) spoke one or more additional languages in the home. These secondary languages included were Spanish, French, and American Sign Language (ASL).

Attrition Analysis: Demographics of Participants Lost to Attrition

In addition to the 11 participants described above who completed the research study, 11 other participants consented for the study, completed study orientation by phone, and completed the pre-intervention assessment questionnaire (including demographic information) but did not complete the intervention. Overall, some

significant differences were found between the demographics of participants lost to attrition and participants who completed the study. These two groups were fairly similar in other ways. These similarities and differences will be discussed next.

Parent participants. Of the 11 parent participants who did not complete the study with their child(ren), ten (90.9%) identified as female and mothers, while one (9.1%) identified as male and was the participating child(ren)'s father. On the other hand, all participants who completed the intervention and study were female and mothers. Parents who completed the study were on average 5 years older ($M = 34.91$ years, $SD = 6.38$) compared to participants who dropped out prior to study completion ($M = 29.91$, $SD = 6.19$). In terms of race/ethnicity, the sample of parent participants who dropped had a higher proportion of multiracial parents (two participants, or 18.2%), compared to no multiracial participants but one Hispanic/Latina and one African American/Black parent among the completed participants. One participant lost to attrition identified as "Other" but did not specify further.

In terms of educational level, parents who dropped out of the study completed less formal education overall compared to those who completed the full intervention and study. Specifically, none of the dropped participants had completed doctorate or professional degrees, compared with three participants (27.3%) with such degrees who completed the intervention. One dropped participant (9.1%) had completed a master's degree, compared with three (27.3%) participants with master's degrees who completed the intervention. Two dropped participants (18.2%) had completed a bachelor's degree, compared with three (27.3%) with bachelor's degrees who completed the intervention. A greater proportion of those lost to attrition had completed associate degrees or less: three

dropped participants (27.3%) had completed an associate degree, compared to none who completed the intervention, and four dropped participants (36.4%) had completed some college but no post-secondary degree, compared to two (18.2%) who completed the intervention. Finally, one dropped participant had obtained a high school diploma or equivalent, while all participants who completed the study had completed at least some college. Therefore, on average, participants lost to attrition had completed less formal education and advanced degrees than those who completed the intervention.

Child participants. Compared to the families who completed the intervention, less participants who were lost to attrition also had a second child within the study's target age range (3 dropped participants, or 27.4%, as compared to 5 participants, or 45.5%). A greater proportion of dropped participants' target children were female (8 female children, or 72.7%, and three male children, or 27.3%), compared to nearly equal parts female and male children among participants who completed the study. No significant difference was found between the two groups in the average age of the target child.

Racial/ethnic demographics of children were also similar, with eight (72.7%) White children in both dropped and completed participant groups. The demographics of the remaining children varied somewhat, with two mixed-race children (18.2%) and one Hispanic/Latino child among the participants who dropped out of the study, compared to one mixed-race child, one Hispanic/Latino child, and one African American/Black child among the participants who completed the study.

Family demographics. Family characteristics between participants lost to attrition and those who completed the intervention and study were similar overall, with

several notable differences. All children of participants who dropped out of the study lived with their mother; similarly to completed participants, one child (9.1%) also lived with a second mother. Fewer families who dropped out of the study also had a father living in the home (i.e., eight children, or 72.7%, of participants lost to attrition also lived with a father, compared to ten children, or 90.9%, of completed participants). Two of the participants lost to attrition (18.2%) were part of single-parent households, while no single-parent households were among those who completed the study. Marital and relationship status was similar in both groups. Seven (63.7%) of participants lost to attrition were married and one (9.1%) was engaged, compared to eight (63.7%) married participants who completed the study. Two (18.2%) participants in both the completed and the dropped groups were cohabitating with a romantic partner. One (9.1%) participant lost to attrition was not in any kind of romantic relationship and not living with a partner or co-parent, compared to one (9.1%) participant who completed the study who was not in a romantic relationship but living with the participating child's father.

Overall, fewer families who dropped out of the study had multiple children living in the home. Three families (27.3%) of those lost to attrition had two children (i.e., the target child and one sibling), two families (18.2%) had three children (i.e., target child and two siblings), and the remaining six families (54.6%) indicated that only the participating child lived in the home with no siblings. These family compositions were different than those of participants who completed the study, six of whom (54.6%) had two children and one of whom (9.1%) had three children. As noted above, participants who completed the study were, on average, about 5 years older than those who were lost

to attrition. Therefore, differences in number of children in the home may be partly a result of age differences between the parents in each group.

In terms of socioeconomic status, based on Oregon median family income and definition of middle class described previously (Pew Research Center, 2015), about half of participants lost to attrition (6, or 54.5%) likely belonged to the middle class. About half (5 participants, or 45.5%) were of lower SES based on Oregon median family income. More specifically, only two participants (18.2%) of those lost to attrition reported a total annual household income over \$75,000, compared to five (45.5%) participants who completed the study. One dropped participant's (9.1%) annual household income was in the \$60-74,000 range and three dropped participants' (27.3%) incomes were in the \$45-59,000 range (similar to the sample of participants who completed the study). However, of participants lost to attrition, almost half (five, or 45.5%) made below 67% of the Oregon median family income, a typical threshold for middle-income families, in contrast to only three participants (27.3%) who completed the study falling below middle class. Of the above five participants lost to attrition, one (9.1%) reported an annual household income of \$30-44,000 and two (18.2%) reported an annual household income of \$15-29,000. Although the above was fairly similar to the three participants in the completed group with annual household incomes of \$15-29,000, nobody among the participants who completed the study reported annual household incomes of under \$15,000 per year. In contrast, one participant (9.1%) who was lost to attrition reported an annual household income of \$5-15,000 and another participant (9.1%) lost to attrition reported an annual household income of under \$5,000.

Furthermore, based on calculations using household income and household size, described previously, over half (6 of 11, or 54.5%) of participants lost to attrition were likely living in poverty. This contrasts with only a quarter (3 of 11, or 27.3%) of participants who completed the intervention. Furthermore, a significantly greater proportion of participants who dropped out of the study reported that they were receiving some form of government assistance: eight (72.7%) participants, compared to five (45.5%) in the group that completed the study. Of the eight dropped participants who were receiving assistance, the majority (five, or 45.5% of dropped participants) were receiving both food assistance (i.e., SNAP and/or WIC) and health care (i.e., Oregon Health Plan). Three dropped participants (three, or 27.3%) were only receiving food assistance, while three dropped participants (27.3%) did not indicate receiving assistance of any sort. On the other hand, three participants who completed the intervention (27.3%) were receiving child care assistance (i.e., subsidy or Head Start) in addition to other forms of assistance, while nobody in the group lost to attrition reported receiving government assistance with child care.

In terms of employment status among participants lost to attrition, five participants (45.5%) reported that they were working outside of the home full time, and three (27.3%) reported that they were raising their child(ren) full time and not working outside of the home. These results were the same in the group of participants who completed the study. However, differences were found in the remaining three participants in each group. Of participants who dropped out of the study, two (18.2%) were full-time students and one (9.1%) was self-employed; in contrast, the three remaining participants (27.3%) of those who completed the study worked part-time.

Consistent with study eligibility requirements, all families spoke English as a primary language in the home. Three families (27.3%) lost to attrition also spoke Spanish in the home, compared to two families (18.2%) who completed the study who each spoke both Spanish and an additional language.

Overall, many characteristics were similar between participants who completed the study and those who did not, including the participating children's mean age and the identified race/ethnicity of the participating children and parents. However, many more of the participating children lost to attrition were female. Several families who dropped out of the study were single-parent households, while all families who completed the study had two parents living in the home. Furthermore, based on the differences discussed above, it can be concluded that the parent participants lost to attrition were overall younger, had less post-secondary formal education, and were of lower SES (i.e., about twice as many likely living in poverty, almost twice as many receiving government assistance) when compared to participants who completed the study. To a lesser extent, participants lost to attrition were more likely to be a full-time student or self-employed compared to working part-time; on the other hand, the proportion of participants working full-time and stay-at-home-mothers were the same across both groups.

Procedures

Electronic Informed Consent

Informed consent was obtained electronically by participants reading and electronically signing an online consent form via Qualtrics. Participants had options to sign the consent form before, during, or after their phone orientation with a research staff member in order to have the opportunity to further discuss informed consent and have

any questions answered. Furthermore, all participants were emailed a PDF copy of the consent form so that they could review and/or complete it during or after their phone orientation and refer to it at any time thereafter.

Informed Consent Process and Phone Orientation to Research and Intervention

Participants had one scheduled phone contact with a research staff member. As part of the feasibility study, the optimal point of time for this phone contact was explored (i.e., before or after each participant electronically signed informed consent and completed the pre-intervention online questionnaires).

Prior to the orientation phone call with a researcher, all participants were emailed a link to return to the online consent form (if they had not yet signed it) or a copy of the consent form (if they had already signed it online). If participants had not yet signed the online consent form on their own, the phone call began by completing the informed consent process. If the participant had already signed the online consent form on their own, the phone call began by reviewing a summary of informed consent, checking for understanding, and answering any questions. Following the completion of oral informed consent and a reminder to electronically sign the consent form on Qualtrics as soon as the participant was able to do so, the researcher assigned a unique research ID number to the participant. The researcher collected the participant's address in order to mail them checks for reimbursement, and verified their full name, phone number, and email address that they provided in their initial Qualtrics survey.

The researcher then oriented the participant to Box, the secure file sharing application that was used to deliver the FIND: Web-Based intervention. Each participant was also emailed a copy of the FIND: Web-Based participant guide ("FIND: Web-Based

Guide”). The researcher reviewed technology steps and guidelines to help the participant successfully film themselves and their child(ren). The FIND: Web-Based Guide that was emailed to the participants and uploaded to Box also included this information.

Pre-Intervention and Post-Intervention Assessment via Online Questionnaires

Participants were asked to complete online surveys using Qualtrics both before and after completing the FIND: Web-Based intervention. The purpose of these surveys was to collect demographic data about participants, their child(ren), and their families; assess intervention effects on parenting stress and sense of competence; and collect participant feedback about the FIND: Web-Based intervention. The link for each Qualtrics questionnaire was placed in each participant’s secure Box folder. The questionnaires did not ask participants to enter any names. Instead, participants were instructed to enter their unique research ID code that they had been given during their orientation phone call into the questionnaires to maintain confidentiality.

FIND: Web-Based Intervention

A trained FIND coach, separate from this author and part of the research team, delivered the intervention to families, including serving as the editor for the video coaching component. FIND: Web-Based was delivered via Apple iOS mobile devices (i.e., iPhones and iPads). Therefore, only parents or caregivers who had access to an Apple mobile device with the capability to record video and run the Box app were eligible for the study. Raw and edited videos and other intervention materials were all shared via Box, a secure online file-sharing app. The Box comment function was also used for the FIND coach to communicate with each participant, and optionally, for the participant to communicate with their coach.

FIND: Web-Based began with the coach uploading an informational introduction video and a PDF handout about “Serve and Return” parent/child interactions. The FIND coach left the participant a comment encouraging them to review these materials and then record their first 10-minute raw film within one week. Further reminders to film were sent as needed via the Box comments function and/or other modes of communication (e.g. phone, text, email). Participants were instructed to ask somebody else, such as a spouse or co-parent, a family member, or a friend, to film them. Alternatively, they were instructed to set their phone or tablet onto a stable surface and direct it at themselves while interacting with their child. Participants were instructed to film only themselves with their child(ren). Videos containing other adults, as well as videos containing any child nudity, were deleted and the parent was asked to upload another film containing only themselves and the child(ren) for whom they had provided consent.

Once each raw film was uploaded, it was edited by the FIND coach to highlight examples of a specific type of developmentally supportive behavior (“FIND element”) such as sharing the child’s focus or naming objects, people, actions, or emotions. Videos were edited using supplemental text and voiceover to replace the in-person coaching used in all previous adaptations of the FIND intervention. The additional video content included a frame-by-frame analysis of micro-social interactions. The edited film was uploaded to the Box app within five business days after the raw footage was uploaded by the participant. Participants received an automatically generated Box notification via email when their film was ready to view. Upon logging into the Box app, parents received instructions via the Box comment feature to: (1) review an informational handout and educational video about the new FIND element, (2) view the edited film, (3)

notice instances of the FIND element in their own interactions with their child(ren) over the next week and (4) record and upload the next 10-minute film segment within a week.

The FIND curriculum consisted of five FIND elements, or specific developmentally supportive caregiving behaviors. The process described above (i.e., record and upload raw film, receive notification that edited film is ready, view educational materials and edited film) was repeated until all five elements were covered.

Two of the raw films that participants uploaded as part of the FIND intervention were also coded for changes in parent-child interactions. Coding occurred after all participants completed the intervention and all research data were collected.

Time Commitment and Pace of Engagement

The initial phone orientation took approximately 20-30 minutes. The two online questionnaires, at pre- and post-intervention, took approximately 30-40 minutes each; therefore, both assessments took about 1 to 1 ½ hours to complete in total. Participants were told that the overall total length of the FIND: Web-Based intervention would vary, depending on how quickly they uploaded their raw films and reviewed edited films and written materials. Initially, the intervention was estimated to take approximately 5-6 hours over the course of 4-10 weeks to complete. Altogether, full study participation was estimated to take approximately 5-12 weeks. These time estimates were shared with potential participants during the informed consent process.

As part of this feasibility study, this author was interested in learning how parents and caregivers would engage in the web-based process, including how long it would take them to complete online activities and upload film. It was predicted that there would be some cases in which participants' pace of completing program activities would be

inordinately slow. The FIND coach and/or research team provided reminders to encourage parents/caregivers to engage and continue participation. However, if a participant did not upload new film within seven days of receiving materials and being sent a notification via Box and was unresponsive to three further attempts to contact them (e.g., three successive reminders via Box, email, and/or phone), they were discontinued from the study, barring unusual circumstances (e.g., known family illness or emergencies that interfered with their participation). Additionally, if a participant did not complete all FIND: Web-Based intervention and research activities within 18 weeks, they were discontinued from the study, barring unusual circumstances as noted above.

Measures

All measures, except the PSI (due to copyright), are included in their entirety in the appendices. Summaries are provided below.

Frontiers of Innovation (FOI) Demographic Questionnaire

The FOI Demographic Questionnaire is an FOI measure used in previous research on FIND. It was administered during the pre-intervention assessment only. Primary questions included the age and racial/ethnic identity of the parent/caregiver and participating child, the parent/caregiver's relationship to the child, basic family and household information, and socioeconomic status (e.g., educational level, employment status, household income). Secondary questions include more detailed questions about the child's development, family, and household.

Parenting Sense of Competence Scale (PSOC)

This 18-item scale has been used in many previous FIND research studies and is based on a widely validated measure by Johnston & Mash (1989). The measure is in the

public domain and is therefore included in Appendix B. It was administered during both the pre-intervention and post-intervention assessments in order to track changes in parents or caregivers' sense of competency over time. Participants were asked to rate items on a 1 to 4 Likert scale, from "Strongly Disagree" to "Strongly Agree."

Parenting Stress Index – Version 4 – Short Form (PSI-4-SF)

This 36-item measure has also been used in many previous FIND studies and is based on the Parenting Stress Index (Abidin, 1995). The PSI-SF is a brief version of the full PSI, a widely used and well-researched measure of parenting stress. The PSI-SF has 36 items from the original 120-item PSI; all items are identical to those in the original version. It consists of questions related to different sources of parenting stress and parents' ability to cope with these stressors. Most items are rated on a 5-point Likert scale, from "Strongly Disagree" to "Strongly Agree," with a neutral "Not Sure" option. Three items utilize slightly different 5-point scales, such as asking participants to rate level of difficulty or estimate the number of bothersome child behaviors they experience. PSI-SF yields scores on the following subscales: 1) Parental Distress, 2) Parent-Child Dysfunctional Interaction, and 3) Difficult Child. Similarly to the PSOC, the PSI-4-SF was administered during both the pre-intervention and post-intervention assessments in order to track changes in parenting stress over time.

Frontiers of Innovation (FOI) Participant Feedback Form

This 14-item feedback form is based on an FOI measure; for this study, this author also added several questions specific to the online adaptation of FIND. Participants were asked to complete this measure at post-intervention only. The first seven items asked participants to rate their satisfaction with various aspects of FIND:

Web-Based on a 10-point Likert scale. Six additional items were open-ended and elicited feedback about intervention content, online format, and technology. Finally, one item asked participants if they would have liked to have another adult (e.g., a partner, another family member) participate with them; this item seeks to assess the impact of the current study's limitation of enrolling only one parent/caregiver per family. Participant answers to the feedback questions were analyzed for this study to inform recommendations about modifications to the intervention and its online delivery for future pilot studies.

Video Coding Measure: PICCOLO

Participants submitted five 10-minute videos of themselves interacting with their child(ren) as part of the FIND intervention. The participants' first and last videos were coded for frequency and consistency of sensitive, developmentally supportive interactions using the Parenting Interactions with Children: Checklist of Observations Linked to Outcomes (PICCOLO) tool (Roggman et al., 2013). PICCOLO is an observational instrument used to measure positive parenting in parents of young children (Roggman et al., 2013). It consists of 29 observable positive parenting behaviors that reflect four domains: affection, responsiveness, encouragement, and teaching (Brookes Publishing, 2019). Each behavior is rated on a 0 to 2 scale, with 0 signifying its absence and 2 signifying its consistent presence. PICCOLO has been found to be reliable, valid, and culturally sensitive (Roggman et al., 2013). It was developed to allow practitioners to show parents what they can do to support their children's development (Brookes Publishing, 2019). Therefore, it was chosen as an appropriate video coding measure.

Research Design and Data Analyses

This study used a quasi-experimental, one-group (within-subjects) pre-test/post-test design. It also included elements of mixed-methods research, with qualitative analysis of open-ended participant feedback. As noted above, the research was planned as a feasibility study, with the primary goal of building a foundation for a future pilot study and randomized controlled trial (RCT). Therefore, the primary goal was not to test intervention outcomes, but to explore the feasibility of online eligibility screening, informed consent, study enrollment, data collection methods, and the FIND: Web-Based intervention. Nevertheless, comparisons of parenting sense of competence, parenting stress, and positive parenting behaviors between pre- and post-intervention were included as preliminary outcome measures, both to explore the feasibility of these assessments and to explore if the intervention showed any promising effects in these areas.

