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Exploring parenting self-efficacy among parents of children in residential treatment: evaluating a combined online psychoeducational intervention

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**EXPLORING PARENTING SELF-EFFICACY
AMONG PARENTS OF CHILDREN IN RESIDENTIAL TREATMENT:
EVALUATING A COMBINED ONLINE PSYCHOEDUCATIONAL
INTERVENTION**

by

WINSLOW ROBINSON

B.A., Connecticut College, 2008
M.S.S.W., Columbia University, 2011

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Approved by

First Reader

Jordana Muroff, Ph.D.
Associate Professor of Clinical Practice

Second Reader

Linda Susan Sprague Martinez, Ph.D.
Assistant Professor of Macro Practice

Third Reader

Thomas Byrne, Ph.D.
Assistant Professor of Social Welfare Policy

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Winslow Robinson
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Boston University School of Social Work, 2018

Major Professor: Jordana Muroff, Associate Professor of Clinical Practice

ABSTRACT

When children return home from residential treatment for behavioral challenges, continuity of care is clinically advised and empirically supported. If parents lack the skills to support this transition, a child's treatment gains may be at risk. Parenting difficulties can initiate oppositional and avoidant behaviors in children, and if sustained, damage the parent-child relationship, leading to poor child outcomes. Offering parent training during a child's residential treatment may increase parent self-efficacy and use of the training in support of a child's transition home. A Northeastern US Residential Treatment Program (RTP) annually provides short-term residential treatment for children (ages 6-18), and therapeutic supports to the parents of these children during their milieu care. RTP's new online parenting program was evaluated across three separate but related studies, exploring in Phase 1) perceived barriers to online program usability, Phase 2) how video dosage was associated with changes in parenting self-efficacy and parenting stress, and Phase 3) through the lens of family routines, what were the longer-term effects of the online program.

Results from Phase 1 suggested that parents with lower technology familiarity may need ongoing support to successfully complete online training; adding digital prompts helped

parents to autonomously navigate the online program. Phase 2 results indicated that parenting self-efficacy increased minimally while children were away, and decreased when children returned home; an inverse effect was found for parenting stress. Phase 3 revealed limited application of the online parent training in post-residential family routines; parent training was shared internationally within parenting social networks, though virtually no videos were watched once children had transitioned home. Similar parenting programs using the Fogg Behavior Model may consider nudging parents during natural surges in parent motivation to prolong recently initiated therapeutic benefits during post-residential home aftercare.

Keywords: psychoeducation, parent training, residential treatment, Fogg Behavior Model

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LIST OF ABBREVIATIONS

CPS	Collaborative Problem Solving
FBM	Fogg Behavior Model
IDEAS	Integrate, Design, Assess, and Share
IY	Incredible Years
PBS	Positive Behavior Support
PMI	Parent Motivation Inventory
PPP	Positive Parenting Program (Triple-P)
PSE	Parenting self-efficacy
PSI-SF	Parenting Stress Inventory - Short Form
PSOC	Parenting Sense of Competence
PW	Parenting Wisely
RTP	Residential Treatment Program

CHAPTER ONE: INTRODUCTION AND LITERATURE REVIEW

Introduction

Children are labeled 'disturbed' because those who label them are disturbed by them.

- Todd Rossi, former Director of the Wediko Summer Program

There is near consensus that a child's progress in residential treatment for behavioral challenges is not predictive of their postdischarge functioning, with evidence that post-treatment adjustment is highly correlated with the quality of a child's postdischarge environment (Bates, English, & Kouidou-Giles, 1997). Outcome research indicates that residential treatment programs should maximize opportunities for learning that are generalizable into nonresidential settings (Curry, 1991). Observing that many aftercare systems in child welfare are underfunded and poorly coordinated, residential facilities have been called upon to ensure services to prepare youth for transition and reintegration into their communities (Hawkins-Rodgers, 2007). Returning home from residential care is a major life transition for children and families (Whittaker, Schinke, & Gilchrist, 1986).

To sustain child treatment gains, it is recommended that congruence be maintained between expectations of the child while in treatment, and expectations once the child has returned home (Hess, 1990). Although numerous studies have informed the understanding parent influences on child outcomes (Coleman & Karraker, 1998; Coleman & Karraker, 2003; Jones & Prinz, 2005), and the literature has long identified

the importance of aftercare services following residential treatment (Guterman, Hodges, Blythe, & Bronson, 1989; Hagen, 1983; Taylor & Alpert, 1973; Whittaker, Ainsworth, & Fulcher, 1987), post-residential parenting characterized by panic or perfectionism can place children at greater risk for transitional problems (Hess, Bjorklund, Preece, & Mulitalo, 2012). One way of supporting a child's transition home may be to provide parent training that parallels the timing of child residential treatment, to better prepare parents to provide home-based aftercare.

Unfortunately, traditional in-person parenting programs can pose problems for parents who have competing commitments (e.g., work schedules, childcare responsibilities for children not in treatment), or who face barriers limiting their attendance (e.g., access to reliable transportation, physical challenges limiting mobility), a problem often reported among single parent families (Baker, Arnold, & Meagher, 2011; Heinrichs, Bertram, Kuschel, & Hahlweg, 2005; Lengua et al., 1992; Spoth & Redmond, 1996). As social work scholars have called for technology solutions to be harnessed for social good (Berzin, Singer, & Chan, 2015; LaMendola & Krysik, 2008; Uehara et al., 2013), residential treatment programs might consider using technology to bypass such in-person barriers to sustain children's post-residential child treatment gains through flexible and on-demand services in online parent training programs. Behavioral parent training is often designed to augment parenting ability, with outcome research frequently characterized by parent-level changes in parenting self-efficacy and parenting stress as indicators of program effects.

While there is great potential for technology to augment parent self-efficacy and

reduce parenting stress, implementation science encourages a mindful approach to the development and release of digital interventions. Thoughtfulness about digital intervention development starts with empathy, considerate of the perceived simplicity of technical intervention components that users will face (Mummah, Robinson, King, Gardner, & Sutton, 2016). Parents will only be able to benefit from online parenting programs if they are a) sufficiently motivated to participate, b) the program seems easy enough to do, and c) instructions for involvement successfully prompt parent engagement (Fogg, 2009).

Given that returning home from residential treatment is a predictable major life transition, this transition is a “privileged moment” (Cialdini, 2017, p. 34) that can be planned for, applying behavioral science to increase parents’ chances of successfully sustaining or building upon recently initiated treatment. A recent comprehensive review of technology-based youth and family-focused interventions failed to locate a technology solution aimed at supporting post-residential continuity of care (MacDonell & Prinz, 2016). This dissertation sought to fill this literature gap by evaluating a bespoke online intervention disseminating psychoeducational video content to parents of children before, during and after their child’s residential treatment with the aim of enhancing parenting self-efficacy to levels such that parents would be more likely to apply skills learned in the evidence-based parent training (i.e., bespoke online video intervention). Program effects were ultimately analyzed through the lens of family routine to determine the extent to which parent training had been integrated into post-residential parenting behavior. The primary goal of this three-phase intervention research series was to explore how online

psychoeducational parent training may improve post-residential parent¹ well-being (i.e., increase parenting self-efficacy and decrease parenting stress). This dissertation will first review relevant literature, and then discuss the current studies in three separate but related phases.

Literature Review

Evolution of approaches to parent involvement in child treatment

At the turn of the 19th century, before the influences of parenting behavior on child outcomes were understood, undesirable child behaviors were attributed to moral deficit and medicalized into formal diagnoses (Gall, 1835; Mercier, 1899; Wollons, 1993). In Western Europe and the United States, the nomenclature of children's mental health began as medical discussions of 'imbecility' and 'idiocy', disease categories that located problems within the 'deviant child' (Rafalovich, 2001). Facilities developed to house children with 'curable' conditions became residential treatment programs for children with serious needs, though (as it was believed that youth problems were the product of unfit parents) parents were withheld from participating in child treatment (Small, 2003).

Such constraint changed in the 1960s as it was recognized that parents (not just clinicians) had meaningful roles to play in child behavior change (Bandura, 1969; Kaminski, Valle, Filene, & Boyle, 2008). These realizations led to a rapid increase in parent training programs, addressing all manner of parenting content (e.g., child

¹ The term 'parent' is used for consistency, though the terms 'caregiver' or 'guardian' may also apply.

development curricula, behavior management techniques, communication skills), mode of delivery (in-person, group-based, home visit), methods of teaching (role-play, homework, perspective-taking), and types of families receiving services (single mothers, low-income teenage parents, children exhibiting antisocial behavior) (Kaminski et al., 2008).

Residential treatment represents a unique challenge for parent involvement in child treatment, given that child admission to residential is synonymous with child removal. Due to limitations in their existing environment, admission to residential indicates that a child's treatment needs are insufficient in the child's immediate ecosystem (e.g., home setting, school system, local therapeutic supports). As such, parenting supports for children in residential treatment face challenges of reunification during transition home from residential treatment, in addition to the traditional aims of parenting supports in improving parenting ability. While in-person supports are frequently available to parents of children attending residential treatment, parents must contend with numerous challenges as children return home.

Challenges as children transition home from residential treatment

The number of children and adolescents needing residential care has increased significantly since 1980, and as of 2003 nearly 70,000 youth were involved in residential treatment (Connor, Doerfler, Toscano Jr, Volungis, & Steingard, 2004; Warner & Pottick, 2003; Zelechowski et al., 2013). Over 21% of children in the United States currently have, or at some point during life will have, a debilitating mental disorder

(Merikangas et al., 2010). Children who exhibit severe emotional and behavior problems are often treated in residential treatment programs, as they are unable to receive adequate care in less restrictive settings (Zelechowski et al., 2013). Residential treatment provides therapeutic services, typically through the daily living milieu delivered by a multidisciplinary treatment team, to children who exhibit an array of behavioral challenges including, but not limited to: aggression, antisocial behaviors, depression, hyperactivity, social deficits, and co-occurring psychiatric and substance abuse disorders (Bates et al., 1997). Routines grounded in daily living skills (e.g., dressing, personal hygiene, eating skills) and timing of activities (e.g., daily group therapy, mealtimes, sleep schedules, etc.) are important in communicating consistency and predictability (Koome, Hocking, & Sutton, 2012; Summers, Larkin, & Dewey, 2008).

Considering that the literature recommends similar qualities of care between residential programs and home (Bates et al., 1997), while acknowledging that parent reactivity might put a child's residential gains at risk (Hess et al., 2012), congruence between these recommendations might involve families ensuring a highly structured environment is set up to welcome their child home. Most children return home following residential treatment (versus further placement), and nearly 40% of families welcoming them lack access to aftercare funding (Sternberg et al., 2013). Especially without additional supports, this transition home can place extreme stress on the family (Guterman et al., 1989; Hess, 1990; Hess et al., 2012). Given that a child's post-treatment adjustment is highly correlated with the quality of a child's postdischarge environment (Bates et al., 1997), and that the supports a child receives in their post-residential

environment appear more significantly associated to a child's eventual outcome than a child's profile upon admission or discharge (Maluccio & Marlow, 1972), the transition home is integral to a child's mental health trajectory. As many families cannot access formal aftercare services (Sternberg et al., 2013), parents must independently support their child's transition home. Parenting programs might support this major life transition.

Psychoeducational parenting programs

Parent training seeks to change parenting behavior and cognitive processes to modify child behavior (Lundahl, Risser, & Lovejoy, 2006). Underpinned by social learning theory (Bandura, 1977; Olds, Sadler, & Kitzman, 2007), most parent training programs assume that maladaptive parenting practices contribute to the creation and maintenance of disruptive behaviors throughout childhood (Lundahl et al., 2006). Psychoeducational parenting programs integrate psychotherapeutic and educational features and, among those that are designated as evidence-based, psychoeducation curricula have shown multiple positive benefits for both the client and the family (Lukens & McFarlane, 2006). Psychoeducational parenting programs have demonstrated increases in parenting self-efficacy and reductions in parent stress (Roskam, Brassart, Loop, Mouton, & Schelstraete, 2015; Sanders, Markie-Dadds, & Turner, 1999; Sanders & Woolley, 2005; Tucker, Gross, Fogg, Delaney, & Lapporte, 1998).

Brief psychoeducational parenting programs have demonstrated effectiveness in improving positive parenting practices and significantly reducing child problem behaviors, with gains being maintained for 12 months (Bradley et al., 2003). Effectiveness studies of psychoeducational programs for underserved populations

demonstrate statistically significant improvements in family functioning, child misbehavior and couple functioning following participation in parenting psychoeducational groups (Berge, Law, Johnson, & Wells, 2010).

Lukens (2015) describes that psychoeducation principles include a) the learning exchange between client and provider acknowledging professional and quotidian knowledge, b) a modular curriculum design, to be accessible to a range of learners, c) consideration of content timing to allow for question clarification or emotional processing, d) a recipe of specific strategies to increase quality of life and enhance functioning, and e) awareness of culturally competencies and language. Lukens' (2015) comprehensive review of psychoeducational programs demonstrates that programs may either be primary or adjunct to other types of care. Other researchers opine that the variety of psychoeducational approaches (information sessions, skills training, or combination thereof) are effective because they address what families want and need (Zipple & Spaniol, 1987).

Online psychoeducational parenting interventions

While in-person parenting programs can be effective, they demand considerable therapist time, training, and supervision (Foster, Johnson-Shelton, & Taylor, 2007). Parents may also face logistical barriers that inhibit their ability to attend in-person sessions; scheduling challenges have been cited as primary barriers to program involvement (Spoth, Redmond, Hockaday, & Shin, 1996), and can result in program dropout (Kazdin, Holland, & Crowley, 1997). Thus, to maximize parent engagement, it has been recommended to create interventions with flexible delivery (Miller & Prinz,

1990) such that evidence-based elements may be transmitted while also reducing possible barriers to parent involvement (O'Brien & Daley, 2011).

Online psychoeducational parenting interventions have resulted in parents demonstrating greater understanding of children's mental health issues, and greater parenting self-efficacy in addressing these issues compared to controls (Deitz, Cook, Billings, & Hendrickson, 2008).

The landscape of online parenting interventions is dominated by two of the most widely cited evidence-based parenting programs for families of children with learning and behavioral challenges, in the Incredible Years (Taylor et al., 2008) and Triple-P programs (Baker & Sanders, 2017). More recently, the Parenting Wisely program is joining their ranks, modernizing its original CD-ROM parenting content in a fully online parenting intervention (Cefai, Smith, & Pushak, 2005; O'Neill & Woodward, 2002; Segal, Chen, Gordon, Kacir, & Gylys, 2003).

Incredible Years (IY) is a group-based parenting series employing video modeling techniques of different parenting approaches from diverse cultural backgrounds (Webster-Stratton, 1981, 1992). Having watched these video vignettes with other parents, content is discussed collaboratively, and a facilitator engages participants in cognitive restructuring, and emotional regulation strategies (Webster-Stratton, 1990a; Webster-Stratton, Kolpacoff, & Hollinsworth, 1988; Webster-Stratton & Reid, 2010). Research on IY is favorable, with the parenting intervention demonstrating improvements in parent-child interaction, reduction of harsh discipline compared with waitlist control (Webster-Stratton, 2016). Results were sustained at 1 to 3-years post-intervention (Webster-

Stratton, 1990b) and at 10-year follow-up (Webster-Stratton, Rinaldi, & Reid, 2011). In a hybrid model bridging internet intervention and coaching support (phone, electronic messaging, in-home visits), the IY program has demonstrated feasibility of its video intervention in web/in-person formats for parents of children with behavior challenges (Taylor et al., 2008).

Triple-P (Positive Parenting Program) takes a multi-level public health approach to parenting interventions, in communicating core positive parenting principles designed to address specific risk and protective factors identified as predictors of positive mental health outcomes in children (Sanders, 2008). These five principles include 1) safe and engaging environments, 2) positive learning environments, 3) assertive discipline, 4) realistic expectations, and 5) parental self-care. Triple-P has an extensive evidence base, with over 500 publications and seven meta-analyses suggesting consistent and positive effects on child behavior via parent psychoeducation, though some researchers have questioned its population-level benefits (Marryat, Thompson, & Wilson, 2017). Noting the paucity of evidence-based online parenting programs, Triple-P developers created Triple-P Online Brief (TOPL) as a five-module low-intensity parenting intervention seeking to promote parents' use of positive parenting strategies and decrease child behavior problems (Baker & Sanders, 2017). One hundred parents of children (ages 2-9) with disruptive behavior problems participated in this study. At nine-month follow-up, regression analyses demonstrated that higher baseline child behavior problems and older parental age predicted greater improvement in child behavior, and that younger child age

predicted completion of the recommended minimum dose of the program (Baker & Sanders, 2017).

Parenting Wisely (PW) is a 3-5 hour online interactive parenting course for parents of children ages 3-18, designed to support parent skill development in addressing common family challenges among young children (e.g., behavior problems, family conflict, etc.) and teenage children (e.g., drug and alcohol use, academic challenges, etc.) (Feil, Gordon, Waldron, Jones, & Widdop, 2011). Video scenarios (e.g., child interrupting parent on telephone) feature maladaptive parent problem-solving techniques, before multiple videos are offered as options displaying alternative responses to address the undesirable child behavior depicted in the scenario. Pre-post research on parent-reported changes associated with online PW is encouraging, with significant increases in parenting self-efficacy on the Parenting Sense of Competence Efficacy subscale ($t=2.28$, $p<.05$) from 33.56 ($SD=7.46$) to 35.60 ($SD=6.92$) with a small/medium effect size of .27), significant reductions in ratings of problematic child behavior, and high parent satisfaction (Feil et al., 2011). In addition, the PW website advertises recognition from the Center for Disease Control as a “best practice for prevention of youth violence” (parentingwisely.com, 2018).

Although the online versions of these parenting interventions herald positive outcomes, none are specifically tailored for helping parents sustain treatment gains following short-term residential treatment. For this and other reasons, a short-term Residential Treatment Program (RTP) in the Northeastern US opted to create a blended parent training program for parents of children in residential treatment, combining the

evidence-based parenting interventions Positive Behavior Supports and Collaborative Problem Solving, resulting in a pilot online psychoeducation intervention under exploration in this dissertation research series.