Quantitative Analyses

Quantitative analyses were conducted using *SPSS Statistics, Version 25*. Descriptive statistics were used to analyze demographic data. For instance, percentages of parents/caregivers and children of each racial/ethnic group, gender, age range, and caregiver type (e.g., biological parent, stepparent, grandparent, etc.) were computed. Additionally, attrition data was calculated to determine what percentage of participants opted out of the study after viewing the consent form and what percentage of participants dropped out of the study after enrolling. Aggregate data from participants who opted out prior to consenting to the study, as well as from those who dropped out after consenting but before completing the study, were similarly analyzed in order to contribute to program evaluation data for future FIND: Web-Based studies.

Participants' engagement in the study, including the pace at which they completed online intervention activities, was tracked and descriptive statistics were calculated. Range and average total length of intervention completion, range and average participant time to upload each new film, and range and average time to access new materials were calculated.

The feasibility of online data collection was also explored by examining the number of participants who completed each questionnaire and the percentage of missing data. In addition, participants' engagement with the research assessments was analyzed by calculating the range and average duration of research completion, the range and average time participants took to complete pre-assessment after enrolling in the study and receiving their Qualtrics link, and the range and average time participants took to complete post-assessment after completing the FIND: Web-Based intervention.

To analyze preliminary data on the effects of the intervention, total scores for parenting sense of competence (PSOC) and parenting stress (using the Parenting Stress Index, or PSI) were computed based on participants' Likert scale responses to these measures. Scores for the four PSI subscales were also computed. All PSI scores (i.e., subscale scores and total score) were translated into *T*-scores. Next, because normative data for the PSI were available, the PSI scores were translated into percentile rank scores. Once the above scores were obtained for all participants, a series of paired sample (i.e., dependent observation) *t*-tests were conducted using *SPSS* to examine changes in parenting sense of competence and parenting stress from pre- to post-intervention. Correction was necessary to account for multiple comparisons (i.e., five total comparisons). Control of family-wise error (FWER; for instance, via a Bonferroni

correction) was deemed too conservative due to resulting low power. This was especially true considering this study's small sample size, particularly after accounting for 50% of participants lost to attrition. Therefore, controlling the False Discovery Rate (FDR) was determined to be a more appropriate correction method that could result in greater power given the small sample size. Due to this study's exploratory nature and its purpose as the basis for further research, rather than to make any definitive claims about the intervention's effectiveness, an FDR of .10 (i.e., 10% expected rate of false discoveries) was chosen. After *t*-tests were conducted for each outcome variable, *p*-values were adjusted using the Benjamini-Hochberg correction (Benjamini & Hochberg, 1995) to determine statistical significance of each *t*-test result. For each of the intervention outcomes, effect size based on Cohen's *d* (Cohen, 1969) was calculated. Statistical power was computed using the *G*Power* application (Buchner, Erdfelder, & Faul, 1996).

In order to examine changes in parenting behavior between the beginning and end of the intervention, the first and last videos submitted by participants were coded using the PICCOLO tool. It was decided that all videos of participants who had completed at least half of the intervention (i.e., completed at least three of six online sessions and uploaded at least three of five raw films) would be coded. Therefore, the first and fifth films were coded and compared for participants who completed the entire intervention. For participants who did not complete the intervention but did upload at least three films, their first film was compared against the last film that they uploaded prior to discontinuation of participation in the intervention. Therefore, a total of 13 participants' first and last films were coded: 11 had completed the full intervention, while 2 had

completed at least three of six online sessions and had uploaded three raw films out of the total five before dropping out of the study.

All 26 raw films were pre-screened by the FIND coach (who had also served as the editor, and was a different member of the research team than this author) to determine their suitability for video coding. Four videos were flagged for potentially not being suitable for video coding (e.g., due to participant and/or child's faces being blocked, or parts of a video not having audio). This author reviewed these four videos prior to coding in order to determine their suitability. In all four cases, the identified problems did not interfere with video coding enough to require full substitution of the video with another one. All other videos were deemed to be fully suitable for video coding using PICCOLO by the FIND coach.

The FIND coach renamed all videos without participant identifiers to ensure that this author was not aware which participant each video belonged to and which were first vs. last films. Coding using the PICCOLO tool was completed in this deidentified manner. PICCOLO codes were assigned for frequency and consistency of sensitive, developmentally supportive parent-child interactions. Subtotal scores were obtained for each video by adding together all items for each of four categories on the PICCOLO: responsiveness, affection, encouragement, and teaching. A grand total score was also calculated for each video by adding together all four subtotal scores.

Once coding was completed, other members of the research team shared a key with this author that identified which videos were first vs. last films. Participant videos were also linked to participant research IDs at this time to assist with analysis. Difference scores were calculated to determine change from pre- to post-intervention in each of the

four PICCOLO categories of developmentally supportive, sensitive parenting interactions, as well as change in the total PICCOLO scores. A paired-samples *t*-test was conducted to determine the direction and statistical significance of change in total PICCOLO scores between pre- and post-intervention.

It is understood that a causal claim cannot be made from pre- vs. post-intervention comparisons due to this study's lack of a control group. Therefore, these results are viewed as preliminary results indicating trends alone and not significant intervention effects and will be interpreted in combination with parent/caregiver feedback about their experience with the FIND: Web-Based intervention. In order to analyze quantitative aspects of participant feedback data, descriptive statistics were examined. Means and standard deviations were calculated for participant ratings of various aspects of FIND: Web-Based and intervention acceptability and fit for their family. Any significant outliers were noted. Total mean and standard deviation were calculated for all participants' ratings combined, to reflect overall satisfaction with the intervention. The remainder of participant feedback was analyzed using qualitative methods, described next.

Qualitative Analyses of Participant Feedback

In order to further assess feasibility of FIND: Web-Based for families, participants' answers to six open-ended questions eliciting feedback about FIND: Web-Based (e.g., strengths and weaknesses of the intervention) were compiled and coded using grounded theory. Codes and sub-codes were created and grouped. Once the data was categorized and coded, explanations were created about codes' relationships to the research questions, including what codes were related, any trends or patterns identified, and any common themes that emerged (e.g., good or poor fit of the content to families;

convenience or difficulty of the online format; concerns about privacy of online research data or videos; participants' ease or difficulty of filming themselves with their children).

Additional Research Process and Clinical Implementation Data

Participants were encouraged to contact the team by phone, email, or Box comments if they encountered technical difficulties. They were also able to leave their FIND coach comments on the Box app in response to the videos and FIND intervention materials. Therefore, in addition to the quantitative and qualitative data collected from post-intervention participant feedback, informal participant communication was an additional source of qualitative data in regard to the feasibility and acceptability of FIND: Web-Based. On the other hand, such participant communication was not a required part of the intervention and was therefore minimal in quantity. Because this was the first time FIND was studied and delivered online, the level to which participants would communicate with the research team and coaches beyond required research measures and engagement with FIND: Web-Based was unknown. Finally, detailed notes were recorded as the research team recruited, screened, consented, collected pre- and post-intervention data, and administered FIND: Web-Based to participants. The most salient successes and challenges of implementing FIND via the novel online format were noted and compiled.

CHAPTER III

RESULTS

Feasibility of Online Recruitment and Research Data Collection

The first research question in this study was as follows: Is it possible and feasible to recruit parents and other caregivers of young children for an online intervention study primarily through online methods? Is it feasible to collect usable research data from these participants online in a timely manner? This research question had four parts: (a) How possible and feasible is online recruitment? What is the nature of attrition between initial participants' initial expression of interest and full enrollment in the study? (b) How do participants engage with the technology and self-guided nature of the online research? (c) Do participants complete the research questionnaires promptly on their own, or do they need multiple reminders from the research team to do so? (d) Does the data collected via online questionnaires include significant missing data? Results for each part of this first research question will be reviewed separately below.

Feasibility and Attrition Data for Online-Only Recruitment

Recruitment using exclusively online methods of advertising and outreach proved to be difficult. Attrition between participants' initial expression of interest and full study enrollment was high. Online recruitment did yield a significant number of potential participants who clicked on online advertisements and outreach posts, viewed at least the first page of the eligibility screening questionnaire, and at least partially completed it. Specifically, there were about 75-100 views in the first two months, with 53 potential participants who completed at least one question in the eligibility screener during this

time. However, of these, five potential participants did not fully complete the eligibility screener (9.43% of those who began it). Of the remaining 48 participants who fully completed the screener during the initial online-only recruitment phase, 25 were ineligible (52.1% of completed responses). Of ineligible participants, the majority, 14 participants (56.0% of those ineligible) were not eligible solely due to not having the required mobile device to participate. Four (16.0% of those ineligible) were ineligible due to not being a parent or primary caregiver of a child under 5 years old. Two (8.0% of those ineligible) were ineligible due to having a mobile device that otherwise met the requirements, but did not have enough memory to install and run the Box app. One (4.0% of those ineligible) was ineligible due to having an open Child Welfare case. Finally, four potential participants (16.0% of those ineligible) were ineligible due to two or more of the above reasons.

Of the 23 potential participants who completed the eligibility screener and were found to be eligible for the study during the first online-only phase of recruitment, five (21.7%) did not continue past the eligibility screener and/or did not leave their contact information and availability for an orientation phone call. The online consent form followed this step; therefore, these participants did not advance to the online consent process. 18 participants (78.3% of those found eligible) provided their contact information for the orientation call, and 13 of these (56.5% of those found eligible) went on to also complete the online consent form and agree to participate in the study.

Feasibility of Expanded (Online and In-Person) Recruitment

As previously described above, in-person recruitment was added after about two months in order to increase the rate of recruitment. All participants, including those with

whom in-person contact was established, were directed to the online eligibility screener questionnaire and, if eligible, the online consent form. At in-person recruitment events, a lab iPad was available if participants wished to complete the eligibility screener and/or consent process onsite. Additionally, this author was available to assist participants with these steps if they requested assistance.

The total recruitment period lasted about seven months and included (1) the first online-only phase of recruitment, and (2) the second phase of recruitment that combined both online and in-person recruitment and outreach methods. During this seven-month period, a total of 117 potential participants viewed and completed at least one question in the online eligibility screener. If eligible, this survey led them to the online consent form.

Attrition Data and Analysis of Eligible and Ineligible Participants for Total

Recruitment Period

Of the 117 eligibility screener responses, 11 (9.40%) were incomplete. All partial responders completed the first eight screening questions, which were on the first questionnaire screen. After question 8, the survey was programmed to add an additional follow-up question on the next screen based on the answer to question 8. This second page also had the remaining questions of the eligibility screener. It is unknown if these partial responders did not click “Next” to proceed to the next page of the survey, or if they did so but then chose not to fill out any further questions on the second survey page.

During the total recruitment period, 106 participants completed the entire eligibility screener (90.6% of those who started it). Of these 106 potential participants, 58 (54.7%) were eligible for the study and 48 (45.3%) were not.

Analysis of ineligible participants. Of the 48 potential participants found to be ineligible for the study throughout the entire recruitment period, 27 (56.3% of all found ineligible) were not eligible solely due to technological reasons. More specifically, 24 (50.0%) were ineligible due to not having access to an iPhone or iPad. Of participants with access to an iPhone or iPad, all had a working camera and microphone on their devices. However, three participants (6.25% of ineligible participants) had an iPhone or iPad but were ineligible due to their device not meeting requirements for study participation. These reasons included having insufficient memory to install and run the Box app, and/or having an older mobile operating system (iOS) incompatible with the Box app and being unwilling to upgrade the iOS for study purposes.

An additional 13 potential participants (27.1% of ineligible participants) were not eligible due to not being a parent or primary caregiver of a child ages 0 through 4 years old. It is unknown how many of these were ineligible due to their child being too old for the target age range, and how many were ineligible due to not being a parent or primary caregiver (e.g., extended family members such as grandparents). Three potential participants (6.25%) were not eligible due to having an open Child Welfare case. Finally, five participants (10.4% of ineligible participants) were ineligible for two or more of the above reasons.

Attrition and engagement of eligible participants leading up to online consent. In total, 58 participants who completed the eligibility screener were found to be eligible for the study. Of these 58 eligible participants, 16 (27.6%) did not continue beyond the eligibility screener. These 16 potential participants either did not click to continue to the next page of the online survey where they would find out that they were

eligible or did continue to this page and were informed that they were eligible but did not provide their contact information in order to be contacted about study participation.

Of all 58 eligible participants, 10 (17.2%) provided their contact information and indicated a desire to be contacted, but either did not click to continue to the online consent form or viewed the consent form but did not fill it out and left the online survey at this point. These 10 potential participants were contacted at the phone number and/or email they had provided. If reached, this author spoke to them further about the study, provided an opportunity to ask questions, and inquired if they were still interested. Three of these participants (5.17% of all eligible participants) consented verbally by phone at this time and subsequently completed the online consent form. The remaining seven of these potential participants (12.1% of all eligible participants) did not respond to three or more attempts to reach them by phone and/or email or were reached by phone, text message, or email and expressed that they no longer wished to participate.

On the other hand, 30 (51.7%) of all eligible participants continued to the online consent form immediately after the eligibility screener and indicated their agreement to participate by clicking “I agree” on this form. Two potential participants (3.45% of eligible participants) continued to the online consent form and, after viewing it, indicated that they did not wish to participate.

Attrition and engagement of participants who provided online consent leading up to full study enrollment. Once online consent was completed, full enrollment procedures and phone orientation to the study proved to be an additional barrier and source of attrition. A total of 33 participants indicated their agreement to participate in the study on the online consent form. As noted above, 30 did so

immediately after completing the online eligibility screener, while 3 did so after speaking to a member of the research team by phone.

Of the 33 participants who consented online, eight (24.2%) were unable to be reached for an orientation phone call or indicated that they no longer wished to participate prior to the orientation phone call. One participant (3.03%) verbally declined to participate during the orientation phone call after hearing further details about the study. Finally, 24 participants (72.7%) completed the orientation phone call and verbally confirmed their consent and willingness to participate in the study with their child(ren). Therefore, a total of 24 participants completely enrolled in the study and were provided with a Box folder and access to study materials, starting with the pre-intervention online questionnaire.

Participant Engagement with Self-Guided Nature of the Online Research Study

Attrition between study enrollment and study completion. As noted above, 24 eligible participants completed the informed consent and study enrollment procedures (including orientation phone call). Of the 24 participants who completely enrolled in the study, 23 (95.8%) installed the Box app and joined their Box folder in order to access study materials, and 22 participants (91.7%) completed the pre-intervention assessment online questionnaire.

11 participants (45.8% of the 24 completely enrolled participants, or 50% of the 22 participants who completed the pre-assessment) eventually completed the FIND: Web-Based intervention phase of the study. All 11 participants who completed the intervention also completed the post-intervention assessment online questionnaire.

In total, 22 participants were lost to attrition between consenting to participate online and study completion: exactly half of these were lost prior to pre-intervention assessment, while half were lost after completion of pre-assessment (i.e., during the study's intervention phase).

Of all 22 participants lost to attrition, five (22.7% of participants who dropped out) withdrew from the study by informing research staff that they no longer wished to participate: three (13.6%) of these did so prior to beginning the intervention phase, while two (9.1%) did so during the intervention phase. Among these dropped participants, primary reasons for disinterest or inability to participate included time commitment of the study and family circumstances that proved to be a barrier for participation. One parent cited a concern about the security of her information and videos, while another parent specified that the financial incentive did not justify the time commitment. On the other hand, a total of 17 participants who dropped out did so by not responding to three or more attempts to contact them. Eight of these (36.4%) stopped responding to multiple contact attempts prior to beginning the intervention phase of the study, while nine (40.9%) did so during the intervention phase.

Engagement and overall duration of study participation. Once enrolled, the time it took participants to complete the entire study varied greatly. Of participants who completed all study components (i.e., pre-assessment, intervention phase, and post-assessment; $n = 11$), total study duration ranged from 28 days (4 weeks) to 126 days (about 4 months). Mean duration of total study participation was 76.45 days ($SD = 32.26$), or about 2 ½ months.

For participants who completed the entire study ($n = 11$), time between completion of the electronic consent online and completion of the orientation phone call with a member of the research team ranged from 1 to 15 days ($M = 4.91$, $SD = 5.01$). During the orientation phone call, participants were provided with an overview of the research process and opportunities to ask questions about any part of the research. They were provided with an option to download and install Box during the phone call with live support from the research team member. The majority of participants did not choose to do so; therefore, they were asked to download and install Box after the phone call.

Participants' Completion of Online Research Questionnaires at Pre- and Post-Intervention

Participants were given access to the pre-intervention online questionnaire once they had completed study enrollment (i.e., online consent *and* orientation phone call, which included verbal informed consent, as noted above). Access to the pre-assessment was granted through the Box app, which participants were asked to download shortly after their orientation call. For all 22 participants who completed pre-assessment, including the 11 participants (50%) who later discontinued their participation in the study, the length of time between being given access to and completing the pre-intervention online questionnaire ranged from 1 to 30 days ($M = 5.05$, $SD = 7.32$). However, one outlier was found (i.e., one participant took 30 days to complete pre-assessment after being granted access, over three standard deviations above the mean time). With this outlier removed, time between access to and completion of pre-assessment ranged between 0 and 18 days ($M = 3.86$, $SD = 4.86$).

On the other hand, when only data for the 11 participants who completed the entire study was examined, the length of time between access to and completion of the pre-intervention online questionnaire ranged from 1 to 18 days ($M = 5.36$, $SD = 5.48$). The participant who took 18 days was found to be a mild outlier; with this outlier removed, the time between access to and completion of pre-assessment for participants who completed the study ranged from 1 to 11 days ($M = 4.54$, $SD = 3.73$).

For all participants who completed pre-assessment ($n = 22$), the time they took to complete this online questionnaire ranged from 9.70 to 82.40 minutes ($M = 21.40$, $SD = 14.83$). However, one outlier was found: one participant took 82.40 minutes to complete pre-assessment questionnaire, significantly longer than any other participants. This long completion time was likely due to this participant pausing questionnaire completion and returning to it later, as it is unlikely that the questionnaire took over an hour to complete based on the number of questions. However, the exact reason is unknown. With this outlier removed, participants' time to complete the pre-assessment questionnaire ranged from 9.70 to 30.13 minutes ($M = 18.50$, $SD = 6.00$).