Positive Behavior Supports (PBS) and Collaborative Problem Solving (CPS)

PBS involves modifying parent behavior and the home environment to respond to the functions of negative child behavior (Carr et al., 1999; Hieneman, Childs, & Sergay, 2006). The PBS approach has demonstrated effectiveness in natural family settings with children (ages 7-14) when delivered by parents (Buschbacher, Fox, & Clarke, 2004; Carr et al., 1999; Lucyshyn, Albin, & Nixon, 1997), often using family routines as the unit of analysis (Lucyshyn et al., 1997; Lucyshyn et al., 2004) in single subject designs (Binnendyk & Lucyshyn, 2009; Clarke, Dunlap, & Vaughn, 1999). Maladaptive family routines are understood through the lens of coercion theory, which posits that repeat conditioning sequences can reciprocally maintain child problem behavior and ineffective parenting practices, becoming habituated across time as automatized transactional processes (Binnendyk & Lucyshyn, 2009; Dumas, 2005). A central goal of PBS is the contextual fit between a behavior support plan (e.g., residential continuity of care plan) and the family's ability to deliver the intervention (Albin, Lucyshyn, Horner, & Flannery, 1996; McLaughlin, Denney, Snyder, & Welsh, 2011). The family-centered PBS framework aims to a) help a family clearly define their family values, b) teach to children clear behavioral expectations representing those values, c) create family routines that support these expectations, and d) reinforce desired behaviors when they occur (Hieneman et al., 2006).

Given that children attending short-term residential treatment often need more support beyond clear expectations and rewards when expectations are met, providing parents with an empirically tested set of communication skills to help address challenging behavior might enhance the systemic nature of PBS. Collaborative Problem Solving (CPS) teaches parents how to proactively address challenging issues with children, express empathy, identify an adult concern, and invite children to solve problems collaboratively with adults. As CPS' transactional framework assumes low compatibility when adults do not acknowledge child-parent incompatibility, the goal of CPS parent training is to inform adults of this incompatibility, and interact with children to reduce aversive responses to incompatibility, so that higher compatibility might occur (Greene, Ablon, & Goring, 2003). Thus, the transactional CPS model views parent skills as a malleable risk factor for child outcomes, and potentially a protective factor as well.

Empirical research on the CPS approach demonstrates positive outcomes. Families report that the CPS intervention is feasible and acceptable, with low attrition and favorable parent satisfaction ratings (Johnson et al., 2012). CPS has been shown to reduce episodes of restraint among children with significant trauma histories and severe behavior, and lower staff and patient injuries (Greene, Ablon, & Martin, 2006) and has been associated with a reduction in the use of seclusion for children diagnosed with adjustment disorder, anxiety disorders, bipolar disorders, depressive non-bipolar disorders, hyperactivity, psychosis and other mental disorders (Martin, Krieg, Esposito, Stubbe, & Cardona, 2015). The effectiveness of CPS has been previously tested in residential treatment (ages 9-13); with results indicating a significant decrease in

problematic behavior between pre-admission and discharge (Stewart, Rick, Currie, & Rielly, 2009). Recently, CPS has been identified as an evidence-based practice (Ollendick et al., 2015).

The learning content of psychoeducational parenting interventions seems to fall into two primary theoretical orientations, as either behavioral or non-behavioral (Serketich & Dumas, 1996). Behavioral theories seek to create family change through contingencies, where a child's prosocial behavior is rewarded by parental reinforcement, and negative behavior is consistently ignored or paired with consequences (Serketich & Dumas, 1996). Non-behavioral programs emphasize communication strategies with children, seeking to teach empathy, mutual respect, and problem-solving skills (such as CPS). PBS is a behavioral program, seeking to modify a child's environment and reinforce desired behaviors. RTP anticipated that an intervention blending PBS and CPS may increase parenting self-efficacy to enhance parents' support of a child's transition home from short-term residential treatment.

Parenting self-efficacy and parenting stress

Parenting self-efficacy

Bandura's self-efficacy theory is defined as the belief in one's ability to perform a specific behavior (Bandura, 1977). Perceptions of self-efficacy have been associated with better physical and mental health (Gecas, 1989; O'Leary, 1985; Pearlin, 1983), and initiation and maintenance of behavior change (Kelly, Zyzanski, & Alemagno, 1991). Parenting self-efficacy (PSE) refers to a parent's perception about the extent to which they are able to perform competently and effectively as a parent (Johnston & Mash, 1989;

Sofronoff & Farbotko, 2002; Teti & Gelfand, 1991). Low PSE has been linked with depression and lower parenting satisfaction (Johnston & Mash, 1989). Research suggests that PSE correlates negatively with child behavioral problems (Mouton & Tuma, 1988), and parents frequently criticized about their parenting express decreased PSE (Herbert, 1995). Lower PSE scores on the Parenting Self-Agency Measure correlated with high ratings of 'receiving negative comments' and 'giving-in to a child's demands' (Whittaker & Cowley, 2012). Low maternal self-efficacy has been linked to maternal learned helplessness (Donovan, Leavitt, & Walsh, 1990), child behavioral problems (Gibaud-Wallston & Wandersmann, 1978; Johnston & Mash, 1989), and passive parenting coping style (Wells-Parker, Miller, & Topping, 1990).

Parents reporting high parenting self-efficacy are likely to interpret maladaptive child behavior as a solvable problem requiring heightened effort and use of parenting skills in creative ways, while parents with low self-efficacy may perceive such challenging situations as a threat exceeding their abilities (Coleman & Karraker, 1998; Donovan et al., 1990). Mental health risks for children in low socioeconomic families may be buffered when parents are nurturing and maintain a sense of personal efficacy, despite their disadvantaged environment (Elder, 1995). Conversely, low PSE might amplify negative impacts found in impoverished communities, suggesting a risk factor for child mental health outcomes (Coleman & Karraker, 1998). Researchers have indicated that PSE can predict parent competence, child functioning, or indicators of risk (Jones & Prinz, 2005). Self-efficacy has been positively correlated with parent efforts to educate themselves about parenting by enrolling in parenting education and reading

parenting materials (Spoth & Conroy, 1993), and parents completing brief, strengths-based parenting interventions have shown gains in their perceived ability to successfully raise their children (Waters & Sun, 2016).

Parenting stress

When children return home from residential treatment, their return can be met with high levels of parenting stress, as some parents express feeling unprepared to provide the level of intervention to which children had recently been exposed to in milieu treatment (Hess et al., 2012). Literature reports greater parenting challenges if children have externalizing behaviors (e.g., attention-deficit/hyperactivity disorder or ADHD) as parents of these children report greater levels of parenting stress (Johnston & Mash, 2001). Parents of children with externalizing symptoms tend to participate in more coercive and negative parenting behaviors, which can intensify child symptoms and increase parenting stress (Johnston & Mash, 2001). Heightened parenting stress can negatively affect parent-child relationships, resulting in poor child outcomes (Abidin, 1992), and parenting difficulties can initiate oppositional and avoidant behaviors in children, and if sustained, damage the parent-child relationship (Barrera et al., 2002; Bradley et al., 2003; Coleman & Karraker, 1998; Dodge & Pettit, 2003; Herbert, 1995; Walsh, 2002). Consequently, parents and children can find themselves in a downward spiral, whereby maladaptive parenting strategies reinforce child behavior problems, possibly leading to increased parenting stress (Webster-Stratton, 1990b).

Parenting stress may be related to poorer child outcomes among children with externalizing behaviors, as parenting stress can undercut parenting competence (Crnic &

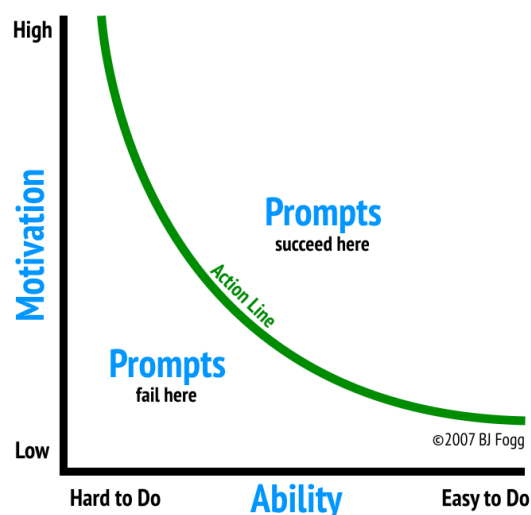
Ross, 2017). In addition, parenting stress may impede treatment engagement and treatment adherence, possibly resulting in treatment drop-out for parent and child (Jones, Putt, Rabinovitch, Hubbard, & Snipes, 2017): parents who have reported higher levels of stress appear more likely to discontinue treatment for their child compared to parents reporting lower levels of stress (Friars & Mellor, 2007).

Thus, an online parent program may help engage parents to address parent stress and enhance self-efficacy. One method of encouraging engagement in online parent training may be to increase the perception of simplicity of desired learning behaviors.