Once participants completed the FIND: Web-Based intervention phase of the study (i.e., could view the content of the last intervention session via the Box app), they were granted access to their post-intervention online questionnaire ($n = 11$). Length of time between participants' access to and completion of post-assessment ranged from 0 to 8 days ($M = 2.27$, $SD = 2.97$). Completion time for the online post-assessment ranged from 11 to 119 minutes ($M = 34.4$, $SD = 31.4$). As with the pre-assessment questionnaire, one outlier was found: one participant took 119 minutes to complete the questionnaire (close to three standard deviations above the mean), likely due to an interruption and

returning to it later. With this outlier removed, completion time for post-assessment ranged from 11 to 55 minutes ($M = 25.9$, $SD = 14.7$).

Participants also varied in the number of reminders, if any, they required to complete the online assessments. Many participants promptly completed assessments with no reminders. Others required frequent reminders, which the research team provided by phone, text message, and/or comments on the Box app. As described in *Methods*, reminders to complete assessments were typically provided by the research team after a week of inactivity. Out of the 22 participants who completed the pre-intervention assessment questionnaire, five (22.7%) took one week or longer from the date they were provided access to the questionnaire to complete it. Therefore, these participants were provided with one or more phone, text message, and/or email reminders to complete the pre-assessment.

Of the 11 participants who completed the intervention phase of the study and subsequently, the post-intervention assessment questionnaire, only two participants (18.2%) took one week or longer from the date they were provided access to the post-intervention questionnaire to complete it. Therefore, these two participants were provided with a reminder to complete the post-assessment. Although they required a reminder, these two participants completed post-assessment within seven and eight days from the time they were granted access. The other nine participants (81.82%) completed post-assessment within zero to five days from being granted access, without any need for a reminder.

Rates of missing data in online questionnaires. The online pre-intervention and post-intervention questionnaires each consisted of over 70 separate questions, due to

many multi-part questions. The pre-assessment in particular had over 100 total questions, due to the large number of demographic questions in which participants were asked to choose one or more of many choices, with each choice counted as a separate answer. For both pre- and post-assessment, each of the questionnaire responses included little to no missing data, as described in further detail below.

Missing data in the pre-intervention online questionnaire. The pre-assessment questionnaire consisted of 133 to 141 possible separate answers. Several questions were optional fill-in questions (e.g., a blank text box for a participant to type in an answer if they chose “Other” on a demographic question). An answer was not counted as missing unless it was required for a specific participant (e.g., an unfilled “Other” text box was not counted as missing data unless a participant chose the “Other” choice but did not fill in the corresponding text box). Furthermore, some questions were only displayed for certain participants based on previous answers. Finally, ten questions to assess knowledge and understanding of the FIND intervention were added to the pre- and post-assessment questionnaires once the study had begun and were therefore not part of the questionnaires for all participants; these ten questions are excluded from missing data analysis.

For each participant who completed the pre-assessment questionnaire ($n = 22$), the number of missing answers based on the above criteria ranged from 0 to 6 ($M = 0.86$, $SD = 1.58$). Fourteen participants (63.6%) did not have any missing data in the pre-assessment, and four (18.2%) had only one missing answer. The participant with the greatest number of missing responses (six) had a total of 133 non-optional questions; therefore, the most missing data in any single questionnaire was 4.51% of required answers.

Missing data in the post-intervention online questionnaire. The post-assessment questionnaire consisted of 71 possible separate answers. As noted above for the pre-assessment, the ten FIND knowledge and understanding questions were added later and thus not included in missing data analysis. The same protocol described above was used to determine which answers were counted as missing. Among all participants who completed the post-assessment questionnaire ($n = 11$), one participant response included one missing answer (1.41% missing data) and one participant response included two missing answers (2.82% missing data). However, these missing responses were fill-in text box responses for yes/no intervention feedback questions (i.e., “Was there anything you didn’t like or that you would recommend we change...?”; “Are there any other adults in your household who may have liked to participate in FIND with you?”). Therefore, it could be presumed that a blank answer for these questions could simply mean “No.” The remaining nine participants’ post-assessment questionnaire responses did not include any missing data; therefore, 81.8% of participants answered every question.

Participant Engagement with FIND: Web-based Intervention

The second research question was as follows: Is it possible and feasible to deliver the FIND intervention in a novel online format (i.e., “FIND: Web-Based”)? This research question had three parts: (a) How do participants engage with the technology and self-guided nature of the intervention? (b) Are the videos filmed by parents or caregivers submitted in a timely manner? (c) Are videos usable (e.g., have adequate lighting and sound) to edit in order to conduct the FIND intervention? Results for each part of this research question will be provided separately below.

Participant Engagement with Technology and Self-Guided Intervention Format

Participants varied widely in their nature of engagement with the technology and self-guided intervention. Overall, the rate of intervention completion varied greatly. Of participants who completed the entire FIND: Web-Based intervention ($n = 11$), total time to complete the intervention ranged from 21 days (3 weeks) to 105 days (15 weeks, or about 3.5 months). Mean time participants took to complete the FIND: Web-Based intervention was 62.55 days ($SD = 26.14$), or about two months.

Timeliness of Participant Submission of Raw Videos

Participants' engagement with the intervention was further tracked and measured by the time between provision of access to each new intervention "session" (which included educational videos, handouts, and after the first session, a personalized edited video) and participants' upload of the next raw video (which became the basis of the next "session"). Because there was significant attrition between sessions, video submission data for all participants is provided, even though a subset of participants did not complete subsequent sessions.

As noted previously, 22 participants completed the pre-intervention assessment and were thus advanced to the intervention phase of the study and provided with access to the first online intervention session. This first session, "Serve and Return," was an introduction to the overall FIND program and concepts and instructed participants to take their first raw video after they viewed all Session 1 content. The time between Session 1 and uploading Film 1 proved to be a major source of intervention attrition: of the 22 participants who were provided access to Session 1, 16 (72.7%) viewed the session and uploaded their first raw video ("Film 1"). The other 6 participants (27.3%) discontinued

study participation after Session 1. For the 16 participants who did upload their first raw film, time between access to Session 1 and uploading Film 1 to Box ranged from 1 to 32 days ($M = 14.31$, $SD = 10.66$).

Of the 16 participants who uploaded Film 1 and were provided access to Session 2, which included their first edited film, two additional participants were lost to attrition after they did not upload their second raw film (“Film 2”), even after several reminders. For the 14 participants who uploaded Film 2, time between access to Session 2 and uploading Film 2 to Box ranged from 0 to 36 days ($M = 12.00$, $SD = 10.41$). The participant who took 36 days was a mild outlier; when removed, time to upload Film 2 ranged from 0 to 25 days ($M = 10.15$, $SD = 8.11$).

Of the 14 participants who uploaded Film 2 and were provided access to Session 3, which included their second edited film, one additional participant was lost to attrition after failing to upload her third raw film (“Film 3”), even after several reminders. For the 13 participants who uploaded Film 3, time between access to Session 3 and uploading Film 3 to Box ranged from 1 to 17 days ($M = 8.85$, $SD = 4.72$).

Of the 13 participants who uploaded Film 3 and were provided access to Session 4, which included their third edited film, two additional participants were lost to attrition after failing to upload their fourth raw film (“Film 4”), even after several reminders. For the 11 participants who uploaded Film 4, time between access to Session 4 and uploading Film 4 to Box ranged from 2 to 16 days ($M = 8.82$, $SD = 4.19$).

Of the 11 participants who uploaded Film 4 and were provided access to Session 5, which included their fourth edited film, none were lost to attrition (i.e., all uploaded “Film 5,” their fifth and final raw film). For these 11 participants who uploaded Film 5,

time between access to Session 5 and uploading Film 5 to Box ranged from 4 to 24 days ($M = 13.36$, $SD = 6.93$).

Finally, of the 11 participants who uploaded Film 5 and were provided access to the final intervention session, Session 6, which included their fifth and final edited film, none were lost to attrition. All 11 participants who uploaded Film 5 also viewed their final Session 6 and went on to complete the post-intervention assessment. The time period between a participant being provided access to an online intervention session and the date they first viewed the session is a less than ideal measure of session completion: it was not possible to know how long each participant spent viewing the session, if they returned to the online session on several separate occasions to complete it, and if they truly completed all components. However, in the absence of another raw video to upload after the final session, the time between participants' access to Session 6 and their first viewing of this session is used as an estimate of session completion time. For the 11 participants who completed the entire FIND: Web-Based intervention, for Session 6, this time ranged between 0 and 5 days ($M = 1.27$, $SD = 1.74$).

The FIND coach provided participants with reminders to complete their next online session and/or upload their next raw film after about one week of inactivity. Therefore, the average participant required at least one reminder to upload each new film.

Usability of Raw Videos for Intervention Implementation

All participants' raw videos were of adequate quality (e.g., adequate lighting, sound, and camera angle) to edit for the purposes of the FIND intervention. One participant's first raw film uploaded to Box without audio due to unknown technological difficulties; however, she attempted to resolve this problem and ultimately uploaded three

separate raw film clips, totaling over 20 minutes of raw footage. Of this footage, well over 10 minutes did have sound and was therefore adequate for editing. This problem was resolved for the participant's subsequent films after she spent some time troubleshooting with the research team. Another participant uploaded her first raw film in the incorrect orientation (i.e., vertical 'portrait' mode instead of horizontal 'landscape' mode). This posed difficulties for editing her film; she was reminded to correct this filming error and was able to do so for subsequent films. With these two exceptions, the quality of all other raw videos was fully adequate for editing, including sufficient lighting and sound. The majority of the raw films submitted by parents did not pose any major difficulties for the purpose of editing for the FIND intervention.

On the other hand, some of the raw films did have more minor issues. It was still possible to edit these films for the purposes of the FIND intervention (i.e., find three short occurrences of the FIND element that was the focus of the upcoming online session). However, several films did pose some difficulties for qualitative coding of the first and last films using PICCOLO. One participant's initial raw Film 1 uploaded without audio, as described above; however, due to additional raw videos that she uploaded to attempt to rectify this problem, 10 minutes of raw film with audio were available for coding. Another participant uploaded a raw film in which her head and face were out of the frame and not visible for the majority of the time (i.e., about 7 minutes out of 10). This film was adequate for editing (i.e., clips were chosen from the 3 minutes in which her face was in the frame, and/or when a FIND interaction could be clearly observed based on seeing the rest of the participant as well as her children in the video). Due to difficulties this would pose for coding this film using PICCOLO, the possibility of replacing this raw film with

another raw film for the purpose of video coding was considered. However, this video was the third film of a participant who had only uploaded three films in total; therefore, as the only possible film to substitute was the second film, which would deem this participant ineligible for video coding, the video was not substituted, and coding was completed despite poor video angle. Nevertheless, it is likely that the video angle likely negatively impacted coding, as most of the parent's face and head were out of the frame for about two-thirds of the video. Two other participant films were also examined more closely prior to video coding; these films were adequate for editing for the FIND intervention, but it was questionable if they were adequate for video coding due to participants' faces being out of frame or obstructed by furniture. However, these problems were only present for a short part of each film (e.g., about 2-3 minutes out of 10), and thus were not serious enough to necessitate replacing these films with another from the same participant for the purposes of video coding.

Overall, the vast majority of raw films uploaded by participants were usable for the purposes of editing for the FIND intervention. The occurrence of the same problem in several films (i.e., parents' faces being out of frame for significant parts of the film) was notable. On the other hand, while problems with visibility of participants' faces posed more of a potential difficulty for video coding for the purposes of research analyses, even these problems were relatively minor and, with one exception, present for less than half of participants' uploaded raw films.

Feasibility and Acceptability of FIND: Web-Based for Participants

The third research question was as follows: Is FIND: Web-Based feasible and acceptable for participants? This research question had three parts: (a) How do

participants rate their satisfaction with various aspects of FIND: Web-Based, including its online format and delivery? (b) What positive feedback do participants provide that supports feasibility and satisfaction with the intervention? (c) What constructive feedback do participants provide that can help this team improve the online delivery of the FIND: Web-Based adaptation for future studies? Results for each part of this research question will be provided separately below.

Participant Satisfaction with FIND: Web-Based, Including the Online Format

Seven post-assessment survey questions addressed this research question. Participants who had completed the FIND: Web-Based intervention ($n = 11$) were asked to rate their satisfaction and the usefulness, helpfulness, and acceptability of various aspects of the intervention. These questions used a 1 to 10 Likert scale. All questions used 1 as the least acceptable or desired answer and 10 as the most acceptable or desired answer, with one exception for length of the program, detailed below. Results for each question will be presented separately and then collectively as overall findings.

Perceived usefulness of FIND content. The first FIND: Web-Based feedback question asked, “How useful was the content of this program to you?” A response of 1 indicated “not at all useful,” while a response of 10 indicated “very useful.” Answers ranged from a 4 to a 10, with a mean response of 7.73 ($SD = 2.15$).

Perceived helpfulness of FIND videos. The second intervention feedback question asked, “How helpful were the videos shared by your FIND coach/editor?” A response of 1 indicated “not at all helpful,” while a response of 10 indicated “very helpful.” Answers ranged from a 4 to a 10, with a mean response of 8.09 ($SD = 2.12$).

Perceived helpfulness of FIND materials. The third feedback question asked, “Were the materials (e.g. online handouts) helpful?” A response of 1 indicated “not at all helpful,” while a response of 10 indicated “very helpful.” Answers ranged from a 3 to a 10, with a mean response of 7.45 ($SD = 2.30$).

Acceptability of FIND: Web-Based program length. The next feedback question asked, “How did the length of the program feel to you?” A response of 1 indicated “too short,” a response of 5 indicated “just right,” and a response of 10 indicated “too long.” Answers ranged from a 5 to a 7, with a mean response of 6.27 (i.e., slightly too long; $SD = 0.79$).

In order to conform to the scale of the other questions, the responses for this question were subsequently re-coded to signify satisfaction with length of the program. All “just right” 5 responses were re-coded to 10, all 6 (slightly too long) responses were re-coded to 8 to indicate slight dissatisfaction with length, and all 7 (somewhat too long) responses were re-coded to 6 to indicate some dissatisfaction with length. These re-coded responses were used in the collective analysis with other questions.

Perceived relevance of FIND ideas. The next feedback question asked, “Did the ideas presented in the program make sense? Were they relevant?” A response of 1 indicated “not at all relevant,” while a response of 10 indicated “very relevant.” Answers ranged from a 4 to a 10, with a mean response of 8.91 ($SD = 1.92$).

Acceptability of online format of FIND: Web-Based. The next feedback question asked, “How well did the online format of the program (sharing and accessing materials on your phone or tablet) work for you?” A response of 1 indicated “not well at

all,” while a response of 10 indicated “very well.” Answers ranged from a 4 to a 10, with a mean response of 7.64 ($SD = 2.20$).

Ease or difficulty of filming parent-child interactions using mobile device.

The last Likert scale rating feedback question asked, “How easy or difficult was it to film yourself and your child interacting?” A response of 1 indicated “very difficult,” while a response of 10 indicated “very easy.” Answers ranged from a 3 to a 9, with a mean response of 6.27 ($SD = 2.49$).

Collective analysis of satisfaction and acceptability ratings. Mean ratings for the intervention feedback ratings questions above ranged from 6.27 to 8.91 on a 1 to 10 Likert scale. On average, the lowest-rated aspect of FIND: Web-Based was difficulty participants had with filming themselves and their children interacting ($M = 6.27$). On the other hand, the highest-rated aspect of FIND: Web-Based was the relevance of the ideas presented ($M = 8.91$). After re-coding the differently-scaled question about satisfaction with length of the program, participants’ Likert scale responses to all seven questions were averaged. On average, participants rated all aspects of FIND: Web-Based at a 7.65 ($SD = 2.17$) on a scale of 1 to 10.

Positive Participant Feedback Supporting Intervention Feasibility and Satisfaction

As described previously, participants’ responses to open-ended questions eliciting their feedback were analyzed using grounded theory. Codes and sub-codes were created and grouped. Relationships between codes were identified and trends, patterns, and common themes were extracted.

Several core themes emerged in participants’ positive feedback about the FIND: Web-Based intervention. First, all participants ($n = 11$) stated that they would recommend

this intervention to a friend or colleague. Most participants stated they would do so and did not provide any qualification. On the other hand, two participants stated that they would only recommend it for particular types of parents: those who were “struggling with” interacting and engaging with their child or those with “low parenting skills.” One participant stated that she would especially recommend it to “new parents or those without experience working with children.” Therefore, most participants found the intervention feasible and acceptable overall, while a small subset thought it was feasible and acceptable for a specific, lower-skilled group of parents or caregivers.

When asked why they would recommend the program, responses fell into three main themes. Four participants identified the value of the content; these parents enjoyed learning new parenting skills and terminology and a “new perspective” on parenting that FIND offered. Four participants identified the strength-based aspect of FIND (e.g., focus on positive interactions, increasing frequency of positive moments, and experiencing the feeling of doing a good job or being a good parent). For instance, one participant wrote: “I found it interesting to see positive interactions between me and my child. If I am more conscious of... nurtur[ing] him I get to do it more often and get the feeling of doing a good job even after a long day.” Another participant wrote: “I found that [filming] the videos and re-watching [the edited versions] provided a good reminder that I am a good mother and that we have many more positive interactions than negative.” Finally, three participants (including the one above) stated that they enjoyed the video coaching aspect of FIND and its focus on everyday moments and interactions.

When participants were asked what they liked most about the FIND content or what they found most helpful, several themes emerged. Five participants noted that they

liked the use of their own videos of positive interactions with their child(ren) as examples of skills. For instance, one participant felt that “it’s an excellent idea to learn through videos of your own interactions, rather than [those] of strangers who may or may not have similar interactions as you do with your child.” Another participant stated that seeing her own videos made the FIND concepts “immediately relatable.” Four participants noted that FIND highlighted their interactions with their child and some felt they gained greater awareness of such interactions. For instance, one participant “felt encouraged to be more aware of [her] responses and interactions with [her] children,” while another “realize[d] the power of those small interactions.” Similarly to the answers for the previous question, three participants mentioned the strength-based nature of FIND with comments such as “it was positive rather than corrective in its approach.” Finally, two participants liked the PDF summary sheets that reviewed “Serve and Return” and each of the five FIND elements.

In terms of positive aspects specific to the online format of FIND: Web-Based, six participants liked the convenience of being able to complete the intervention at their own pace and around their own schedule. Similarly, three participants noted that the online format was “accessible” and easy to use. Three participants liked getting text message and/or Box comment reminders from their FIND coach.

Constructive Participant Feedback Informing Improvements to Online Delivery of FIND: Web-Based

Several themes emerged in participant responses to open-ended feedback questions that could help improve FIND: Web-Based. First, participants were asked if there was anything they disliked or would change about the content of FIND. Three

participants denied disliking any aspects and did not suggest any changes. Three identified difficulties or suggested changes related to technological or online aspects of FIND: Web-Based; these responses will be discussed next. Two participants suggested difficulty or content changes related to the videos. For instance, one participant wrote, “I had a hard time finding time alone with my child in order to [film] the videos. But it was a good reminder that he does really need to have one-on-one time with me and my spouse.” Another participant suggested content changes for the films: “I’d love to see what a really highly skilled [interaction or video] looks like... [or] get videos of times that [my child] is being incredibly ‘spirited’ and get some advice on that.” Finally, two participants disliked the “repetitive” nature of the FIND content.

Next, participants were asked if they disliked or would recommend any changes specific to the online delivery of FIND: Web-Based. Five participants denied disliking anything, with three of these making broad positive comments about the online delivery instead. When including responses from the previous question (see above paragraph), three participants had complaints about technological aspects of the videos. They noted that videos took a long time or a lot of data to upload to the Box app and that edited videos took a long time to load for playback on Box. However, one of these participants, who did not have a reliable Wi-Fi connection in her home, noted that she countered these difficulties by using public Wi-Fi at her local library to complete the intervention.

The following participant responses related to miscellaneous aspects of the online delivery of FIND: Web-Based. They were not considered themes, as each was only expressed by one participant. However, they are included for greater transparency and to further inform potential changes to future iterations of FIND: Web-Based. One

participant expressed some confusion about figuring out the correct order in which to view the online videos (since each “session” included several separate videos). Another participant disliked that the Box app itself required a lot of memory on her device, but also noted, “It wasn’t too big of a deal.” One participant wished the intervention was accessible to non-Apple devices. Finally, one participant suggested making the online intervention “more interactive” using the Box comments feature. Specifically, she suggested asking the reflective questions posed in the videos via comments, in order to “encourage participants to ask and answer questions.”

Furthermore, participants were asked if they had any difficulties with the technological components of FIND: Web-Based, including using Box, accessing materials online, and filming using their mobile device. Four participants denied having any difficulties related to technological components or filming. Four participants identified difficulties related to video upload and/or playback via Box: three of these mentioned difficulty uploading videos (e.g., trouble learning how to upload directly into the app, uploads requiring multiple attempts, one video uploading without sound), while two mentioned that edited videos loaded very slowly for playback. Three participants identified difficulties related to filming themselves (e.g., self-consciousness, getting a good angle, and making sure the child participant was clothed for videos due to “refus[ing] clothing for two weeks... We are potty training right now and he is just very interested in his 3-year-old body”). Finally, two participants expressed difficulties or dissatisfaction with other aspects of the Box app (e.g., the file system “feels a little messy”; “I was able to use it successfully after clearing up some space”).

Quantitative Results of Pre- and Post-Intervention Questionnaires: Preliminary Evidence for Positive Impact of FIND: Web-Based

The fourth research question was as follows: Do the quantitative results of self-report questionnaires that participants complete before and after their participation in the FIND: Web-Based intervention add to promising preliminary evidence for the positive impact of FIND on parenting? Are these results similar to those found in other video coaching parenting interventions? This research question had two parts: (a) Is full participation in the FIND: Web-Based intervention associated with an increase in parenting sense of competence? (b) Is full participation in the FIND: Web-Based intervention associated with a decrease in parenting stress? Results for each part of this research question will be provided separately below.

Association Between Full Participation in FIND: Web-Based and Change in Parenting Sense of Competence

A paired-samples *t*-test was conducted to examine change in parenting sense of competence between pre- and post-intervention. The dependent variable was parenting sense of competence (PSOC) score, measured on a continuous scale. The categorical independent variable was time at data collection: pre- or post-intervention, with matched pairs consisting of PSOC scores at pre- and post-intervention. This research question was answered using within-subjects analysis, as participants reported on their own PSOC before and after completion of the FIND: Web-Based intervention.

Data was examined for assumptions of the paired-sample *t*-test. First, no significant outliers were found in the differences between the paired pre- and post-

intervention PSOC scores. Second, the distribution of the differences in the dependent variable (PSOC scores) between the two paired groups was approximately normal.

Participants ($n = 11$) were asked to rate their own PSOC before beginning participation in FIND: Web-Based (i.e., pre-intervention) and again after they completed the FIND: Web-Based program (i.e., post-intervention). As noted previously, PSOC scores have a potential range starting at 18, signifying the lowest possible parenting sense of competence, and with a maximum of 72, signifying the highest possible parenting sense of competence. In this study's sample at pre-intervention, PSOC scores ranged from 43 to 62 ($M = 53.00$, $SD = 6.81$). At post-intervention, PSOC scores ranged from 45 to 65 ($M = 53.27$, $SD = 7.09$). No statistically significant difference was found between participants' pre- and post-intervention PSOC scores, $t(10) = -0.247$, $p = .810$, FDR-adjusted $p = .810$.

Despite the non-significance of the difference in PSOC between pre- and post-intervention, effect size was also calculated to estimate the size of the difference. Effect size was very small ($d = .04$) and significantly lower than Cohen's criteria for even a small effect. With 11 participants (i.e., 11 matched pairs of scores), this study had almost no statistical power of .05 to uncover the small effect size of $dz = .07$.

Association Between Full Participation in FIND: Web-Based and Change in Parenting Stress

Paired-samples t -tests were also conducted to examine changes in parenting stress between pre- and post-intervention. The dependent variable was total parenting stress index (PSI) score as well as PSI subscale scores, each measured on a continuous scale. The categorical independent variable for each test was time at data collection: pre- or

post-intervention, with the matched pairs consisting of PSI scores at pre- and post-intervention. Like the prior research question about parenting sense of competence, this research question was also answered using within-subjects analysis, as participants reported on their own parenting stress at two time points: before and after completion of the FIND: Web-Based intervention.

Data was examined for assumptions of the paired-sample *t*-test. First, no significant outliers were found in the differences between the paired pre- and post-intervention PSI scores. Second, the distribution of the differences in the dependent variable (PSI scores) between the two paired groups was approximately normal.

Participants ($n = 11$) were asked to rate various aspects of parenting stress using the PSI before beginning participation in FIND: Web-Based (i.e., pre-intervention) and again after they completed the FIND: Web-Based program (i.e., post-intervention). As noted previously, PSI scores had a possible range starting at 36, signifying the lowest possible parenting stress, with a maximum of 180, signifying the highest possible parenting stress. PSI scores were also converted to percentile ranks based on the PSI's normative sample (Abidin, 1995), with higher scores indicating higher parenting stress. Based on the PSI norms, parents who score above the 85th percentile are considered to be experiencing a high level of parenting stress.

In this study's sample at pre-intervention, total PSI scores ranged from 42 to 129 ($M = 75.18, SD = 24.21$). This was slightly higher than the normative sample for the PSI ($M = 71.0, SD = 15.4$; Abidin, 1995). PSI percentile rank at pre-intervention ranged from the 4th percentile to the 99th percentile ($M = 47.36, SD = 29.97$). At post-intervention, participants' PSI scores ranged from 39 to 96 ($M = 67.27, SD = 17.48$). These translated

to percentile ranks ranging from the 1st percentile to the 75th percentile ($M = 37.91$, $SD = 25.70$). After correcting for multiple comparisons using a False Discovery Rate (FDR) of 10%, a statistically significant difference was found between participants' pre- and post-intervention PSI percentile ranks, $t(10) = 2.45$, $p = .034$, FDR adjusted $p = .085$.

Participants' PSI percentile rank decreased an average of 9.46 percentile points ($SD = 12.78$) following their completion of FIND: Web-Based, from mean pre-intervention parenting stress at the 47.36 percentile rank ($SD = 29.97$) to mean post-intervention parenting stress at the 37.91 percentile rank ($SD = 25.70$).

Effect size was also calculated to estimate the size of the difference in PSI between pre- and post-intervention. Based on Cohen's criteria, the effect size of the decrease in parenting stress was between small and medium ($d = .34$). Post hoc power analysis revealed that with the current small sample of 11 participants (i.e., 11 matched pairs), this study had power of .60 to uncover an effect size of $d_z = .74$. Furthermore, a priori power analysis using the same parameters revealed that it would take 17 participants to reach power of .80, typically considered adequate statistical power.

Changes in parenting stress in specific PSI subscales. In order to determine which aspect(s) of parenting stress contributed most to the decrease in PSI between pre- and post-intervention, paired-samples t -tests were conducted to examine changes between pre- and post-intervention in specific areas of parenting stress. These were measured by three subscales of the PSI: Parental Distress, Difficult Child, and Parent-Child Dysfunctional Interaction. After FDR adjustment, no statistically significant differences were found between pre- and post-intervention in the first two sub-scales. However, a

statistically significant result was found in the Parent-Child Dysfunctional Interaction (PCDI) subscale, as described below.

PCDI scores had a possible range between 12, signifying the least dysfunctional interaction between parents and their children, and 60, signifying the most dysfunctional parent-child interaction. PCDI scores were also converted to percentile ranks based on the PSI's normative sample (Abidin, 1995), with higher scores indicating greater dysfunction in the parent-child interaction. Similarly to overall PSI scores, parents who scored above the 85th percentile on the PCDI were considered to be experiencing a high level of parenting stress, in this case, stress specific to negative interactions with their children.

In this study's sample at pre-intervention, Parent-Child Dysfunctional Interaction (PCDI) scores ranged from 12 to 31 ($M = 19.45$, $SD = 6.58$). This was slightly higher than the normative sample mean ($M = 18.7$, $SD = 4.8$; Abidin, 1995). When converted to percentile rank scores, PCDI percentile rank at pre-intervention ranged from the 5th to the 80th percentile ($M = 37.55$, $SD = 27.10$). At post-intervention, participants' PCDI scores ranged from 12 to 25 ($M = 16.73$, $SD = 4.71$). These translated to percentile ranks ranging from the 5th to the 63rd percentile ($M = 26.64$, $SD = 21.22$). After correcting for False Discovery Rate (FDR) of 10% to account for multiple comparisons, a statistically significant difference was found between participants' pre- and post-intervention PCDI percentile rank, $t(10) = 2.53$, $p = .030$, FDR adjusted $p = .085$. Participants' PCDI percentile rank decreased an average of 10.91 percentile points ($SD = 14.31$) following their completion of FIND: Web-Based, from mean pre-intervention PCDI scores at the

37.55 percentile rank ($SD = 27.10$) to mean post-intervention PCDI scores at the 26.64 percentile rank ($SD = 21.22$).

Effect size was also calculated to estimate the size of the difference in PCDI between pre- and post-intervention. Based on Cohen's criteria, the effect size of the decrease in parent-child dysfunctional interaction ($d = 0.45$) approached a medium effect size (0.5). Post hoc power analysis revealed that with its small sample of 11 participants (i.e., 11 matched pairs of scores), this study had power of .63 to uncover an effect size of $d_z = .76$. Furthermore, a priori power analysis using the same parameters revealed that it would take 16 participants to reach power of .80, typically considered adequate power.

Association Between Participation in FIND: Web-Based and Changes in Frequency and Consistency of “Serve and Return” Interactions

The final research questions sought to investigate the effect of the intervention on positive, responsive parenting behaviors and parent/child interactions: Does participation in the FIND: Web-Based intervention increase frequency and consistency of “Serve and Return” interactions? More specifically, is intervention participation associated with an increase in parent-child interactions demonstrating (a) affection, (b) responsiveness, (c) encouragement, and (d) teaching?

In order to explore whether completing a majority (i.e., half or more) of the FIND: Web-Based intervention was associated with changes in the above parenting behaviors, 10-minute raw films of parent-child interactions were coded for frequency and consistency of sensitive, developmentally supportive parent-child interactions using the PICCOLO tool. As described in further detail in *Methods*, PICCOLO consists of four categories or subscales: affection, responsiveness, encouragement, and teaching, with

seven to eight items in each category. Subscale total scores were calculated for each of these categories, and a grand total score was also calculated for each video by adding together all four subtotal scores.

As noted previously, 11 participants completed the entire intervention; therefore, these participants' first films were compared against their fifth films. Two additional participants completed at least half of the intervention (i.e., completed at least three of six online sessions and uploaded three of five raw films). Both of these participants discontinued intervention participation after completing their third online session and uploading their third raw film. Therefore, for each of these two participants, their first film was compared to their third (i.e., last) film, which was considered their post-intervention measure.

Difference scores were calculated and paired-samples *t*-tests were conducted to examine changes in positive parenting behaviors between pre- and post-intervention. For *t*-test analyses, the dependent variable was PICCOLO total score, measured on a continuous scale. The categorical independent variable was time at data collection: pre- or post-intervention, with matched pairs consisting of PICCOLO total scores at pre- and post-intervention. This research question was answered using within-subjects analysis, as participants' PICCOLO scores were computed after coding each participants' first film (before completion of FIND: Web-Based) and last film (after partial or, in most cases, full completion of FIND: Web-Based).

Data was examined for assumptions of the paired-sample *t*-test. First, no significant outliers were found in the differences between the paired pre- and post-intervention PICCOLO total scores. Second, the distribution of the differences in the

dependent variable (PICCOLO total scores) between the two paired groups was approximately normal.

Participants' ($n = 13$) 10-minute videos of their interaction with their child(ren) were coded using the PICCOLO tool. Each participant's first video was uploaded by the participant at the beginning of the FIND: Web-Based intervention, and their last video was uploaded at the end of their participation in the intervention. As noted previously, 11 participants completed the full intervention and therefore, their last film was their fifth and final film. Two additional participants who completed half of the intervention (i.e., completed three online sessions and uploaded three raw films) were also included in the video coding analysis; for these participants, their third videos were their last film, as they discontinued their participation after uploading this film. Therefore, a total of 13 participants were included in video coding analysis.

All films were coded using the PICCOLO tool. As described in further detail previously, the PICCOLO has four categories or subscales. Three of these (i.e., Affection, Responsiveness, and Encouragement) have seven items each, while one (i.e., Teaching) has eight items. Each item is rated on a scale of 0 to 2. Therefore, the Affection, Responsiveness, and Encouragement subscales have a potential range of 0 to 14, while Teaching has a potential range of 0 to 16. Higher scores indicate higher frequency and consistency of positive parenting behaviors reflective of each item. Finally, if all subscales are added together, the PICCOLO total score has a potential range of 0 to 58.

PICCOLO total scores across all participants' first films ($n = 13$) ranged from 36 to 50 ($M = 43.92$, $SD = 4.91$). Similarly, PICCOLO total scores across all participants' last films ($n = 13$) ranged from 36 to 50, with a slightly higher average total score ($M =$

44.54, $SD = 3.99$). Although on average, participants' total PICCOLO scores increased by 0.62 points between their first and last films, this increase was not found to be statistically significant, $t(12) = 0.91, p = .380$.

Frequencies of the direction of changes in PICCOLO scores were also examined. In terms of difference scores for total PICCOLO score, 6 participants' total scores increased, 4 participants' total score did not change, and 3 participants' total scores decreased after participation in the intervention.

Difference scores were also calculated to determine changes from the beginning to the end of the intervention in each of the four PICCOLO categories of developmentally supportive, sensitive parenting interactions. Descriptive statistics were calculated for difference scores in each category. On average, Affection scores increased 0.46 points between pre- and post-intervention, Responsiveness scores increased 0.23 points, and Teaching scores increased 0.08 points. On average, Encouragement scores decreased 0.15 points between pre- and post-intervention, indicating a change in the opposite direction than was expected in this subscale.

CHAPTER IV

DISCUSSION

Overview of Findings

This study demonstrated that significant changes to both research and intervention protocols need to be made prior to further research and implementation of this intervention. The small sample size (despite significant effort and time invested into recruitment) coupled with high attrition rates demonstrate that overall, FIND: Web-Based and the current research procedures were largely not feasible. First, recruitment and study enrollment procedures proved to be major barriers, with very high attrition rates at every stage. These procedures did not allow for gathering a sufficient sample size; in addition, the final sample proved to have high levels of socioeconomic status and formal education and relatively low stress overall, resulting in a relatively low-risk sample. Therefore, significant changes should be made prior to attempting a larger, more rigorous study of FIND: Web-Based as an intervention for a broader range of families. On the other hand, it is possible that FIND: Web-Based is more appropriate as a preventive program for higher-SES, lower-risk, and less stressed families. Technological factors were also a significant barrier to participation: about half of interested participants were not eligible to participate in the study due to their lack of access to required technology (specifically, Apple mobile devices). For participants who entered the intervention phase, attrition was still high overall, particularly immediately after study enrollment and between the first and second intervention sessions. Attrition did decrease once remaining participants reached the second intervention session (i.e., after uploading the first film). The novel

web-based format of FIND did offer some advantages; however, the self-guided nature of the intervention also likely contributed to the high attrition rate. Furthermore, the time that participants took to complete various steps of both research and intervention online varied widely, from 3 to 15 weeks among those who completed the intervention. This wide range was likely due to the self-guided nature of the online study as well as several common technological barriers, discussed next.

On the other hand, despite the small sample size, several aspects of the research study were demonstrated to be feasible for the families who did participate. For instance, missing research data was not a significant problem in research questionnaires. Furthermore, raw films uploaded by participants were of adequate quality for video editing for purposes of the intervention, and participants were able to correct any issues with filming for their subsequent films.