Conceptual framework to ‘activate’ parent engagement in online psychoeducation

As a strategy for activating engagement in online parent psychoeducation, the Fogg Behavior Model (FBM), conceptualizes behavior activation thresholds (Figure 1). The FBM assumes that behavior occurs when sufficient motivation, sufficient ability and a prompt (“*act now*”) occur at the same moment (Fogg, 2008, 2012, 2016a). Fogg explains that people have three core motivators, including sensation (pleasure vs. pain), anticipation (hope vs. fear) and belonging (social rejection vs. social acceptance) (2016a, 2016b), and describes the ability construct as the *perception of ability* rather than a measure of *actual ability*, fitting with Bandura’s (1977) self-efficacy theory as the *belief in one’s ability*.

Figure 1. Fogg Behavior Model (Fogg, 2009)



As it may take time for online psychoeducational video training to create shifts in perceived parenting ability, Fogg (2013) emphasizes that the best way to increase ability for challenging tasks is to make the desired behavior easier to do. By reducing the length of online video training, reducing complexity of online training to ease access of psychoeducational content, and ensuring that the training works on all devices (desktop and mobile), participation in parent training becomes easier to do as the perception of the online intervention is simplified.

Using the FBM as a strategy to activate changes in parenting behavior involves increasing ability (i.e., parenting self-efficacy) via online training to sufficient levels where prompts (challenging child behavior post residential treatment) are hypothesized to activate parenting skills learned (PBS and CPS competencies). Thus, this intervention operates under the assumptions of associative learning theory to create contingent relationships between challenging child behavior and the application of new parenting skills (Miller & Dollard, 1941; Shanks, 1995).

Study Aims and Hypotheses

Across three separate but related studies, this mixed methods dissertation research series (with a community partner) aimed to build and refine an online parenting intervention (Phase 1), evaluate changes in self-report parenting self-efficacy and parenting stress in relation to use of the new online program (Phase 2), and evaluate potential longer-term effects of the parenting program as families resume their lives in the weeks following residential treatment (Phase 3).

Phase 1 collaboratively built an online parenting program being piloted at a Northeastern US Residential Treatment Program (RTP), using online psychoeducational video streamed from RTP's website. This online program blended evidence-based approaches to child treatment in Positive Behavior Supports (Hieneman et al., 2006) and Collaborative Problem Solving (Greene et al., 2003). Guiding this first phase was the research question: *What are the perceived barriers identified by RTP parents that may interfere with parents' timeliness and completion of desired learner behaviors (navigating and accessing online content) through RTP online parenting program?* The aim of this first phase was to explore perceived simplicity of technology use among parents of children in residential treatment in a self-paced tutorial, and address barriers to perceived simplicity. Among a small sample of parents who have previously had their children attend the short-term RTP, it was hypothesized that participants would be able to navigate the online program successfully and efficiently, with minimal support solicited from the research facilitator.

Phase 2 then tested the refined online program, after barriers acknowledged in

Phase 1 were addressed and integrated into the online training. A linear mixed model was used to determine the extent to which video dosage (i.e., parents who watched videos) was associated with parenting self-efficacy and parenting stress. These two parenting constructs were measured at four time points: beginning of child treatment, middle of child treatment, end of child treatment, and at eight-week follow-up (after children had been home for two months). Phase 2 quantitative analysis was guided by the research question *Do parents participating in RTP's online psychoeducational video intervention experience increases in parenting self-efficacy and decreases in parenting stress?* The aim of Phase 2 was to test the effectiveness of RTP's adapted eight-module, eight-week psychoeducational training with parents of children at the 2016 RTP, assessing parenting self-efficacy as a primary outcome and parenting stress as an exploratory outcome. It was hypothesized that for parents who watched over 50% of training videos (measured using a Vimeo JavaScript plugin for Google Analytics), parenting self-efficacy would increase across the study period, and parenting stress would decrease.

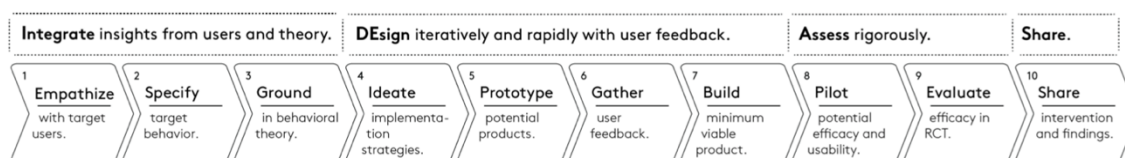
Using mixed methods, Phase 3 then explored the longer-term impacts of the online psychoeducation program eight weeks after children had returned home, via in-depth qualitative phone interviews with n=20 parents and visualization of video use data. The following research questions guided Phase 3: *What are the longer-term effects of RTP online parent program? Are parents continuing to access the online training as booster sessions? If so, which aspects of training are regularly accessed? Have parents created new routines to implement the evidence-based training? If so, how have these new family routines been helpful?* The aim of Phase 3 was to understand to what extent

evidence-based approaches to child treatment had been integrated into daily post-residential life in support of children's long-term outcomes, and how parents described new parenting behaviors through the lens of family routine. It was hypothesized that parents reporting high parenting self-efficacy scores at Phase 2 eight-week follow-up would describe integrating recently learned evidenced-based practices into family routines. This is the first study to combine and test an online PBS / CPS intervention with parents of children attending short-term residential treatment.

Intervention Development Framework

Stanford's IDEAS framework (Mummah et al., 2016) serves as a useful guide in the development of digital health behavior change interventions. Figure 2 demonstrates the ten-step framework, with Phase 1 following steps 1 - 7 (integration of insight from users and theory, through design iteration based upon user feedback). IDEAS step 8 (pilot potential efficacy and usability) was featured in Phases 2 and 3 of this dissertation research series, while step 9 (evaluate efficacy in randomized control trial [RCT]) and step 10 (share intervention and findings of RCT) are suggested for future research.

Figure 2. IDEAS intervention development framework (Mummah et al., 2016, p. 3)



Using the IDEAS framework to develop a psychoeducational persuasive technology

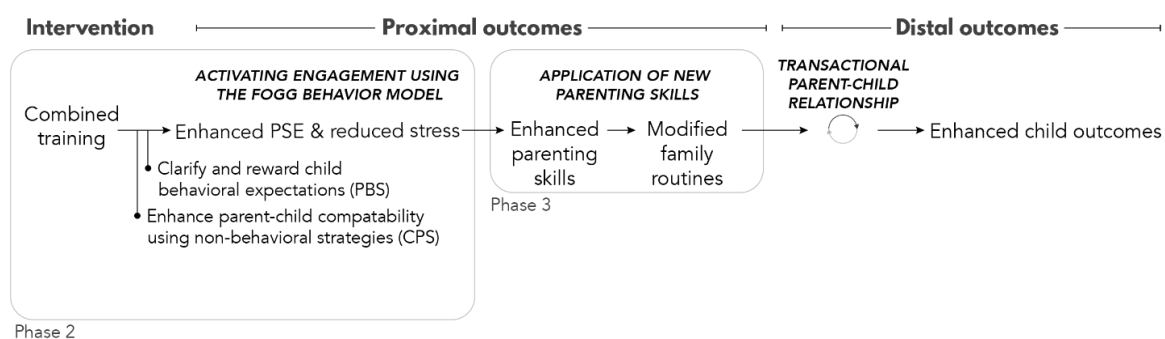
Applying the IDEAS framework to intervention development, this dissertation research sought to build and evaluate a persuasive technology (an online positive parenting program) to augment parenting self-efficacy and decrease parenting stress through easy-to-use online video psychoeducation. As Fogg, Cuellar, and Danielson (2009) describe, persuasive technologies are a) noncoercive (i.e., not forceful, deceptive or manipulative), b) must involve an attempt to influence, and c) should yield persuasive elements concerning changes in attitudes or behavior or both. As computers can increase self-efficacy perceptions (Lieberman, 1992) by making users feel more in control and generally more effective (De Charms, 2013; Pancer, George, & Gebotys, 1992), such technologies may be leveraged for social good by helping to augment desired parenting behavior while children are engaged in short-term residential treatment.

Rationale for proposed research

Given the importance of a child's post-residential treatment environment to their long-term outcome, and the central role that parents assume as children return home, attention to parenting ability during this major life transition is essential. Psychoeducational parenting programs may provide a promising means of communicating credible information to parents about how to sustain a child's recently initiated treatment gains. Offering this training online, and designing the training for simplicity, may avoid barriers faced by traditional in-person parenting programs while allowing for novel approaches encouraging parents to integrate evidence-based practices into post-residential home aftercare.

Moreover, despite its frequency of use as a parenting construct in outcomes research, at the time of this writing parenting self-efficacy (PSE) has not been previously evaluated as an outcome of Positive Behavior Supports (PBS) or Collaborative Problem Solving (CPS) interventions. Augmenting PSE is a common goal of parenting programs, where enhancements of PSE are theorized to enhance self-perceptions of parenting skills, leading to enhanced child outcomes (Herbert, 1995; Jones & Prinz, 2005). As inconsistency in parenting behavior and parent-child incompatibility have been empirically linked to the development of child disorders (Mash & Dozois, 1997), this research evaluated RTP's combined intervention teaching parenting consistency (using PBS), and nurturing parent-child compatibility (with CPS). Using social modeling and social persuasion (Bandura, 1977) via video training content, this research focused on the proximal outcomes of PSE and parent stress while children were engaged in residential treatment (Figure 3, Phase 2) and parent attributions of training to new parenting skills and family routines (Figure 3, Phase 3). An exploratory aim of this research series is the possible decrease in parenting stress attributed by parents to RTP's new psychoeducational video training.