In terms of participant feedback about intervention feasibility and acceptability, most participants of the small sample who completed the intervention were generally satisfied with it and found its content and format acceptable for their family. For these families, average satisfaction scores were very high for usefulness and relevance of the core content of FIND as well as helpfulness of the videos, and lower on average (but still relatively high) for the online format of FIND: Web-Based and the helpfulness of the FIND online handouts. Finally, the lowest-rated aspect of the intervention for participants was ease or difficulty of filming themselves and their children, suggesting that this may be the least feasible aspect of online intervention and one that should be improved in future iterations of FIND: Web-Based. In open-ended feedback, most participants in the small sample of those who completed the intervention noted that they were generally

satisfied with the intervention, especially the educational content, the strength-based perspective, and the video coaching aspect. In terms of the online format and delivery of FIND: Web-Based, the majority of participants who completed the intervention liked the convenience, flexibility, and/or accessibility of the novel web-based format. Many participants did not report any difficulties with the online format or technology. However, in those that did, the most common problems identified were technological difficulties with filming, uploading, and/or viewing videos on the mobile platform used for the intervention. Several participants also noted that they had non-technological difficulties filming themselves with their child(ren). Therefore, it is clear that although some aspects of the online intervention may be feasible for a small subset of families like those who completed the intervention, having parents film themselves and participate in online video coaching is the least feasible aspect of FIND: Web-Based. Because video coaching is a key component of the intervention, changes to address these difficulties should be explored in order to increase feasibility and acceptability of the online intervention for families. Furthermore, the above results hold true only for the small sample of 11 families who were able to complete the full intervention (and subsequently, the post-intervention assessment). The high attrition rates and small final sample suggests that the intervention and/or the current research procedures were not feasible for many more families who dropped out from the study, declined to participate, or were ineligible to participate. Specifically, the current procedures and intervention were more appropriate for a lower-risk sample and a universal prevention approach, as opposed to an intervention for families at greater risk. Therefore, in order to conduct a more rigorous, larger-scale randomized controlled trial of FIND: Web-Based that draws a higher-risk sample with

greater parenting stress and other stressors, research procedures as well as elements of the intervention itself would need to be significantly modified.

Finally, in terms of preliminary outcome measures, no statistically significant results were found for changes in parenting sense of competence (PSOC) between pre- and post-intervention. In addition, video coding comparing participants' first and last uploaded raw films did not uncover any significant group changes in parenting behaviors and parent-child interactions throughout participation in FIND: Web-Based. These non-significant findings will be further discussed below. On the other hand, average parenting stress in this sample did significantly decrease between pre- and post-intervention assessment, with a small to medium effect size. Furthermore, a specific decrease was found in scores on the Parent-Child Dysfunctional Interaction (PCDI) subscale; this decrease approached a medium effect size. Although power analyses indicated that this study was under-powered due to the very small sample, and no causal claims can be made due to the lack of control/comparison group, the above results are promising. These findings suggest that FIND: Web-Based may contribute to a decrease in participants' parenting stress and provide support for further studying this outcome in future research. Results will be discussed in further detail next.

Feasibility of Participant Recruitment and Research Enrollment Procedures

Feasibility of Online Recruitment

Recruitment using only online methods proved to be difficult. Online recruitment did yield a relatively high number of clicks and potential participants who viewed study recruitment materials and the eligibility screening online questionnaire. However, only about half of these individuals completed even part of the screening questionnaire.

Furthermore, about half of those who did complete the screening questionnaire were not eligible for the study. Of all eligible participants, over half went on to complete the online consent form and agreed to participate in the study. Overall, although online recruitment methods yielded a relatively large number of viewers who were potentially interested, less than 20% of these were eligible *and* agreed to participate.

The addition of in-person recruitment in the local community, while posing a greater burden in terms of time and energy spent, was helpful for this study's recruitment efforts. Between both recruitment periods, 117 potential participants completed at least part of the online eligibility screener. Of note, almost 10% of responses were incomplete, with partial responders all discontinuing the survey at the same point: after eight questions. The survey was programmed to add an additional follow-up question based on the answer to question 8, and this follow-up question as well as all the remaining questions of the screener were on a separate page. Therefore, it is likely that many or most of the partial responders did not click "Next" to proceed to the next page of the survey. An important lesson for online eligibility screening may be to present all eligibility questions on one page. Doing so may increase the likelihood that participants will complete the entire eligibility screener to see if they are eligible for the study. Overall, recruitment for this study using only online methods did not prove to be feasible. Instead, a combination of online, contact lists (e.g., database of parents who had indicated they were interested in parenting research), and in-person methods was more successful. However, even this combination of methods yielded a small final sample that was somewhat homogeneous in terms of many demographic factors. Barriers to consent, enrollment, and study completion were significant and will be discussed next.

Overall, the process that participants had to complete to progress between eligibility screening, online consent, and final enrollment in the study was not feasible, as many eligible potential participants were lost to attrition throughout this process. 33 participants, over half (56.9%) of 58 eligible participants, agreed to participate in the study. Surprisingly, only two potential participants (3.45% of eligible participants) indicated that they did not wish to participate (i.e., clicked “I do not agree”) after viewing the online consent form. Many more participants were lost to attrition via discontinuing at some stage of the online eligibility screening, online consent, or phone and app-based enrollment process (discussed next) rather than by overtly declining to participate.

Attrition During Study Enrollment Processes

Progressing from eligibility screening to informed consent proved to be a significant source of attrition, as over a quarter (27.6%) of eligible participants did not continue beyond the eligibility screening questionnaire. It is unknown how many of them simply did not click to find out if they were eligible, versus how many found out they were eligible but discontinued when asked to provide their contact information to be contacted about study participation. Despite this uncertainty, the above may hold another lesson for feasibility of online recruitment: waiting until the informed consent process to ask participants for their contact information could have been more effective. It is possible that some participants were distrustful or uncertain about providing their contact information before obtaining full details about the study in the online consent form. Rather than continuing, they may have simply discontinued and left the webpage when asked for contact information. However, this is only a hypothesis and exact reasons for high attrition at this stage is unknown.

Another source of attrition, though not as large as the ones above, was progressing from expressing desire to be contacted to completing the online consent form. 10 of 58 eligible participants (17.2%) provided contact information and expressed a desire to be contacted, but either did not click to continue to the online consent form or viewed the consent form but did not fill it out and discontinued the online survey. Once again, it is unknown how many potential participants did not click to continue to the consent form page, and how many discontinued once they viewed the online consent. Nevertheless, attrition at this point may provide several possible lessons for the feasibility of online recruitment.

First, it may be beneficial to combine questionnaires and the flow of online recruitment into as few online screens or pages as possible. Alternatively, an online questionnaire that automatically proceeds to the next screen or page, rather than requiring each participant to click “Next,” may be helpful in reducing attrition after each page. Second, the online consent form for this study was long and complex. In addition to the options of “I agree” and “I do not agree” to participate, a third option was added that allowed participants to express their interest but wait to consent until they spoke to a member of the research team by phone. Nevertheless, it is likely that some potential participants saw the long and complex consent form, became overwhelmed, and discontinued by closing the page. In research studies that recruit and enroll participants in person, a trained research assistant typically reviews and summarizes the consent form for participants. It would be worth considering an equivalent version for online consent and enrollment, such as a brief video of a research team member reviewing the consent form or a brief text summary provided alongside the full consent form. Furthermore,

perhaps the skills and expertise of web developers and graphic designers could be used to format the online consent form more effectively in order to decrease the overwhelming nature of several pages of dense text and increase its readability and comprehension. Of note, some combination of the above steps may be particularly helpful in recruiting more participants with lower levels of formal education; it is possible that reading ability and comprehension was a barrier to these participants continuing once they saw the long and dense consent form.

On the other hand, 30 of 58 eligible participants, or about half (51.7%) of those who were eligible, did continue to the online consent form immediately after completing the online eligibility screener and provided consent to participate. In the future, additional participant feedback could be collected from these participants to determine what factors encourage potential participants to progress to the online consent phase and help them feel more comfortable and ready to consent without any contact with research staff.

Feasibility of Study Enrollment Procedures: Online and Phone Procedures

Once online consent was completed, completing full enrollment and orientation to the study proved to be yet another source of attrition. Although a total of 33 participants indicated their desire to participate in the study by consenting to participate online, about a quarter (24.2%) of these were unable to be reached for an orientation phone call or declined to participate prior to this call. Several conclusions about the feasibility of the study enrollment procedures can be drawn from high attrition at this stage.

On the one hand, the orientation phone call was included in the procedures for several important reasons: to provide participants a chance to ask questions about the study and more fully complete the informed consent process, to increase their comfort

and motivation to participate in the study (i.e., by speaking to a “real person” by phone), and to provide a more effective and accessible introduction to the study procedures, particularly technological steps. Although these reasons are sound, completing the orientation call, which typically lasted 20-25 minutes, was often a barrier for busy parents. This author spent a great deal of time attempting to contact consented participants by phone. Often, it was difficult for parents to find the time, energy, or focus to complete a long phone call, particularly when interrupted by their babies’ and toddlers’ demands and needs. The magnitude of this barrier was likely a source of the high attrition at this stage, although some participants may have realized they were no longer interested in study participation after signing the electronic consent form.

The above should serve as another lesson for feasibility of FIND: Web-Based and suggests the importance of redesigning the enrollment procedures for any future study. Alternatives to a long orientation phone call could include a one-time, in-person orientation visit, either at the research lab or at the participant’s home. Although this could increase participant burden due to transportation and could make it impossible for families who live further away from the research lab to participate, it could also be helpful in terms of increasing motivation and accountability as well as providing a focused time to complete study enrollment and orientation procedures (i.e., if childcare was available during this time). Alternatively, providing online options for this step, such as pre-recorded videos summarizing the consent form and reviewing study enrollment and orientation, could be a helpful option. Finally, a flexible hybrid of the above options could be created. For instance, videos with the content of the orientation phone call could

be made available to participants, with an option to speak to a researcher by phone or in person only if the participant wishes and is able to do so.

Timeliness and Rate of Participants' Progress through Study Components

Once enrolled, the time it took participants to complete the entire study varied greatly. For the 11 participants who completed all study components (i.e., pre-assessment, intervention, and post-assessment), duration of total study participation averaged almost 11 weeks (about 2 ½ months). The participant who completed the study most quickly did so in 28 days (4 weeks), while the one who did so most slowly completed it in 126 days (about 18 weeks, or 4 months). Initially, study duration was estimated to be 5-12 weeks. Therefore, the average time to complete all research activities fell on the longer end of this time range. On the other hand, four participants completed the study at an inordinately slow pace, taking over 3 months to complete all study activities. These participants also required many reminders at various stages. Although this pace was much slower than the initial estimate of 5-12 weeks, it was consistent with predictions that some participants might take much longer to complete the study. In terms of feasibility, these results demonstrate that participants were able to complete the study, but some did so much more slowly than others and required frequent reminders throughout their participation to complete each next step. Therefore, these results indicate that although the self-guided, online format was suitable for some participants, many could benefit from additional guidance, reminders, and/or in-person contact in order to facilitate more timely completion of intervention and other study procedures.

Feasibility of Online Assessment Questionnaires

Timeliness. In terms of completion of online questionnaires, participants were able to complete the research questionnaires online, but their time to do so varied greatly and many required reminders. Of the 22 participants who completed the pre-intervention assessment questionnaire, most completed it between 1 and 11 days after being given access to it. However, although mean time to complete pre-assessment was about 4.5 days, two significant outliers of 18 and 30 days were identified. Overall, 5 out of 22 (about 23%) participants who completed the pre-assessment took one week or longer to do so and were therefore provided with one or more reminders to complete this online questionnaire. Post-assessment results were notably different: all 11 participants completed the post-assessment within 8 days, with mean time to complete slightly over 2 days. 9 of 11 participants (about 82%) completed post-assessment within five days of being granted access, and only 2 (about 18%) took one week or longer and required one reminder. No participant required more than one reminder.

These results demonstrate that participants were able to complete online questionnaires, but a subset (18-23%) did require reminders after one week of inactivity. The difference in the time it took participants to access their pre-assessment as compared to their post-assessment may be due to the post-assessment being provided after participants had already been engaged with the intervention for one to several months. This prior engagement may have led to greater motivation to complete the online assessment at post-intervention as compared to pre-intervention. This difference may lend support to a “hybrid” intervention and study design, in which the pre-assessment and initial intervention session(s) could be conducted in person, while later intervention

sessions and the post-assessment could be conducted online. Such a model could increase participant engagement, motivation, and pace of initial study activities (stages that were also a major source of attrition).

The time that participants required to complete the online assessment questionnaires once they began them, on average, was consistent with expected estimates. However, one outlier was found for each assessment. 22 participants completed the pre-assessment, taking an average of about 21.5 minutes with all participants included, or an average of 18.5 minutes after removal of an outlier. Although the reason for an 82-minute outlier is unknown, it is likely that this participant began completing the questionnaire, paused or was interrupted, and returned to complete it later. When this outlier was removed, the next slowest time to complete post-assessment was about 30 minutes. Therefore, with one exception, all participants completed the pre-assessment within the initially expected timeframe of 30 to 40 minutes. These results show that online questionnaires for such assessments are feasible: although many participants did not begin their online assessments after being provided access, once they started the online questionnaires, they were able to complete them in a reasonable time.

Duration of survey completion for the post-assessment was similar overall. 11 participants completed the post-assessment, taking an average of about 34 minutes to do so (or an average of about 26 minutes after a significant outlier was removed). Although the reason for the 119-minute outlier is unknown, as described for the outlier time in the pre-assessment above, it is highly likely that this participant began completing the questionnaire, paused or was interrupted, and returned to complete it later. The next

slowest times to complete post-assessment were 55 and 45 minutes; all other participants completed the post-assessment in 35 minutes or less.

Therefore, with several exceptions, most participants completed the pre-assessment within the 30- to 40-minute timeframe that was initially estimated. For the three participants (including the outlier of almost two hours) who took longer than expected, it is unknown if this was due to a similar reason hypothesized for the outlier, or perhaps because the post-assessment had more open-ended questions, which took participants more time. For any future research, it would be recommended to slightly increase estimated times for assessments that include open-ended questions eliciting participant feedback.

Missing data in online questionnaires. A thorough analysis of missing data in both the pre- and post-intervention online questionnaires is included in the Results chapter. Briefly, contrary to the anticipation of missing data being a barrier, this was a very minor concern in the pre-assessment and negligible in the post-assessment. Thus, it can be concluded that for this sample, online collection of pre- and post-intervention assessment data using questionnaires was feasible overall, although a subset of participants required one or more reminders to begin their questionnaires.

Due to the very small sample, generalized conclusions about broader feasibility for a larger, less restricted sample cannot be made. Although online questionnaires were feasible for this small sample, they may not be for a broader sample of participants, such as those who were lost to attrition or ineligible to participate (described next).

Technological and Other Barriers to Study Eligibility

Analysis of the reasons that participants were not eligible revealed that of over 100 potential participants who completed the eligibility screener in its entirety, almost half were ineligible for the study. This high proportion of ineligible participants indicates that the criteria to participate in this study prevented many parents or caregivers who were interested in participating from doing so. Of all ineligible participants, over half of these (56%) were not eligible solely due to technological reasons. Specifically, exactly 50% of potential participants were ineligible due to not having access to an iPhone or iPad; several others did have an iPhone or iPad that did not meet specific technical requirements for study participation. An additional 10% of ineligible participants were ineligible for two or more reasons, most of which included one technological reason. Therefore, it is evident that technological requirements for FIND: Web-Based posed a significant barrier to participation for over half of parents or caregivers who initially wished to participate. Half of ineligible participants being ineligible solely due to not having access to an iPhone or iPad provides a strong rationale for expanding any future research and/or implementation of FIND: Web-Based to additional devices beyond Apple mobile devices and additional platforms beyond iOS. Alternatively, if technological limitations continue to provide a strong rationale for limiting FIND: Web-Based to only Apple devices, the possibility of loaning participants a mobile device to complete the intervention should be explored. As discussed above, the final sample was a relatively high-SES sample; it is likely that expanding the technological requirements beyond only Apple mobile devices and/or loaning participants a device would help recruit a broader sample of greater socioeconomic diversity.

Feasibility of FIND: Web-Based Intervention Implementation:

Attrition, Engagement, and Completion Rate of the Online Intervention

Attrition During Intervention Phase of the Study

Overall, 24 participants (41.4% of all eligible participants, or 72.7% of those who consented online) completed the study enrollment procedures, including the orientation phone call. Of these, 22 participants also completed the pre-intervention assessment online questionnaire. However, only 11 participants (45.8% of those enrolled in the study and 50% of those who completed pre-assessment) went on to complete the entire FIND: Web-Based intervention. In short, half of the study's participants who completed pre-assessment were lost to attrition immediately prior to beginning the intervention or during the intervention phase. The vast majority of participants who dropped out of the study simply discontinued participation and stopped responding to contact attempts. Therefore, reasons for attrition after study enrollment are largely unknown. However, because these attrition rates are extremely high, it can be theorized that the online format of FIND: Web-Based at least partially contributed to this high attrition rate.

Furthermore, attrition rate varied by intervention progress, with many more participants dropping out of the study in its early stages. Following completion of the pre-intervention assessment, most participants dropped out prior to or after the first session. Once participants uploaded their first raw film, attrition rate for remaining participants greatly decreased. Attrition between online sessions was as follows:

- 1) 22 participants were provided access to intervention Session 1 (introduction),
- 2) 16 uploaded Film 1 and were provided access to Session 2,
- 3) 14 participants uploaded Film 2 and were provided access to Session 3,

- 4) 13 participants uploaded Film 3 and were provided access to Session 4,
- 5) 11 participants uploaded Film 4 and were provided access to Session 5. All of these participants also uploaded Film 5 and were provided access to Session 6.

The above results demonstrate that once participants progressed through study enrollment procedures (e.g., online eligibility screening consent, phone orientation to the study), completed pre-intervention assessment, and uploaded their first film, they were much less likely to be lost to attrition subsequently. Therefore, the procedures leading up to intervention Session 2 (including the introductory Session 1 and the filming and uploading of the first raw film) proved to be a barrier for many participants. These were the least feasible aspects of the study and intervention. Options to modify these initial processes in order to decrease attrition and improve participants' experience during their study and intervention participation will be discussed below.

Participants' Engagement with and Rate of Progress through the Intervention

Engagement with and pace of completion of the intervention varied greatly, given its self-guided nature. Unlike in-person interventions, which typically occur on a regular schedule (e.g., one session per week), FIND: Web-Based allowed participants to complete all intervention activities around their own schedules. This flexibility may be an advantage for busy parents or those with long or irregular work schedules; however, it also required participants to maintain their own motivation and follow-through in order to move through the program at a steady pace. Participants took an average of about two months to complete the FIND: Web-Based intervention. This mean completion time was generally aligned with initial estimates. However, the range of intervention completion time varied greatly, from 3 weeks to 15 weeks (or about 3.5 months). Although 3.5

months still fell within a time judged as reasonable by the research team, it was a much slower pace of intervention engagement. FIND: Web-Based consisted of six online “sessions” that participants were asked to complete. Assuming time between sessions was approximately equal, this longest intervention completion time translates to an average of 2.5 weeks to complete each session. Therefore, some participants progressed through the intervention at a very slow pace. Such participants in particular may benefit from an in-person or “hybrid” intervention approach, as they likely had one or more barriers such as a busy schedule, little free or uninterrupted time, family events or circumstances, and/or a lack of motivation that prevented them from completing sessions at a quicker pace.

Overall, as the sample decreased in number between sessions and attrition rate among remaining participants decreased, the average time participants took to upload each subsequent film decreased or remained stable. On average, participants took about 14 days to upload their first film; however, these included all participants, including those who later dropped out. Time to upload the second film was 12 days on average, or 10 days after removal of one outlier. Average time to upload the third and fourth film was about 9 days, and time to upload the last film increased to 13 days.

Several aspects of these results are notable. First, not reflected in the above mean times is that the time to upload new films varied greatly. Some participants filmed their parent-child interactions and uploaded their raw video clips almost immediately, within a day of receiving access to each respective intervention session. On the other hand, others took several weeks or even over a month to do so. Second, the FIND coach provided participants with reminders to continue their intervention engagement (e.g., complete their next online FIND session and/or upload their next raw film) after about one week of

inactivity. On average, time to upload each new film was greater than one week, even with outliers removed. Therefore, the average participant did require at least one reminder, and at times additional reminders, to upload their next raw film in order to keep progressing through the online intervention. This finding is important in terms of feasibility of online intervention. Although a small number of participants were found to be highly self-motivated and prompt in completing online activities, most participants took at least one week or at times, several weeks, between intervention activities. Furthermore, the average participant required at least one reminder from the FIND coach to continue their participation in the online intervention. It is unknown if automated, non-personalized reminders could also serve this purpose and be equally as effective in an online intervention, or if the personal nature of the reminder (e.g., Box comment, call, text, or email directly from the participant's FIND coach) helped participants remain engaged.

Acceptability of Intervention and Participants' Satisfaction with Intervention

Participants' Satisfaction Ratings of FIND: Web-Based

Participants rated their satisfaction and perceived usefulness, helpfulness, and acceptability of various aspects of FIND: Web-Based using a 1 to 10 Likert scale, described in greater detail in *Methods* and *Results*. When participants' responses to all questions were averaged, the mean rating of all aspects of FIND: Web-Based was about 7.5 out of 10. Therefore, participants were generally satisfied with the intervention, but not highly satisfied overall. Overall, participants found the online and mobile filming aspects of the intervention to be acceptable, though less so than its core content.

In terms of specific aspects of the intervention, the area of lowest satisfaction across all participants was difficulty filming themselves interacting with their child(ren). On average, participants rated this aspect at about 6 out of 10 (with 1 indicating “very difficult” and 10 indicating “very easy” to film for the intervention). The next lowest-rated aspects were the acceptability of the intervention’s online format and helpfulness of the FIND materials (i.e., online handouts), each rated as about 7.5 out of 10 on average.

Overall, participants found the content and ideas presented in the FIND intervention to be mostly to highly satisfactory and acceptable. The areas of highest satisfaction, on average, were the relevance of the ideas presented, rated as about 9 out of 10. This was followed by usefulness of intervention content and helpfulness of FIND videos, each rated as about 8 out of 10.

These quantitative feedback results indicate that participants were satisfied but not very satisfied with the novel aspects of FIND: Web-Based, namely its requirement to film themselves with their child(ren) and the online format. On the other hand, participants were highly satisfied with the core elements of FIND: they found the ideas presented very relevant, the content very useful, and the videos very helpful. These results hold some important lessons for the feasibility of FIND: Web-Based. For the small sample of participants who were able to complete the intervention and study, the online intervention was feasible overall, but had several specific aspects that should be improved. The online format and requirement for parents to film themselves were acceptable overall but more difficult for some families than others, suggesting room for improvement in these areas. Furthermore, it is likely that many of the participants who were lost to attrition had even more difficulty with these elements, which the current data does not reflect. Therefore,

improving the online delivery and providing further assistance with filming could be crucial to decreasing attrition (potentially retaining a more demographically diverse range of participants) and increasing satisfaction. On the other hand, participants' high level of satisfaction with the core aspects of FIND suggests that despite some difficulties with the filming and/or technological aspects of FIND: Web-Based, participants still enjoyed and benefitted from the intervention's core elements, which came across even through the online format. These results reflecting participant satisfaction only hold true for the very small and relatively higher-SES and lower-risk sample of parents who completed the full intervention and study. Because final participation was very low and attrition very high, these results cannot demonstrate feasibility of FIND: Web-Based for a broader sample of parents. However, they are helpful to identify areas of greater and less satisfaction that in turn, can suggest areas in which the intervention can be modified to make it more feasible.

Participant Feedback Supporting Intervention Feasibility and Satisfaction

All participants reported satisfaction with the intervention, at least enough to state that they would recommend it to a friend or colleague. Two participants, however, specified that they would recommend it specifically for parents who were struggling to interact with their child or those with "low parenting skills." Three main themes emerged for reasons participants would recommend the program: value of the content (i.e., learning new skills, terminology, or perspectives), the strength-based aspect of FIND, and the video coaching aspect specifically. In terms of which aspects of the intervention participants found most helpful, themes that emerged were largely similar to the above. Almost half of the participants enjoyed seeing their own videos of positive parent/child

interactions as examples of the skills being taught. Furthermore, several participants described that FIND highlighted their interactions with their child(ren), and some felt more aware of these interactions as a result. Several participants once again emphasized the strength-based nature of the intervention. Two participants liked the summary sheet handouts provided. These results indicate that the core aspects of video coaching parenting programs (i.e., teaching new skills via videotaped examples of parents' own interactions; focus on positive parent/child interactions as a way to build parents' skills and increase these interactions) and the unique strength-based nature of FIND translated to this novel online adaptation of FIND. These aspects were endorsed as beneficial and enjoyable by many participants. Furthermore, when asked what they would change about the FIND content, none of the participants identified any aspects of the core FIND content they would change. Several participants also did not suggest any changes to the online delivery of FIND: Web-Based, indicating that for some, the intervention was acceptable as is.

As noted previously, results reflecting participant satisfaction only hold true for the very small sample of parents who completed the full intervention and study; as a whole, the final sample was relatively high-SES and highly educated. Because final participation was very low and attrition very high, these results do not necessarily demonstrate acceptability of FIND: Web-Based for a broader sample of parents, as many parents who did not find the intervention acceptable likely dropped out or did not participate in the study. However, feedback from the final sample is helpful to identify areas in which the intervention can be modified to make it more feasible and acceptable.

Many participants gave feedback about difficulties with and/or changes to the online delivery or format of the intervention, described next.

Feedback and Recommended Changes to Novel Online Aspects of Intervention

As anticipated, the major area of change and improvement to FIND: Web-Based identified by participants did relate to its online format, most frequently to recording, uploading, and viewing films using the online Box platform. On the one hand, the majority of participants liked the convenience and flexibility afforded by the online format (i.e., ability to complete it around their own schedules). Several participants liked the online format's accessibility and ease of use, while several others liked receiving reminders from their FIND coach. These results indicate that the anticipated key advantages of an online intervention (e.g., greater convenience, flexibility, and accessibility) when compared to an in-person intervention did hold true for FIND: Web-Based, for this small sample. Furthermore, a significant number of participants did not identify any changes they would make to the online delivery of FIND nor report any difficulties with technological components or filming; several made positive comments about these elements instead.

On the other hand, many participants provided valuable constructive feedback to improve FIND: Web-Based, with most frequently identified changes related to difficulties with technological aspects and/or filming themselves. Several clear themes emerged in constructive feedback about the online delivery and technological components of the intervention. First, a significant number of participants disliked technological aspects of the videos, with the most common sub-theme being difficulty uploading raw films. According to several participants, the raw films took a long time,

multiple attempts, or a lot of mobile data (in the absence of reliable Wi-Fi) to upload to Box, or were simply “not easy” to upload directly into the app; one participant’s uploaded films required troubleshooting with the research team. Two participants also noted that edited films took a long time to load for playback within Box.

Next, several participants expressed difficulty with filming themselves interacting with their children. Difficulties filming included finding one-on-one time with the child to film, parent self-consciousness, getting an appropriate angle, and ensuring the child was clothed for videos. These difficulties were separate from technological difficulties. However, they still directly relate to the intervention’s online format due to the novel requirement for parents to film their own parent-child interactions, rather than being filmed in person by a coach. Although the orientation phone call and PDF guide included tips for filming and normalized initial uncomfortable feelings during filming, these aspects could be further emphasized. Alternatively, a “Tips for Filming” handout and/or brief instructional video could be added after the first introductory FIND: Web-Based session. The orientation phone call occurred before parents completed the pre-intervention assessment and, in some cases, long before they began the intervention. Providing additional support for filming immediately before parents are asked to film for the first time could be beneficial to address some of the identified challenges.

Several other participants expressed difficulties or dissatisfaction with other aspects of the online platform not related to videos: the large amount of phone memory required by the Box app, the Box app file system organization, and confusion around the correct order in which to view the edited and educational FIND videos. Most of the above issues could be remedied by expanding FIND: Web-Based to a broader range of

technology. For instance, allowing participants to use a non-mobile version of Box on a computer to complete at least some intervention activities would likely eliminate difficulties related to insufficient system memory on mobile devices and decrease problems related to slow video upload and playback. The Box interface would likely be easier to navigate on a larger computer screen as compared to a tablet and especially a small phone screen. Participants who have access to a computer could film and upload videos using their mobile device, and then have the option to complete other steps of the intervention on their computer if they prefer. Expanding to non-Apple mobile devices was also mentioned by several participants. This possibility had been discussed at length at the initiation of this study, and a decision to not do so was made for this initial feasibility and early pilot study. However, for future studies, expanding FIND: Web-Based to operating systems other than iOS would not only greatly expand access and the pool of eligible participants, but could also improve the experience even for participants with Apple devices by allowing them another option. A version of FIND: Web-Based that combines filming on a mobile device and completing other intervention activities (e.g., watching edited and educational videos, reading handouts) on a desktop or laptop computer could be especially promising, as it would likely alleviate many of the technological difficulties noted above. However, difficulties with filming and technological difficulties related to uploading 10-minute raw video files could still occur and would need to be resolved.

Furthermore, the primary aim of adapting intervention to a web-based format needs to be considered. If the purpose is to increase access and allow parents or caregivers to complete FIND online, a computer-based option should be explored. On the

other hand, if the purpose is to specifically focus on delivering FIND via mobile devices and capitalizing on the current popularity of apps (e.g., parenting, mental health, and self-help apps), then barriers related to large video files on mobile devices must be addressed.

On the other hand, perhaps an online intervention format is simply not feasible for many families, particularly those with technological limitations (e.g., no access to reliable Wi-Fi, memory limitations on devices) and/or a greater number of barriers such as those posed by poverty (e.g., interfering demands on the time and energy of caregivers). It is possible that in-person intervention, or a hybrid intervention format combining one initial in-person visit with online activities, could be more feasible and improve engagement, rate of progress, and intervention completion. For instance, for families within a reasonable distance, it would be possible to complete the initial session in person with the coach, collect 10 minutes or more of raw film using an iPad belonging to the research lab, and create subsequent edited videos from this raw film. Participants could complete remaining intervention sessions and view their edited film and handouts on a mobile device or a computer. If needed, a second in-person session could be added to collect additional raw film and provide participants with another point of contact to increase motivation and follow-through for remaining sessions. Such a hybrid version could eliminate difficulties associated with parents filming themselves with their child(ren) and uploading raw films yet continue to capitalize on the advantages of the online format.

Discussion of Preliminary Outcome Results: Non-Significant Findings

Parenting Sense of Competence

No statistically significant difference was found between participants' self-ratings of their parenting sense of competence (PSOC) before and after completing the FIND:

Web-Based intervention. On average, parents' PSOC scores stayed stable from pre- to post-intervention. See Table 2 for each parent participant's PSOC scores at pre- and post-intervention, matched with basic demographic variables (all figures and tables can be found in Appendix D). Furthermore, calculated effect size for any difference was close to zero and did not meet criteria for even a small effect, and post-hoc power analysis revealed statistical power close to zero. These results indicate that participation in FIND: Web-Based was not associated with any change in parenting sense of competence. It is possible that these results are reflective of a broader sample and that unlike in-person intervention, some aspect of the online intervention prevented a positive impact on PSOC. However, this sample's PSOC at pre-intervention was relatively high overall, with an average score of 53 on a scale ranging from 18 to 72. Therefore, it is also possible that the parents in this sample already viewed themselves as fairly competent parents and that the intervention did not significantly increase their PSOC. This result may be due to a ceiling effect and may not hold when generalized to a sample of parents with lower perceived competence. In other words, it is possible that a sample of parents who view themselves as less competent overall (i.e., lower PSOC score at pre-intervention) could experience some increase in PSOC after completing the intervention.

Frequency and Consistency of “Serve and Return” Positive Parenting Behaviors

The comparison of participants' first and last raw films using PICCOLO video coding yielded a lack of significant findings overall. Although there was a minimal change in the mean PICCOLO total score in the expected direction (i.e., increased slightly), this increase was less than one point (out of 58 total maximum points) and not found to be statistically significant nor approaching statistical significance. Furthermore,

while 6 participants' total PICCOLO scores increased, 4 participants' scores did not change and 3 participants' scores decreased. In terms of changes in each of the four PICCOLO categories (i.e., Affection, Responsiveness, Encouragement, and Teaching), Affection was the category with greatest mean increase, although this increase was small. Responsiveness and Teaching scores showed very small, likely negligible increases. Mean Encouragement scores changed in the opposite direction than expected: a mean decrease, also likely negligible, was found between first and last films.

Several explanations can account for the lack of significant findings. First, it is possible that participation in FIND: Web-Based did not, on average, lead to any changes in parenting behaviors or parent-child interactions, as captured by the PICCOLO tool. On the other hand, the PICCOLO tool only has a 3-point scale (i.e., 0, 1, or 2 for any given item) and may therefore not be sensitive enough to detect small changes in parenting behaviors, particularly with parents who are relatively skilled overall.

An alternative explanation relates to the activity that parents chose to record. Parents were provided with great flexibility in the type of activities they could film. Furthermore, they were encouraged to film a range of activities throughout the intervention, including daily routines such as mealtime or bedtime, in order to highlight the generalizability of “serve and return” interactions to everyday activities and routines. Of note, several parents whose PICCOLO scores decreased between their first and last videos began by filming more open-ended, child-led play in their first video, as opposed to filming more structured and/or parent-led routines such as mealtime or bedtime (e.g., reading aloud from a book) in their last video. The latter types of activities may intrinsically allow less opportunities for many behaviors that make up the PICCOLO

subscales. Parents were purposely encouraged to record a range of activities throughout the intervention and notice their use of FIND elements (i.e., parenting skills) in different activities and routines with their children. Therefore, varying the activity they filmed and using less child-led activities in latter sessions could have been clinically helpful to parents' learning and skill development. However, from a research standpoint, it is possible that, had the same type of activity been recorded in the first and last videos, these parents' PICCOLO scores would not have decreased. In other words, some parents' overall use of positive parenting behaviors could have remained stable or even increased, but the change in activity type coded using PICCOLO led to perception of a decrease in skills. In future research, greater uniformity in the type of activity filmed for coded videos could be helpful to more accurately assess changes in responsive, attentive parenting skills and strategies. For instance, parents could be asked to film the same type of activity in their first and last films, while filming different types of activities in their middle films for the aforementioned clinical benefit.

Finally, it is also possible that a lack of significant findings using PICCOLO video coding was related to less rigorous reliability standards in this study. For the purposes of this dissertation, it was not possible to work with a second coder to achieve inter-rater reliability. Although this author reached 75% item reliability for each PICCOLO subscale before proceeding to code participant videos, this was done using a set of other videos of parent-child interactions previously coded by another research team. Best practice for reaching reliability on video coding typically dictates that coders work together and discuss codes to reach consensus and resolve discrepancies; it was not possible to do so for the current study. Furthermore, the activities recorded in this study's

raw films were sometimes different from those in the prior films used to reach reliability. Therefore, it is possible that true reliability was not reached, which may have resulted in non-significant findings for the video coding portion of the study.

Significant Findings Suggesting Positive Impact of FIND: Web-Based Parenting Stress

A statistically significant difference was found between participants' pre- and post-intervention self-ratings of their parenting stress using the Parenting Stress Index (PSI). On average, parents' PSI scores decreased about 9.5 percentile rank points from pre- to post-intervention, with a small to medium effect size. Furthermore, mean parenting stress at pre-intervention was slightly higher than the normative sample; one participant endorsed a clinically elevated level of parenting stress at pre-intervention. This was no longer true at post-intervention. When specific aspects of parenting stress were analyzed separately, a statistically significant mean decrease of about 11 percentile rank points was found between pre- and post-intervention in Parent-Child Dysfunctional Interaction (PCDI) scores. This decrease approached a medium effect size. Similarly to total PSI score, this sample's mean PCDI score was also slightly higher than the normative sample's at pre-intervention, but fell within the normative range at post-intervention.