Figure 3. Hypothesized proximal and distal outcomes



This dissertation research series addresses a gap in engagement strategies among existing parent training programs, as traditional engagement strategies induce motivation by incentivizing involvement; about 50% of parents drop out of parenting programs, even when financial incentives, childcare, refreshments and transportation are available (Baker et al., 2011; Kazdin, 1996). While inducing motivation may work as a short-term strategy for changing behavior, Fogg (2012) believes that this strategy is ineffective for long-term change; just as motivation is easily influenced by incentives, competing motivators in daily life may nullify the effects of those incentives.

According to the FBM, by increasing parents' perceived simplicity of the online training, engagement in parent training is more likely to occur – even at low levels of motivation. Higher engagement in online parent training was predicted to lead to increases in PSE via perceived simplicity of online psychoeducation, leading to the application of recently learned parenting skills. This dissertation research sought to collaboratively create and evaluate an online parenting program designed for simplicity in support of home-based post-residential aftercare, to overcome barriers associated with traditional in-person parenting programs.

CHAPTER TWO, PHASE 1

Surveying simplicity: Addressing perceived barriers to use of an online parenting program

Background

The services and supports a child receives in their post-residential environment appear more significantly associated with a child's outcome than a child's profile upon admission or discharge (Maluccio & Marlow, 1972). Aftercare services can assure that expectations of child behavior remain consistent during the transition between milieu treatment and home aftercare (Hess, 1990). One way of providing post-residential aftercare support is through evidence-based parenting programs, made available to parents while children are engaged in residential treatment. Unfortunately, parenting programs are often underutilized, given competing parent commitments and logistical barriers (Koerting et al., 2013; Spoth & Redmond, 2000). As an alternative, web-based parenting programs can deliver brief synchronous and asynchronous interventions, and have demonstrated potential in realizing desired change for parenting and child behavior (Baker, 2017; Enebrink, Högström, Forster, & Ghaderi, 2012; Turner & Sanders, 2006).

Potential of tech-informed interventions

The proliferation of web and mobile technologies invites helping professionals and researchers to design and develop software products to meet human service needs. Social work scholars have described the promise of collaboration between designers and technologists to develop more effective interventions, in persuasive technology design

(LaMendola & Krysik, 2008). Persuasive technologies are defined as non-coercive interactive computer applications designed to change behaviors and attitudes (Fogg, 2002, 2009; Fogg et al., 2009). Given that social workers have advocated that persuasive technologies be leveraged for social good (Dennison, Morrison, Conway, & Yardley, 2013; Kugler, 2016), and that a child's transition home from residential treatment has been empirically established as a vulnerable moment to ensure continuity of care (Bates et al., 1997), targeted online psychoeducation may be one way of meeting this need.

Although evidence-based parenting programs have demonstrable benefits to child and family well-being (Epstein, Fonnesebeck, Potter, Rizzone, & McPheeters, 2015; Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2017; WHO, 2009) rates of parent engagement are typically low (Baker, 2017; Breitenstein, Gross, & Christophersen, 2014; Prinz & Sanders, 2007). Parent engagement in youth treatment has been shown to increase the effectiveness of child treatments (Mendlowitz et al., 1999), though traditional engagement strategies (e.g., financial incentives, refreshments) can be ineffective motivators. A more effective approach to parent engagement may be to make desired parent behaviors *easier to do*, as the perception of simplicity has been shown to influence desired behaviors (Fogg, 2008, 2012, 2013, 2016a). In online learning environments, the perception of simplicity may be influenced by the anticipated time to complete tasks. When desired learning behaviors involve viewing video content, video production can increase the perception of simplicity by reducing video length. In an empirical study of optimal video length for user engagement in massive open online courses, the ideal length for video engagement was 3-7 minutes (Guo, Kim, & Rubin,

2014).

In an effort to maximize parent engagement in a new online parent training program at a Northeastern US Residential Treatment Program (RTP), a usability test was conducted to determine the usability of the online program. Usability tests are a widely-used research strategy when seeking to understand how a new product is used from the perspective of end-users. Specifically, the current usability test was conceptualized as a mixed-methods problem discovery study (Albert & Tullis, 2013), whereby parent participants navigated an early prototype of the online intervention for RTP to identify and resolve areas of perceived difficulty encountered by research participants.

Phase 1 was guided by the research question: *What are the perceived barriers identified by RTP parents that may interfere with parents' efficiency and completion of desired learner behaviors (navigating and accessing online content) through RTP's online parenting program?* The primary aim of the study was to explore Fogg's (2009) typology for perceived simplicity of technology use among parents of children in residential treatment via an in-person guided training tutorial, addressing barriers to simplicity. It was hypothesized that participants would be able to navigate RTP's online program successfully and efficiently, with minimal support solicited from the research facilitator.

Fogg's typology for simplicity is composed of five factors: Time, Money, Physical Effort, Brain cycles, and Non-routine (see Table 1). These factors represent a framework of possible perceived barriers, where the failure of a single simplicity factor makes a specific behavior harder to do. As Fogg (2009) indicates, these five factors are

connected; if “any single link breaks, then the chain fails [and] simplicity is lost” (p. 5).

Table 1. Fogg simplicity factors (Fogg, 2009)

Simplicity factors.	Definitions copied from Fogg (2009, pp. 5-6)
Time	<i>If a target behavior requires time and we don't have time available, then the behavior is not simple. For example, if I need to fill out an online form that has 100 fields in it, that behavior is not simple for me because I usually have other demands on my time.</i>
Money	<i>For people with limited financial resources, a target behavior that costs money is not simple. For wealthy people, this link in the chain rarely breaks. In fact, some people will simplify their lives by using money to save time. It's a trade-off. They hire gardeners and house cleaners.</i>
Physical Effort	<i>For example if I want to visit Las Vegas and must walk all the way from Stanford, that behavior would not be simple. But if I take a plane, that's simpler because I don't need to exert much physical effort.</i>
Brain cycles	<i>If performing a target behavior causes us to think hard, that might not be simple. This is especially true if our minds are consumed with other issues. In contrast, some people are very good at thinking, so this link in their simplicity chain will rarely break. But for the most part, we overestimate how much everyday people want to think. Thinking deeply or thinking in new ways can be difficult.</i>
Non-routine	<i>People tend to find behaviors simple if they are routine, activities they do over and over again. When people face a behavior that is not routine, then they may not find it simple. In seeking simplicity, people will often stick to their routine, like buying gas at the same station, even if it costs more money or time than other options.</i>

Importantly, perceived simplicity is not the sole determinant of user behavior. The Fogg Behavior Model (FBM) assumes that for a behavior to occur, sufficient ability, sufficient motivation, and a prompt (i.e., call to action, “*act now*”) must occur at the same

moment (Fogg, 2009). Failure of a single simplicity factor adversely affects sufficient ability. This usability test was approached with heightened awareness of the interrelationship of all three FBM factors, searching for simplicity factors impinging on ability. In accordance with the IDEAS framework, the process of intervention development is first discussed in detail, providing more information about RTP. This development section is followed by a description of the methods associated with the usability test, analyses, findings and discussion.

Developing RTP's online parent training program

RTP's online parent training program followed Stanford's IDEAS framework (Mummah et al., 2016) to develop a minimally viable parent training program. Consistent with the IDEAS framework, constructing a digital intervention for parents of children in short-term residential treatment first involved empathizing with parent experience. Ten years of the PI's direct service contributed empathy with end-users (i.e., parents of children in residential treatment), as did qualitative literature featuring parent stories welcoming their children home from residential treatment (Hess et al., 2012).

About the Residential Treatment Program

The Residential Treatment Program (RTP) has provided short-term milieu treatment to children since 1934. Approximately 130 children with learning and emotional challenges spend 45 days between July and August each summer at the residential treatment facility, located in New England. While the facility has the facade of a summer camp, children and staff live together in cabins on the 450-acre wooded

campus, where a hospital-level of care is provided. A child's admission to RTP is contingent upon parent agreement to engage in multiple family supports (including, as of Summer 2016, online parent psychoeducation) while their child receives milieu therapy. Building the online program involved significant collaboration between RTP and the PI.

Consistent with the recommendation that psychoeducation models should allow opportunity for participants to ask questions about educational materials (Lukens, 2015), RTP also arranged for weekly phone calls with parents to digest and discuss the psychoeducational videos. These conference calls were moderated by a RTP staff member, who guided conversation among parents from children in the same clinical group. Calls occurred once weekly during the summer program. This dissertation research series focused on the influence of the online program; data about parent phone calls was not collected. Additional family supports were provided to families, but were not tracked as part of this dissertation research.