See Table 2 for each parent participant's PSI and PCDI scores at pre- and post-intervention, matched with basic demographic variables (all figures and tables can be found in Appendix D). Interestingly, when changes in scores are viewed by participant, a range of participants demonstrate a decrease in PSI and/or PCDI. Several participants demonstrate higher parenting stress at pre-intervention that decreases to more normative

levels at post-intervention, while others demonstrate normative or lower than average parenting stress at pre-intervention, which decreases at post-intervention.

These results should be interpreted with a high degree of caution, as a number of possible confounding factors could account for decreases in parenting stress and specifically, in parent-child dysfunctional interactions. Confounding factors include maturation (e.g., child development over the course of the study leading to a decrease in parenting stress and less stressful interactions). Parents could have developed a greater ability to cope with the difficulties presented by their child(ren) simply with the passage of time and with more practice. Because this study lacked a control or comparison group that did not receive the intervention, no causal claims can be made about the impact of FIND: Web-Based on parenting stress.

However, the above results are nevertheless promising for the possibility of finding such an effect in more rigorous future research on FIND: Web-Based. In order to correct for multiple comparisons, a False Discovery Rate of 10% was set. Under these conditions, a statistically significant decrease in parenting stress was found, even though this study was underpowered to find statistically significant findings with more conservative correction (i.e., $\alpha = .05$ and Bonferroni correction for Family-Wise Error Rate). A small to medium effect size was also found. These are promising results suggesting that FIND: Web-Based may contribute to a decrease in parenting stress.

Furthermore, the finding that the decrease in parenting stress is most attributed to a decrease in parent/child dysfunctional interactions specifically is also promising. FIND, and by extension, FIND: Web-Based, targets parent-child interactions. Therefore, a decrease in parent-child interactions that are perceived as dysfunctional can be

interpreted as parents' perception that their interactions with their child(ren) have improved. This improvement suggests the possibility of intervention effects in this area; therefore, these relationships should certainly be further examined in future research.

This study's non-controlled design and the presence of only two time points (i.e., pre- and post-intervention, without a follow-up) limited the statistical analyses that could be conducted. Future research should include a follow-up time point and a control or comparison group in order to make possible the use of more rigorous analyses, such as analyses of variance (ANOVAs). These analyses would allow more adequate disentangling of outcomes using multiple comparisons than this study could provide.

Implications

The results of this study can be used to inform changes to improve the research design and intervention delivery of FIND: Web-Based for future research. Overall, recruitment and attrition were two of the greatest challenges for this study. The current recruitment strategy and research procedures should be reconsidered in order to overcome these barriers and increase feasibility, as well as to increase the diversity of participants who enroll in the study and more importantly, complete it. On the other hand, for the small, limited sample of participants who did remain in the study, online data collection using pre- and post-intervention online questionnaires did not pose any significant challenges.

Based on both quantitative and qualitative findings of this feasibility study, the FIND: Web-Based online intervention could be improved in several key ways. Most importantly, making it easier for participants to film themselves with their child(ren) and decreasing technological difficulties and barriers (e.g., slow video upload and loading

times, dissatisfaction with the Box app) is crucial to ensure the feasibility of the online intervention. On the other hand, despite technological difficulties, most participants who did complete FIND: Web-Based were satisfied with the intervention overall, and highly satisfied with several specific aspects that should be retained. However, as noted above, it is important to keep in mind the nature of the final sample (i.e., higher-SES, relatively high levels of formal education, mostly two-parent households) as well as the participants lost to attrition when considering the feasibility of the intervention. It is possible that FIND: Web-Based is feasible and more appropriate as a universal prevention program for a lower-risk sample of families with less barriers, rather than as a true intervention designed to target any specific problems or difficulties in families at greater risk.

Furthermore, no significant changes were found in parenting sense of competence between pre- and post-intervention assessment. On the other hand, on average, parents reported a significant decrease in parenting stress, and specifically, a significant decrease in parent-child dysfunctional interactions after completing FIND: Web-Based. These are promising preliminary outcome results that suggest the possibility of some positive intervention effects for parents. Therefore, further research should be conducted on FIND: Web-Based after making the above recommended changes to its online delivery. Such further research can seek to demonstrate positive impact for a broader range of families using a larger, more diverse sample and more rigorous study design and methodology.

On the other hand, this study's results also demonstrate significant limitations of providing intervention to families through an online format. The high percentage of families who were not eligible to participate, paired with very high attrition, demonstrates

that online research and interventions may only be appropriate for a small, specific subset of parents of young children. For many others, perhaps in-person intervention and coaching may still be ideal. Alternatively, a hybrid format of FIND: Web-Based was discussed, in which initial study enrollment, informed consent, orientation, and possibly pre-assessment and the first intervention session and filming is done in person. Following this, participants would likely be more engaged and more able to complete additional components online in a more flexible, self-guided manner.

Limitations

This study had several significant limitations. First, recruitment proved to be difficult and the attrition rate was very high. Of the 33 participants who were eligible for the study and electronically consented to participate via an online consent form, only 22 (66.6%) fully enrolled in the study and completed the pre-intervention assessment. Furthermore, only 11 (33.3%) of the 33 initially consented participants completed all study procedures, including full FIND: Web-Based intervention and the post-intervention assessment. Therefore, the final number of participants who completed the study was very small, even for an early-stage pilot and feasibility study. The small sample greatly limited statistical power and made it difficult to uncover statistically significant results for the preliminary outcomes measured. In addition, because data related to intervention feasibility and acceptability feedback was collected at post-assessment, only 11 participants' answers to quantitative and open-ended feedback questions could be analyzed, greatly limiting the ability to draw conclusions from this sample.

Another significant limitation was the lack of demographic diversity in this study's small sample. Several notable demographic characteristics of the sample limit the

generalizability and external validity of findings. For instance, the majority of participants who completed the study were Caucasian (i.e., over 80% of parent participants and over 70% of child participants). Although this is largely reflective of the racial/ethnic demographics of Oregon, where this study was conducted, it limits generalizability of findings to parents or caregivers and children of other races and ethnicities. In addition, although child participants were roughly evenly distributed in terms of gender, all parent participants who completed the study identified as female and mothers. One mother was an adoptive mother, while all others were biological mothers. Therefore, the generalizability of findings to caregivers of another gender and/or those who have another relationship to a child (e.g., fathers, step-parents, adoptive or foster parents, grandparents, or other extended family member caregivers) may be limited. Every participating child lived in a two-parent household, the vast majority of which were a mother and a father. Therefore, generalizability of findings may be limited in this aspect as well, as results could be different for single parents and/or LGBTQ parents.

The study sample also captured a relatively narrow socioeconomic and educational range. All parent participants had completed at least some college, with over half reporting completion of a Master's, doctorate, or other graduate degree. Due to difficulty with recruitment, the sample was largely a sample of convenience: much of the recruitment was completed at or near the University of Oregon (UO), at UO-associated programs (e.g., child care centers for faculty, staff, and students), and via UO channels of communication (e.g., student and faculty parent email lists). Therefore, while the educational characteristics of the sample are not surprising given the recruitment sources, they also limit generalizability of findings. For instance, it is possible that results may be

different for parents or caregivers with lower levels of formal education. Overall, although it is possible to make claims and draw conclusions specific to this sample, it is questionable if these conclusions would hold for a broader sample of families.

In addition, this study had important limitations in its research design. Pre- and post-intervention data was collected, but the study design lacked a post-intervention follow-up assessment. Therefore, any longer-term intervention outcomes could not be evaluated (e.g., to determine if decrease in parenting stress was maintained for some time after intervention completion). Due to this study's extremely high attrition rate, it is likely that obtaining follow-up data several weeks or months after intervention completion would be very difficult. Nevertheless, attempting to collect data at a third follow-up timepoint would be an important addition to future research. Adding a third data timepoint would also allow for more robust statistical analysis of intervention outcome data, such as repeated-measures analysis of variance (ANOVAs).

Furthermore, this study was an early-stage feasibility and non-controlled pilot study. Although the study was initially designed as such, the sample size was much smaller than anticipated, limiting the statistical power for quantitative analyses as well as the generalizability of qualitative findings. In addition, this study did not have a control or comparison group of parents who did not participate in FIND: Web-Based. Due to the non-controlled design, no causal claims can be made based on the preliminary outcome findings; any claims at this stage are merely correlational. Changes from pre- to post-intervention, such as decrease in parenting stress, could be due to other confounding variables, such as time or maturation. For instance, the decrease in parenting stress could be due to participants becoming more experienced parents during their participation in

the FIND: Web-Based intervention. Alternatively, young children’s development and maturation over several months could lead to a decrease in parenting stress. The influence of such confounding factors can only be teased apart with a more rigorous research design, such as a randomized controlled trial (RCT). Although this study provides a great deal of information about the feasibility of FIND: Web-Based, findings related to intervention outcomes (i.e., changes from pre- to post-intervention) should be viewed as preliminary, correlational data. On the other hand, this study lays the foundation for future research on FIND: Web-Based that should include a comparison or control group (e.g., waitlist control or “treatment-as-usual” group) to address these limitations.

Directions for Future Research

Many of the lessons learned from implementing an online research study and the FIND: Web-Based intervention can inform future research on FIND: Web-Based, including a larger-scale pilot study and a randomized controlled trial. In particular, future pilot studies and/or RCTs should be expanded to parents or caregivers who use mobile devices with operating systems other than Apple’s iOS. A FIND: Web-Based intervention that is compatible with laptop or desktop computers would also be recommended. If this is not feasible for filming, combining the use of mobile devices for filming and computers for viewing intervention content is recommended, as this could decrease many of the most commonly experienced technological difficulties. Furthermore, expanding future research on FIND: Web-Based to a broader demographic of families would be recommended in order to increase generalizability of findings. Alternatively, if this proves too difficult, framing FIND: Web-Based as a more universal

prevention program for lower-risk families, rather than an online intervention program for children and families at risk for any particular issues or problems, may be warranted.

This dissertation study demonstrated that significant challenges to research and intervention feasibility exist for the current study and intervention design of FIND: Web-Based. Significant barriers included low rate of participant eligibility, high attrition rate, technological difficulties, and some participants' challenges filming themselves with their child(ren). The final sample of parents who completed the intervention and study was limited in several key demographic factors, limiting generalizability of any findings and conclusions drawn from this sample. On the other hand, for this small sample of parents, it was generally feasible to collect research data online and they reported finding the intervention acceptable and enjoyable overall.

Preliminary outcome results from this sample demonstrated a statistically significant decrease in parenting stress, specifically in parent-child dysfunctional interactions, between pre- and post-intervention. These results are strictly preliminary and are limited in their generalizability by this study's sample and design. However, they are promising and provide a rationale for further research on FIND: Web-Based, with important modifications. Such research will be important in order to create an online intervention and/or prevention program that is acceptable and beneficial to a broad range of parents and caregivers of young children.

APPENDIX A

FRONTIERS OF INNOVATION (FOI) DEMOGRAPHICS QUESTIONNAIRE

Primary Questions

Target Child

1. Child's age: _____ years, _____ months
2. Child's birth date: ___ ___/ ___ ___/ ___ ___ ___ ___
3. Child's gender: _____
4. The following racial categories come from the US Census Bureau. If you and/or the child identifies in a way that is not captured by these categories, please use option G for "Other."

Child's race/ethnicity (check **all that apply**):

- African-American or Black
- American Indian or Alaska Native
- Asian
- Hispanic or Latino
- Native Hawaiian or other Pacific Islander
- White/Caucasian
- Other

If Other, Please Specify: _____

5. What is your relationship to the child participating in the study today? (check **one**)

- Mother
- Father
- Step-mother
- Step-father
- Aunt/ Uncle
- Grandparent
- Teacher
- Other (Includes Foster Mother, Foster Father, Kinship care provider etc.)

If Other, Please Specify: _____

6. Who lives in the household with the child (e.g. 1 mother, 2 sisters, 1 step-father, etc.)?

- ___ Mother
- ___ Father
- ___ Step-mother
- ___ Step-father
- ___ Sister
- ___ Brother
- ___ Grandmother
- ___ Grandfather
- ___ Others

If Others, Please Specify: _____

7. What language is primarily spoken in your home (i.e. spoken more than any other languages)?

8. What other languages are spoken in your home (if applicable)?

Caregiver

9. How old are you (in years)? _____

10. The following racial categories come from the US Census Bureau. If you identify in a way that is not captured by these categories, please use option G for "Other."

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

African-American or Black

American Indian or Alaska Native

Asian

Hispanic or Latino

Native Hawaiian or other Pacific Islander

White/ Caucasian

Other

If Other, Please Specify: _____

11. What is the highest degree or certification you have earned, in any program? (check **one**)

Less than high school

Some high school

High school diploma or equivalency (GED)

Some college

Associate degree (junior college)

Bachelor's degree

Master's degree

Doctorate or Professional (PhD, MD, JD, DDS, etc.)

Other

If Other, Please Specify:

12. What best describes your relationship status? (check **one**)

Engaged

Married

Separated

Divorced

Widowed

Living together/ cohabitating

Romantically involved, but living apart

Not in any kind of relationship

13. Which of the following best describes your current employment status? (Check **one**)

Working full time

Working part-time

Unemployed or laid off, *seeking employment*
Unemployed or laid off, *not seeking employment*
Keeping house or raising children full-time
Retired
Full-time student
Other
If Other, Please Specify:

With regard to your current or most recent job activity:

14. Where do/ did you work? (*For example: hospital, construction, newspaper, post office, warehouse, factory, school*)

15. What is/ was your job title? (*For example: registered nurse, personnel manager, supervisor of order department, gasoline engine assembler, grinder operator, teacher*)

16. To the best of your knowledge, which option best describes your annual household income from all sources? (check **one**)

No income
Less than \$5,000
\$5,000 to 14,999
\$15,000 to \$29,999
\$30,000 to \$44,999
\$45,000 to \$59,999
\$60,000 to \$74,999
Greater than \$75,000

17. Do you receive any of the following forms of assistance? (check **all that apply.**)

Child Care (subsidy, Head Start, etc.)
Social Security
Food/ Nutrition (ie. WIC, food stamps, etc.)
Healthcare (ie. Medicaid, subsidized healthcare, etc.)
Housing assistance (ie. Section 8, help paying for rent etc.)
Cash Assistance (ie. TANF or Welfare etc.)
Other
None of the above
If Other, Please Specify:

Secondary Questions

Target Child

If child is over one year of age, complete item 18:

18. Which hand does your child prefer to use? (check **one**):

Left Right No preference

If your child is over 2 years of age, complete items 19 - 23:

19. Is English your child's first language? A. YES B. NO

20. If no, at what age (in months) did your child first start learning English?

21. If no, what language is your child's first language?

22. Does your child currently attend school or childcare? A. YES B. NO

23. If yes, what grade is your child either currently enrolled in or will be enrolled in when they return to school?

24. If your child is of school age (kindergarten and above), and does not attend school and/or will not re-enroll, please explain: _____

25. Is your child on any medications? A. YES B. NO

26. If yes, please list the name(s) of the medication(s):

27. Was your child born prematurely? A. YES B. NO

28. If so, how many weeks premature?

29. Has your child ever been diagnosed with any neurological or psychological disorders (i.e. ADHD, autism, Asperger's, depression, etc.) A. YES B. NO

30. If yes, please explain: _____

Motor Milestones

Next to each item, please answer yes or no, and then provide the approximate age (in months or weeks) at which the skill first appeared (if applicable).

31. Sitting independently (without support of parents or hands): A. YES B. NO Age:

32. Crawling: A. YES B. NO Age:

33. Cruising (moving/walking while holding furniture): A. YES B. NO Age:

34. Walking independently: A. YES B. NO Age:

Caregiver

35. Do you have a car or reliable access to one? A. YES B. NO

36. What is the last grade or year of regular school you completed (not alternative degree programs)? (check one.)

Elementary School	Middle School	High School	College	Graduate School
01	06	09	13	17
02	07	10	14	18
03	08	11	15	19
04		12	16	20+
05				

37. Do/did you regularly work....

Weekdays?

Evenings (6pm-11pm)?

Nights (11pm-7am)?

Weekends?
Different times each week?

38. *To what extent are the following needs being met:*

38A. Food: (check **one**)

- My family is frequently hungry.
- My family is sometimes hungry.
- I meet my families' needs with state help.
- I meet my families' needs without help.

38B. Housing: (check **one**)

- I am homeless or will be in 1 month
- I worry that I could be homeless soon
- I can afford my home with state help
- I can afford my home without help.

38C. Money: (check **one**)

- I don't have enough money for basic needs.
- I meet basic needs but have no extra money.
- I have some extra money with state help.
- I have some extra money without help.

38D. Access to help: (check **one**)

- There is no state help for me.
- I don't know how to get state help.
- I do know how to get state help and have done it.
- I do know how to get state help but don't need it.

39. How many people are currently living in your household, including yourself (include children and non-relatives)? _____

40. How many of the people living in your household are children (under 18)? _____

41. How many of the people living in your household are adults (over 18)? _____

42. Of these adults, how many bring income into the household? _____

43. Is the home where you live: (check **one**)

- Owned or being bought by you (or someone in the household)?
- Rented for money?
- Occupied without payment of money or rent?
- Other (specify) _____

44. Does the target child live or spend a significant amount of time in more than one household?

YES NO

45. If so, who lives in the other household (e.g. 1 father, 2 step-sisters, etc.)?

- ___ Mother
- ___ Father
- ___ Step-mother
- ___ Step-father
- ___ Sister
- ___ Brother

___ Grandmother

___ Grandfather

___ Others (specify _____)

46. Who are the child's primary caregivers? (check **all that apply**)

Mother

Father

Step-mother

Step-father

Sister

Brother

Grandmother

Grandfather

Others (specify _____)

47. Who is financially responsible for the child? (check **one**)

Mother

Father

Step-mother

Step-father

Sister

Brother

Grandmother

Grandfather

Others (specify _____)

48. Are you presently receiving financial assistance from the government for childcare?

YES NO

49. Are you presently volunteering in your child's classroom to satisfy TANF work requirements? YES NO

APPENDIX B

PARENTING SENSE OF COMPETENCE

(Johnston & Mash, 1989)

Check whether you strongly agree, agree, disagree, or strongly disagree with the following statements.