For RTP, the online psychoeducation program marked a new direction in service provision. One month prior to the launch of the online program, a blog post on RTP's website described the upcoming online psychoeducational intervention:

"[RTP] has always been about building mastery and we continue to find different ways to support skill-building for staff, students, and families. This summer, we will offer families an online video series focused on building skills to support their child(ren) when they return home. A child's home environment greatly impacts their gains post-[RTP], so we are expanding our support of families to further support them and their child's gains. Through the online series, we are helping families recognize and support their own stress levels to build parenting competence and confidence." (wediko.org, 2016)

The IDEAS framework specifies that a target behavior must be selected (Mummah et al., 2016). In Phase 1, this target behavior was the efficient navigation of the new online program, grounded in theoretical assumptions of the Fogg Behavior Model (Fogg, 2009). Various online learning platforms were reviewed and presented to RTP for intervention dissemination (edX, Blackboard, Cisco WebEx, Skillsoft, Dokeos) but were ultimately not good fits (parents would have needed login credentials, terms of service would have threatened intervention ownership, hosting options would have been too costly, etc.); thus, RTP opted to host videos on its own website. The following intervention development sections detail tasks to achieve IDEAS step 5 (prototyping potential product), before user feedback was acquired, evaluated using thematic analysis and post hoc evaluation, resulting in a minimally viable product produced for testing in Phase 2 of this dissertation research series.

Prototyping the online intervention: user interface and video content

Psychoeducational video content was scripted by RTP, and created (conceptualized, filmed, edited, hosted online) by the PI. Blocks of related video content were termed ‘sessions’, with eight sessions containing multiple videos to be released weekly while children were engaged in residential treatment (June 5, 2016 to August 18, 2016). The average length of the 12 videos in Phase 1 was approximately 3.5 minutes. The first three videos were short introductory trailers for the online program, which a) described the purpose of the online program, b) introduced the individuals who would appear in the videos, and c) provided an overview about how to use the online videos (see Table 2).

Table 2. Overview of online videos in Phase 1 usability test

Session	Video title	Length (minutes: seconds)
Introduction	Welcome	01:32
Introduction	Family Program Introduction	00:59
Introduction	How to use these videos	03:05
1	NH Arrival Day	03:45
1	MA Arrival Day	04:09
1	Common concerns	04:08
1	Preparing for concerns	07:45
2	Routines and structures	03:23
2	Space to grow	05:52
3	Reasons for routines	02:27
3	How habits work	02:42
3	Routines at RTP	01:57

Beyond the three introductory trailer videos, three sessions containing nine additional videos were developed: *Session 1: Feeling ready*, *Session 2: What's going on?*, and *Session 3: Routines and habits*. Videos in Session 1 provided information about the logistics of Arrival Day (residential intake process occurring either in New Hampshire or Massachusetts), and advice in how best to support a child (e.g., anxiety reduction, reminding child of their commitment to RTP, reviewing slideshow photos to increase excitement) as Arrival Day approached. Videos in Session 2 described RTP's highly structured environment (e.g., activities in residential milieu, therapeutic interventions), and offered suggestions to parents in how they might support a child after they had been at RTP's Summer Program for their first week. Videos in Session 3 described RTP's highly structured and routinized environment designed to prompt desired behaviors (e.g., transition benches to cue transition behaviors of ending current activity, collecting thoughts, preparing for next activity, and transitioning to next

activity), and indicated that similar routines could be applied in the home as a home-based aftercare intervention following short-term residential treatment to sustain treatment gains. Videos in each session were contained on the same page, stacked atop of one another (example available at winslowrobinson.com/video).

Filming and Editing

Creation of video content followed online learning best practices as advocated by the MIT-affiliated online learning platform edX (2016). Video production involved filming RTP staff and the PI performing scripts on camera, facing the camera to speak directly to parents. A high-definition video camera mounted on a tripod recorded all video content. Raw video content was imported into Final Cut Pro X (version 10.2.3) where videos were color balanced and audio was enhanced. Opening titles were added as videos began to play, creating a common introduction across all videos. All videos were shot against a light monochrome background, and actors were framed using the rule of thirds (Liu, Chen, Wolf, & Cohen-Or, 2010) such that text could be later added to the video, complementing auditory information and highlighting salient learning points. Video outros summarized text information that had been presented in the videos, and cross-fade transitions were made between all onscreen text. Videos were edited to 3-7 minute length clips (Guo et al., 2014), removing pauses, bloopers, and repetitive information from raw footage to reduce video length and increase the perceived simplicity of the online intervention.

Secure video hosting

Completed videos were then exported and uploaded to the PI's secure Vimeo account (settings within Vimeo made the videos private, and video streaming was restricted to RTP's website). Embed codes (one per video) were created within Vimeo, then shared with RTP's web team for hosting. These videos were then hosted on a test section of the RTP website, and access to this section of the website was unknown unless the exact URL was entered. The test site was also password protected to further ensure no disruption of RTP services would occur. For the usability test, the password was entered by the PI and saved in browser cookies prior to usability tests (to reduce participant burden of having to enter password).

METHODS

Mixed methods were employed to test the usability of RTP's online intervention. This study was approved by the Boston University IRB and RTP's IRB. Phase 1 employed the concurrent think-aloud protocol (Cooke, 2010; Krahmer & Ummelen, 2004; Li et al., 2012; Nielsen, Clemmensen, & Yssing, 2002) to identify usability issues, whereby participants spoke aloud while working through computer tasks (Albert & Tullis, 2013). This stream of consciousness exercise can suggest verbal frustration, expressions of confidence / lack thereof, and reveal body language or eye movements suggestive of indecision / confusion (Albert & Tullis, 2013).

Using the think-aloud protocol in place of a traditional interview, study participants were presented with video content and observed, while navigating RTP's website to view videos. In addition, pre-post surveys were conducted online. Qualitative

data was analyzed using a top-down bottom-up approach to analysis, whereby data were coded thematically first using Fogg's 5-factor model typology of simplicity, then allowing unique barriers to surface within each typology factor. Pre-post survey data was analyzed using R-Studio (solely descriptive) to evaluate results from the Parent Motivation Inventory, as well as results from a post-hoc analysis exploring the extent of interactions between the PI and participants.

Sampling and Recruitment

Criterion sampling (Palinkas et al., 2015) was employed to identify key informants, a purposive sampling method which involved identifying and selecting participants based on predetermined inclusion criteria. Inclusion criteria specified that parents must have previously had a child attend RTP's Summer Program. In addition, it was required that parents be fluent in United States-English to read and follow on-screen instructions, and that they possessed basic technology skills including checking email and watching online videos (e.g., YouTube, Vimeo).

A recruitment email was sent to a program coordinator at RTP, who forwarded the email to potential parent participants (n=10) inviting them to participate in the study. These potential participants were part of a parent group that met regularly at RTP, each of whom had previously supported their child in the RTP Summer Program. Once parents had indicated their interest to the program coordinator, parent information was provided to the PI to arrange interviews the RTP Boston office (a familiar setting to participants), which offered reliable WiFi and available office space for the interview.

Survey Measures

Parents provided demographic information in the pre-Qualtrics survey, and completed the Parent Motivation Inventory (Nock & Photos, 2006). The PMI is a 25-item measure designed to assess parent motivation to participate in child treatment, which uses a 5-point Likert scale with values ranging from 1 (“Strongly disagree”) to 5 (“Strongly agree”). The PMI had strong internal consistency and test-retest reliability, and evaluates overall motivation across three subscales, in Desire for child change, Readiness to change parenting behavior, and Perceived ability to change (Nock & Photos, 2006). Total scores are calculated by summing the three subscales, with a potential total score range between 25 and 125; there are no cutoffs to determine score ranges (e.g., high, moderate, low).

While there are three subscales, Nock and Photos (2006) found that a principal component analysis revealed that the construct of parent motivation is best represented by a single component in the total score, as total motivation, where higher scores suggest greater parent motivation for treatment (Wagner, 2008). Nock and Photos (2006) have noted that a single administration of the PMI is predictive of parents’ perceived barriers to treatment and that perceived barriers to treatment predicted treatment attendance. This measure was administered to address the Motivation construct in the Fogg Behavior Model. In the current study, understanding mean parental motivation during the usability test was deemed helpful to anticipate mean motivation of parents who would be accessing RTP’s online training independently; for individuals with lower motivation, the perception of simplicity of the online training must be increased (with a well-timed prompt) if desired learning behaviors were to occur.

Procedures

Parents consenting to research were told that the interview would last approximately 90 minutes, and that they would receive a \$20 Amazon gift card upon completion of the interview. In-persons meetings were scheduled with RTP parents (n=5); of the 10 parents contacted, five declined to participate, expressing disappointment to RTP that their child had not been accepted to the upcoming 2016 Summer Program. Prior to viewing training content, participants were asked to complete an online survey.

The online survey began with a 92-second embedded introductory video describing RTP's new online program. Following this video, parents continued the survey to provide demographic and background information (Baker et al., 2011; Robst et al., 2013) (full name, DOB, race/ethnicity, marital status, highest education level, occupation, annual family income, number of children currently living in household, child DOB) information about previous experience with transitioning home from the RTP Summer Program, and the Parent Motivation Inventory (Nock & Photos, 2006). The survey then directed parents to watch two additional embedded introductory videos describing the online program, including 1) an introduction to the people the participant would see in the videos, and 2) information about 'how to use these videos' (e.g., purpose of videos, how to access videos from email links, how these videos could be accessed across multiple devices).