Strongly Agree	Agree	Disagree	Strongly Disagree
4	3	2	1

1. The problems of taking care of a child are easy to solve.
2. Even though being a parent could be rewarding, it is difficult now.
3. I go to bed feeling like I have not gotten a whole lot done.
4. Sometimes when I'm supposed to be in control, I feel like the one being controlled.
5. My parents were better prepared at being good parents than I am.
6. I would make a fine model for a new parent.
7. Any problems associated with being a parent are easily solved.
8. One problem with being a parent is not knowing whether you are doing a good job.
9. Sometimes I feel like I am not getting anything done.
10. I feel that I am as skilled as I need to be in taking care of my child.
11. If anyone can find the answer to what is troubling my child, I can.
12. I do a good job of caring for my child.
13. I am more interested in other things than being a parent.
14. Considering how long I've been a parent, I know what I am doing.
15. I would be a better parent if parenting were more interesting.
16. I have all the skills to be a good parent.
17. Being a parent makes me tense and nervous.
18. Being a good parent is rewarding.

APPENDIX C

PARTICIPANT FEEDBACK FORM–CAREGIVER

(Adapted from Frontiers of Innovation Feedback form)

Thank you for your participation in this research program. We hope you have enjoyed working with us and that this program has been helpful for you! To help us understand how to improve in the future, we'd like to ask for your feedback, on both the content of FIND: Web-Based and on the format of the sessions and evaluation. Please answer the questions below.

1. How useful was the content of this program to you?

1 2 3 4 5 6 7 8 9 10

Not at all useful

Very Useful

2. How helpful were the videos shared by your FIND coach/editor?

1 2 3 4 5 6 7 8 9 10

Not at all helpful

Very helpful

3. Were the materials (e.g. online handouts) helpful?

1 2 3 4 5 6 7 8 9 10

Not at all helpful

Very helpful

4. How did the length of the program feel to you?

1 2 3 4 5 6 7 8 9 10

Too short

Just right

Too long

5. Did the ideas presented in the program make sense? Were they relevant?

1 2 3 4 5 6 7 8 9 10

Not at all relevant

Very relevant

6. How well did the online format of the program (sharing and accessing materials on your phone or tablet) work for you?

1 2 3 4 5 6 7 8 9 10

Not well at all

Very well

7. How easy or difficult was it to film yourself and your child interacting?

1 2 3 4 5 6 7 8 9 10

Very difficult

Very easy

8. Would you recommend this program to a friend or someone you work with? If so, why? If not, why not?

9. Was there anything in particular you liked about the content of the program? What was most helpful, and why?

10. Was there anything you didn't like or that you would recommend we change in the content of the program? If you could change anything about the content of the program, what would it be?

11. Was there anything in particular you liked about the online format of the program?

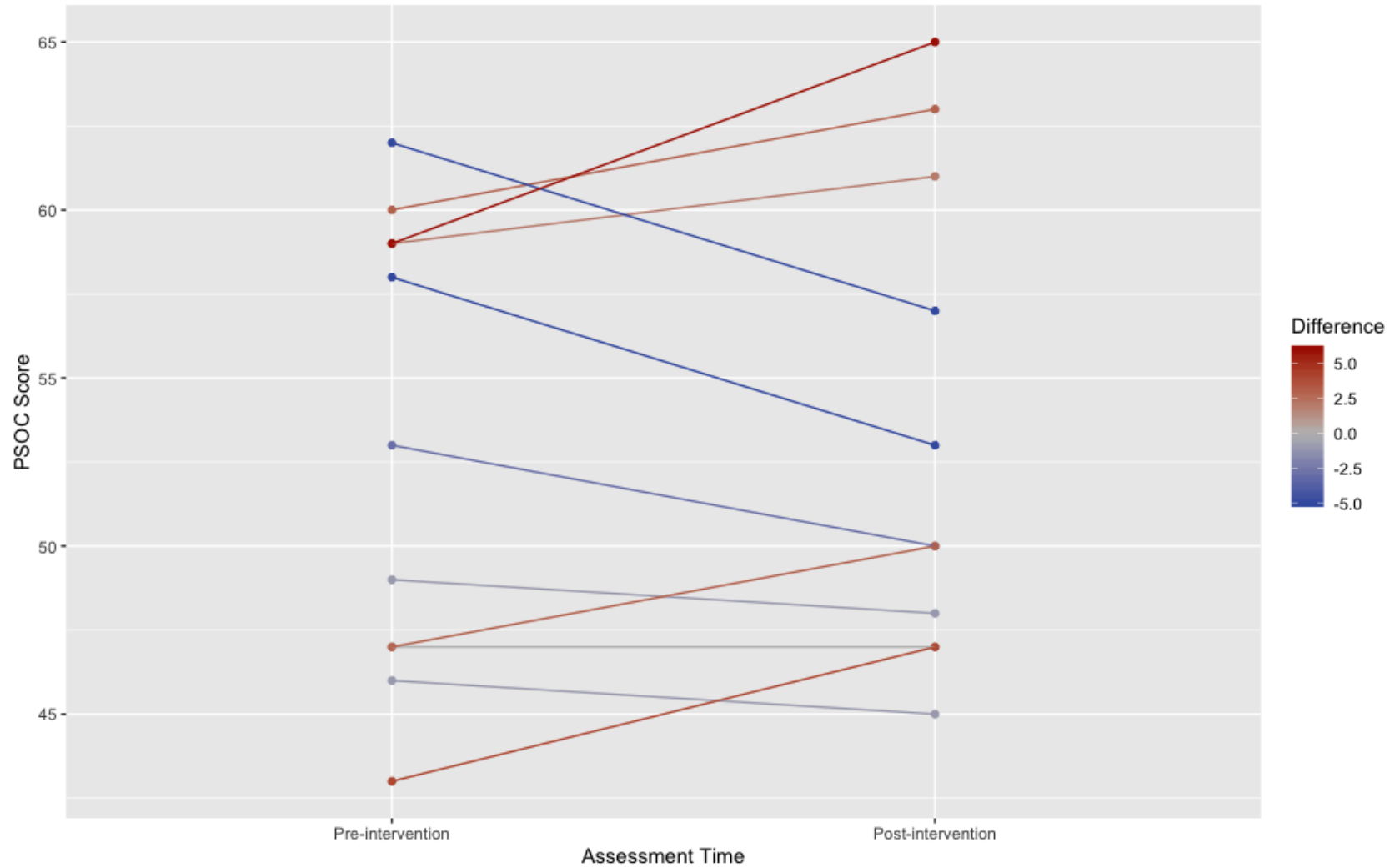
12. Was there anything you didn't like or that you would recommend we change in our online delivery of the program? If you could change anything about the delivery of the program, what would it be?

13. Did you have any difficulties with any of the program's technological components (e.g., installing or using Box, filming yourself and your child using your device, completing tasks or accessing materials online)? If so, what would have helped make that easier for you?

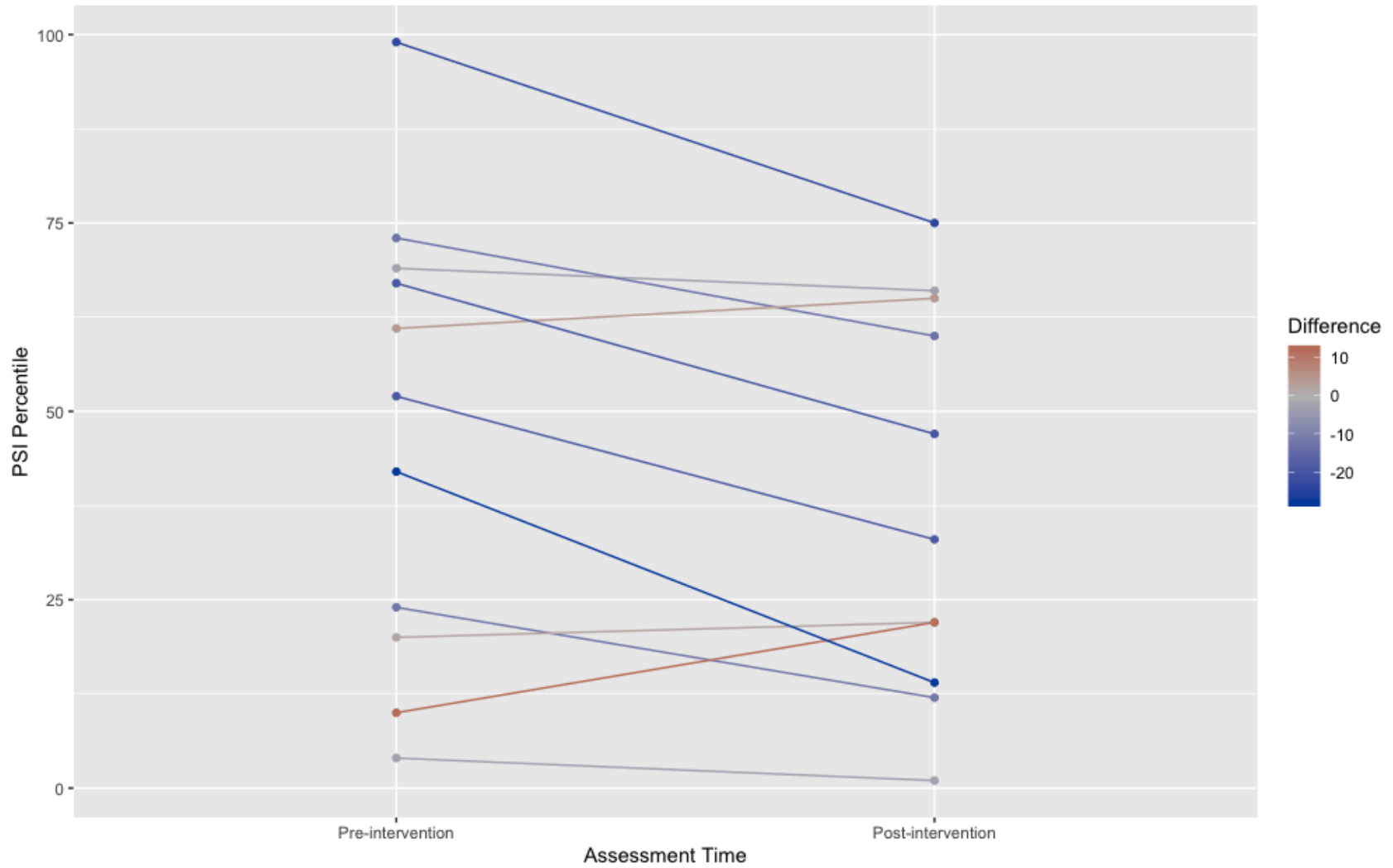
14. Are there are any other adults in your household who may have liked to participate in FIND with you?

APPENDIX D. FIGURES AND TABLES

Change in Parenting Sense of Competence (PSOC) between Pre- and Post-Intervention



Change in Parenting Stress Index (PSI) between Pre- and Post-Intervention



Change in Parent-Child Dysfunctional Interaction (PCDI) between Pre- and Post-Intervention

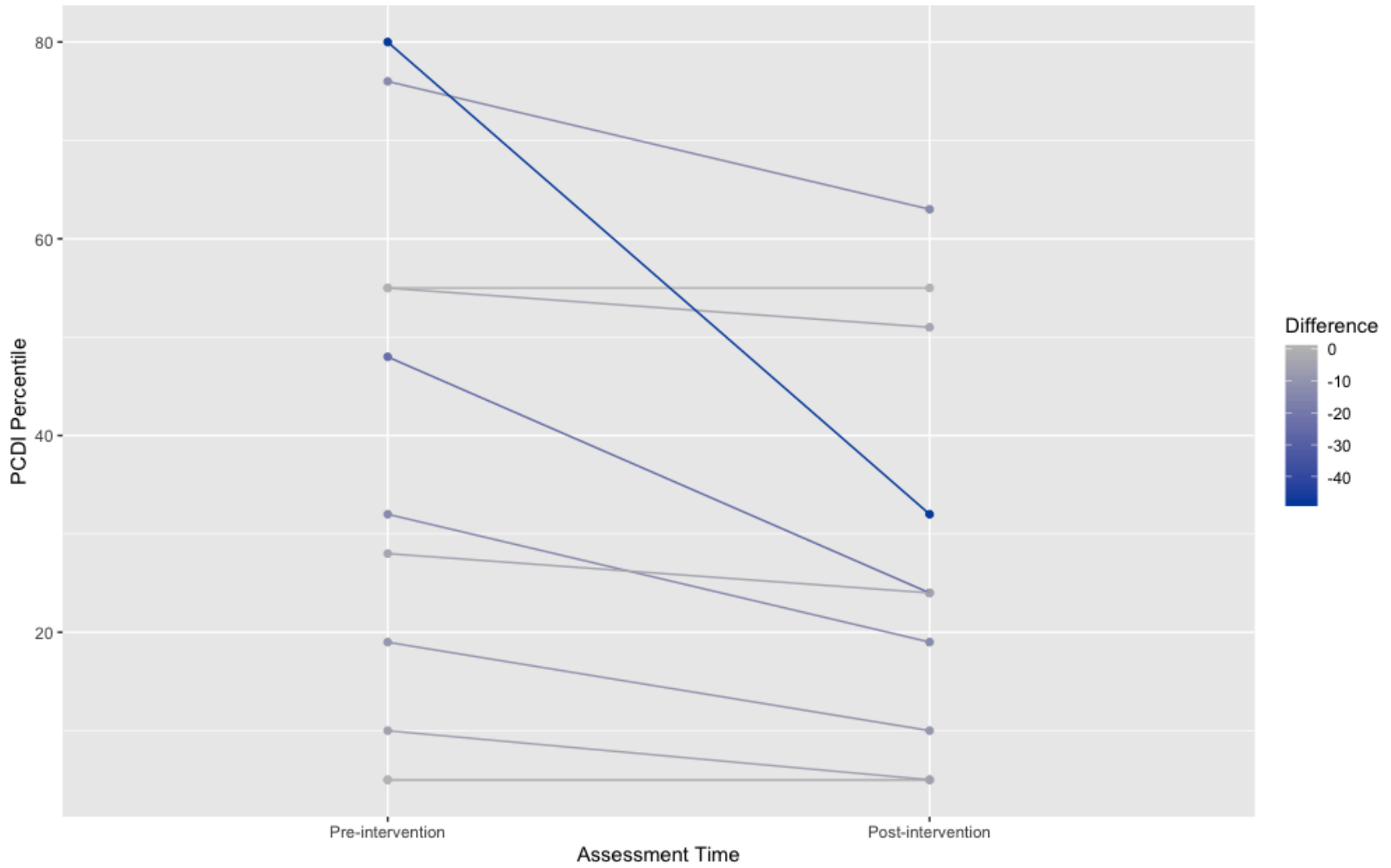


Table 1. PSI and PCDI Descriptives Using *t*-test for Equality of Means from Pre- to Post-Intervention.

	Pre-Intervention		Post-Intervention		df	<i>t</i>	<i>p</i>	FDR adjusted <i>p</i>
	M	SD	M	SD				
PSI total score percentile rank	47.36	29.97	37.91	25.70	10	2.45	.034*	.085
PCDI subscale percentile rank	37.55	27.10	26.64	21.22	10	2.53	.030*	.085

**p* < .05.

Note. PSI = Parenting Stress Index. PCDI = Parent-Child Dysfunctional Interaction. M = Mean. SD = Standard Deviation. PSI total and subscale percentile rank range from 1 to 100. Scores above the 85th percentile are considered to indicate a high level of parenting stress.

Table 2. Summary of Participant Demographics and Pre- and Post-Intervention Parenting Sense of Competence and Parenting Stress.

Mother Demographics				Child Demographics			PSOC Score		PSI Percentile		PCDI Percentile		Summary of PSI and PCDI Changes from Pre to Post ^c
Age Group	Race/Ethnicity	Formal Education	Annual Household Income	Sex	Age ^b	Race/Ethnicity	Pre	Post	Pre	Post	Pre	Post	
Early 40s	White	Doctorate or equivalent	> \$75K	F	2.5	White	59	61	24	12	5	5	Decrease in parenting stress
Early 30s	White	Bachelor's	\$45-59K	F	1.5	White	49	48	69	66	55	51	
Late 40s	White	Doctorate or equivalent	> \$75K	M	3 and 4.5	Hispanic/Latino	47	47	73	60	76	63	Decrease in PCDI
Late 30s	White	Master's	>\$75K	M	3 and 1	White	60	63	20	22	19	10	
Late 20s	White	Some college	\$15-29K ^a	M	4	White	62	57	10	22	5	5	Opposite direction than expected: Increase in parenting stress
Late 30s	AA/Black	Doctorate or equivalent	> \$75K	F	2.5	AA/Black	46	45	61	65	55	55	
Early 40s	Hispanic/Latino	Master's	> \$75K	M	2	Hispanic/Latino; White	53	50	52	33	48	24	Decrease in parenting stress and decrease in PCDI
Late 30s	White	Master's	\$60-74K	F	3 and 0	White	47	50	67	47	32	19	
Late 20s	White	Some college	\$15-29K ^a	F	2 and 1	White	58	53	42	14	28	24	Decrease in parenting stress
Early 30s	White	Bachelor's	\$15-29K ^a	M	3	White	59	65	4	1	10	5	
Late 20s	White	Bachelor's	\$45-59K	M	3 and 0.5	White	43	47	99 ^d	75	80	32	Decrease in parenting stress ^d and decrease in PCDI

Note. PSOC = Parenting Sense of Competence. PSOC scores can range from 18 to 72, with a mean score of 62 (*SD* = 10) in a normative community sample.

PSI = Parenting Stress Index. PCDI = Parent-Child Dysfunctional Interaction (a subscale of Parenting Stress Index). AA = African American.

^a Family estimated to fall under Federal poverty line (based on household size, assuming midpoint of identified income range)

^b Child age approximated to closest half-year; second age listed is the age of participating sibling (if any)

^c Changes noted if scores changed by 10 percentile rank points or more

^d Clinically significant stress; this participant had clinically significant PSI score at Pre, which decreased to non-clinical PSI score at Post

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