Once parents completed the online survey, they were automatically redirected to RTP's website to view remaining video content. They were told during the self-guided tutorial that the PI would be available to support if there were questions, though the PI

was interested in understanding what the experience of a parent would be when accessing these videos independently. The PI explained that support would be provided immediately if barriers were apparent (i.e., if the PI observed the participant was having difficulty) or if help was requested. As participants were completing the self-guided tutorial, the PI conducted an observation as participants interacted with the survey and video content, noting possible barriers occurring for participants (e.g., small text in survey caused reading strain for older participants, wide range in audio quality causing participants to engage often with volume). If barriers were evident, the PI would ask for confirmation if barriers were being encountered.

Once parents had completed viewing video content, they were directed to complete a post-survey using a link provided to them via email. This survey asked if they would prefer high definition videos (better quality) or low definition videos (better performance), and quizzed participants on the questions that had been asked previously about video content, to determine if important video content had been retained.

Data management and Analysis

Interview transcripts

Raw electronic data was de-identified and stored on a password-protected secure drive. Audio from the participant screen recordings was scrubbed of identifiers and uploaded to a secure transcription service portal. This portal then provided access to a completed audio transcript which was then downloaded and further cleaned (e.g., fixed misspellings, retained participant's intended use of language and intonation) by listening to recording during a final cleaning and data familiarization procedure.

Observation

Observational data were captured using hand-written notes, which were then photographed and saved on a password-protected secure drive to support later analysis. Observations made by the PI were purposefully spoken aloud to be captured on the audio recording, if a usability issue was evident (e.g., audio was recorded of PI observing that computer screen was too far from participant as participant strained to see, the issue was confirmed, and the computer was moved closer to facilitate the self-guided tutorial).

Survey Data

Survey data were collected using a BU-licensed version of Qualtrics, and results were then downloaded to a password-protected secure drive. Survey data were organized in Excel and analyzed using R Studio (R version 3.4.1).

Thematic analysis of interview transcripts

A hybrid data analysis strategy was employed in a parent-child coding scheme (Fereday & Muir-Cochrane, 2006). First, thematic analyses were conducted to explore perceived barriers to simplicity (i.e., gathering and analyzing user feedback, see IDEAS step 6 in Figure 1) using Fogg's (2009) typology for perceived simplicity (Time, Money, Physical Effort, Brain Cycles, and Non-routine) in a top-down strategy (i.e., theoretically-driven parent codes). Then, bottom-up thematic analysis was used to describe nuance that may have existed within each of Fogg's simplicity codes (i.e., data-driven child codes), which may have varied by participant (e.g., for the simplicity factor of Time, time may be experienced idiosyncratically). A post-hoc analysis of help solicited and help offered was

conducted following the thematic analysis, to further contextualize assistance offered to study participants.

Codebook development

Two researchers (study PI and a research assistant) followed Braun & Clarke's (2006) process for creating a codebook using thematic analysis, independently generating initial codes. The research assistant (MSW graduate student) received brief training from the PI in Braun and Clarke's (2006) systematic approach to thematic analysis; Braun & Clarke (2006) describe the process of developing initial codes involves data familiarization before coding "interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code" (p. 87). Using a BU-licensed version of Microsoft OneDrive, screen recordings from all five interviews were securely shared with the research assistant for review. Additionally, the PI provided secure access to anonymized / cleaned transcripts. All five transcripts were used to develop the codebook. Instructions followed Braun & Clarke's (2006) guide to code interesting features systematically, per Fogg's (2009) five-factor typology for simplicity, allowing unique child codes to differ within theoretically driven parent codes; in other words, child codes (nuanced participants responses) were nested within parent codes (e.g., Time, Money, Physical effort), using a hybrid approach to thematic coding (Fereday & Muir-Cochrane, 2006).

Upon first comparison of the codes, consensus was not achieved as each coder had a separate notion of how to build a codebook; percentage of agreement would not have been useful given dissimilarity of the initial comparison. As such, additional

structure was imposed through a codebook template (code title, brief definition, full definition, when to use code, when not to use code) (Guest & MacQueen, 2008). In a second review of coding, this additional structure improved consistency of top-down theoretical coding, such that only one disagreement about theoretically-driven codes arose in determining which parent simplicity factor best described challenges encountered associated with hearing audio content from videos: are problems with video volume better attributed to Brain cycles or Physical effort?

Problems associated with video volume were ultimately labeled as Physical effort, as participants took physical measures to improve hearing (e.g., move computer closer, increase volume by reaching for volume controls). Disagreements about child data-driven codes did not occur, as each was viewed as added nuance to theoretically-driven codes.

Having separately established parent codes (theoretical codes from Fogg's typology) child codes (how different people uniquely experienced Fogg's five simplicity factors), consensus was reached by end of the second meeting. While not part of Fogg's typology, the research assistant contributed codes emerging from the interview (e.g., general impressions of simplicity, unsolicited endorsements of the intervention prototype, and barriers to continuity of care), as valuable features of the interviews. A final version of the codebook was reapplied to all five transcripts, having been imported to NVivo Pro (Windows via Parallels Desktop on Mac, NVivo version 11).

Application of the codebook revealed barriers to the successful, efficient, autonomous navigation of psychoeducational video content. Analysis followed the usability test from initial screen interactions, revealing that usability of an online

intervention included far more barriers than initially anticipated (e.g., accessing email, physical use of trackpad, hearing and visual impairments) resulting in increased PI interactions (e.g., confirming that help was actually being solicited from PI, moving laptop closer to participant, increasing size of text on screen, teaching participant how to make a streaming video full-screen).

RESULTS

The aim of Phase 1 was to analyze participant interactions with RTP's online program, exploring Fogg's (2009) typology for perceived simplicity of technology use among parents of children in residential treatment using an in-person usability test, addressing barriers to perceived simplicity. While it was hypothesized that participants would be able to navigate RTP's online program successfully and efficiently, with minimal support solicited from the research facilitator, great variability was noted among participants in their ability to navigate the online program. These results describe IDEAS framework step 6 (gathering user feedback) to achieve step 7 (building minimally viable product) based on results from user engagement with an early parenting program prototype.

Participant descriptions (pseudonyms used)

Five participants expressed interest and agreed to participate in this study. Rosie is a 58-year-old grandmother, who identified as Black and disabled. Rosie has never been married, has a high school education, and indicated her income is below \$10,000 annually through government programs. She is one of two primary caregivers for her 15.5-year-old grandson with her son, Adam, who also participated in this study. Adam is

38 years old, identifies as Black, has a high school degree, and has never been married. He indicated he makes between \$40,000 and \$49,000 annually. Rosie's grandson (Adam's son) has attended the RTP Summer Program five times previously, and receives school therapeutic supports and afterschool activities.

Debbie is an Irish-American 51-year-old mother who has had both of sons attend the RTP Summer Program – her youngest (age 14) has attended three times. She identified as White, divorced, and having a professional degree (Masters in Social Work), earning between \$10,000 and \$19,000 annually; she reports her sons' behaviors prevent her from working full-time. At the time of the interview, her oldest son was in a year-round residential placement, receiving school supports including speech therapy, occupational therapy, graphic organizers, extended time for testing, counseling, and behavior modification training.

Tonya has a 17-year-old son, who had attended the RTP Summer Program once previously. She is 41, identifies as Black, has a high school education, makes less than \$10,000 annually and is unemployed. Tonya has a visual impairment, and asked that the computer screen be moved closer so she could see more easily. She described that her son did not receive any school supports, and is concerned he will end up in jail.

Nina has a 12-year-old son who has attended the RTP Summer Program four times previously. She is 37 years old, identifies as White, has never been married and has a high school education. She reports earning less than \$10,000 annually, and has two children (one male, one female). Her son who has attended the RTP Summer Program receives therapeutic services in school.

Parent motivation, and preference for quality over connection speed

The mean parent score on the Parent Motivation Inventory (PMI) was 109.2 (SD=16.08, range 82 – 124 (see Table 3). The overall maximum score of the PMI is 125, suggesting that parents in this usability test were moderately to highly motivated to participate in their child's treatment. In accordance with the Fogg Behavior Model, when paired with a prompt, parents with higher total PMI scores will theoretically be able to endure learning to use an online parenting program (despite threats to simplicity) in support of their child's post-residential continued care (Fogg, 2009).

Table 3. Breakdown of Parent Motivation Inventory scores

<i>Parent</i>	<i>Total PMI Score</i>
Debbie	110
Rosie	117
Tonya	82
Nina	124
Adam	113

Two of five parents indicated they would use their Android smartphones to access RTP's online family program, one indicated they would use their iPad, while another indicated they would use their personal computer. Device information is important for designing successful digital interventions across multiple devices (Levin, 2014).

Participants were asked about the video quality of the online intervention; as videos could be viewed on desktop or mobile devices, video quality would be affected if on WiFi or data plan. Rosie, Tonya and Nina indicated they would prefer high definition video over better performance video, while Debbie and Adam preferred lower bandwidth

for better video performance and faster load time. As Adam indicated, “*The audio is the most important part of it, right? So it wouldn't be necessary have to be like a high definition, because the verbal is the most important part to help you explain.*” Fogg’s (2009) simplicity factors were then explored.

Results by simplicity factor

Time

Coding for Fogg’s factor of Time, two thematic impressions of video length were apparent. Debbie and Tonya expressed concern that the videos might *get too long* after a certain point (joking they would be unlikely to participate if the training were “hours long” each day), but also acknowledging that if content seemed relevant to parents, they would be more likely to stay engaged. Adam shared that the videos during the usability test were *shorter than anticipated*, given that his mother (Rosie) had taken a long time to complete the online training, and had indicated to him that the task was long; “*Yeah, she had me like I’m about to watch a movie*”.

Although I had initially conceptualized Time to be a factor only associated with viewing video content, Time became a major factor throughout the usability test (i.e., also for pre / post surveys); total minutes to complete the pre-Qualtrics survey varied widely (mean 37.92 minutes, SD = 21.87 minutes, 19.45 – 75.05 minutes). The wide range in time to complete the pre-Qualtrics survey may be due to how unfamiliar Rosie was in how to engage with an online survey and stream online videos (despite having confirmed such ability). She explained that, while she had previous experience in as a typist, a stroke had impaired her ability to work and keep pace with technology. Rosie not

only faced challenges entering her name into an online field, but also how to navigate to that field using the mouse, and how to use the keyboard to complete the task. Interviewer language is capitalized:

I go here, right, to the name [field]? And then I type it in?

THAT'S EXACTLY RIGHT. First or last? IT'S--

Or should I just put me and my son?

YEAH, YOU CAN PUT YOUR OWN FULL NAME.

Okay, I'm trying to get there. NO PROBLEM. [Rosie trying to move mouse]

Right here. I can just click right here. CLICK RIGHT THERE, NICE AND

LIGHT. YEP, AND NOW YOU CAN PUT IN YOUR NAME.

Last or first? YOUR FULL NAME.

My full name? MM HM. Then I want to space, or just go and type?

YEAH, YOU CAN DO A SPACE. I hit this?

THIS BUTTON-- Oh, no. Space bar, right here. THIS BUTTON IS SPACE BAR,

YEP.

Brain Cycles

At times, the online survey design created usability issues (e.g., dragging a slider on online Likert scale), extending the overall interview length. As an exemplar usability problem presented by the survey, Debbie expressed uncertainty about what information was being sought by the PI, with statements such as “*Okay I’m not sure how to answer this...*”, “*So is this talkin’ about when he returns from [RTP] after?*”, or “*Is this question right?*”. While these were not related to the usability test of video sessions, they did

extend overall interview time. These survey barriers notwithstanding, Debbie expressed little difficulty navigating and completing the online survey.

By contrast, Rosie encountered many barriers while completing the online survey. Her principle challenge was page navigation, and as scrolling with the mouse and touchpad did not work for her, she created a heuristic which she called “go to the grey” (Nielsen, 1994; Norman, 2013). *Going to the grey* involved clicking in the margins of the page to exit the survey question field, in which her cursor was currently located. Once the browser recognized Rosie was no longer attempting to enter information into the field, the arrow keys could be used to move up and down the page. This heuristic worked for her to create a mental model of how to navigate the online survey, which she would later use to navigate the online videos as well.

And now I go to the grey? NOW YOU GO TO THE GREY. And down button?

[... several seconds later...]

All right, now I have to go to the grey. And then go down. YOU GOT IT.

[... several seconds later...]

Do I need to go up? I mean down. YEP, YOU NEED TO GO DOWN. CORRECT.

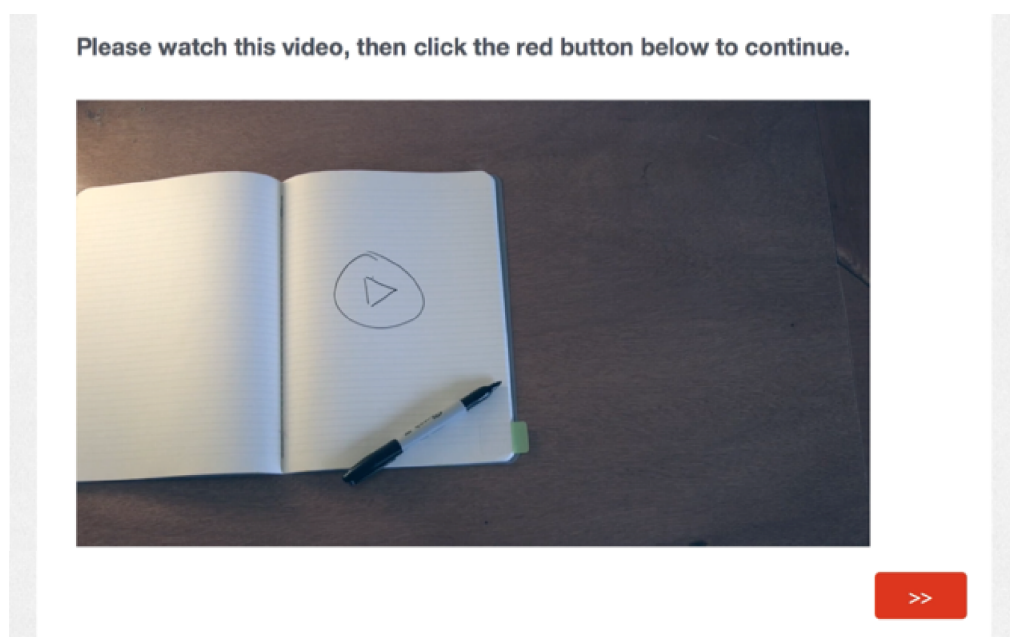
Oh, I didn't hit the grey. I'm sorry.

Non-routine

The navigation challenge presented to Rosie was partly influenced by her confidence in using the keyboard and mouse. Early in Rosie’s interview, she reflected how little experience she had in using a computer mouse, stating “*I use these once in a while and move it around. I'm not good at that, but...* ”. Given that Rosie’s challenges

with mouse use seemed to stem from lack of exposure to computer mice and laptop trackpads, her troubles with the mouse and keyboard were operationalized as limitations secondary to rare use. Non-routine codes were also used as they related to playing online videos. When Rosie reached the point in the survey when embedded videos were presented, she encountered the following instructional screen (Figure 4),

Figure 4. Embedded video in survey



and remarked,

So you want me to go to the red button now?

NO. IT SAYS, PLEASE WATCH THE VIDEO. AND THEN CLICK THE RED BUTTON.

Oh, okay. OK, SO LET ME KNOW IF YOU NEED ANY HELP.

Oh, this is, just watch the book and the pen?

YEAH, WATCH THE -- YEAH, CLICK TO WATCH THE VIDEO. Oh, okay.

YEP, AND THEN CONTINUE AFTER THAT BY CLICKING THE RED BUTTON. BUT DON'T CLICK THAT RED BUTTON YET. FIRST WATCH THIS VIDEO. AND LET ME KNOW IF YOU NEED HELP.

So who starts the video? You or me? WELL, YOU CAN START IT. That's a video?

Although Rosie had confirmed that she possessed basic technology skills, such as checking email and streaming online video, she used her son's email address and appeared to have little experience streaming online videos. Rosie wasn't the only participant who had trouble with the instructional screen with embedded video in Figure 4. Tonya also appeared confused, expressing (after 45 seconds) while watching the same instructional screen:

Is it gonna play? HM?

Do I press play, or...? I THINK YOU HAVE TO PRESS PLAY FIRST, YEAH.

The instructional screen in Figure 4 was the first screen seen by parents. Barriers observed at this screen and others provided insight into how parents might use these videos without the support of another family member, or RTP staff member, to guide them through the online intervention.

Physical effort

Tonya identified as having a visual impairment which may have impacted the amount of time taken to read the onscreen prompt. However, given her question about *what to do next*, it seems she was waiting for the video to auto-play. Tonya was able to read and retain the instructions, but the onscreen instructions were not helpful enough, or

specific enough, to prompt successful action.

Tonya would squint at the screen to complete other tasks in the online survey. When asking if she would like the size of the screen text increased, she confirmed that this would be helpful. When text enlargement was offered to Debbie and to Rosie, they both also affirmed that they would like larger text. Rosie also indicated she had a visual impairment, saying “*Well actually, I want to put my glasses on, so I can see real good.*”

In addition to visual impairment, the volume of videos was an issue for parents. Both Debbie and Rosie requested that the volume in videos be adjusted during the session, and Debbie exclaimed about one video being too loud (given that the volume had been increased for a quieter video previously).

Money

Money was only briefly discussed by parents during the post Qualtrics survey, when talking about the cost of data plans to access the new online program, away from WiFi. Debbie and I spoke about her data plan:

STREAMING VIDEOS DOES TAKE DATA, ON YOUR DATA PLAN. SO IF WATCHING YOUTUBE VIDEOS IS AN ISSUE... If you, well, it depends on who you have for carrier. MHM! And what you have, because there are some of the prepaid ones that are unlimited. So you can sit there all day and use it, and not... MHM YEAH... otha' than it slows down from 4 to 3 [4G to 3G] but. But if you have somethin' like Verizon where ya payin' ... big bucks MHM that would be a problem. GOT IT OKAY.

Expecially [especially] if you didn't have WiFi at home, so then you'd be tryin' to find some place that had WiFi that you could tap into...

Pre-post multiple choice survey results

Having watched all videos, participants again responded to six multiple choice questions about content introduced in the videos: *A) Why do we use behavior checklists at RTP, B) What is the one thing we recommend that parents do not say to their child before coming to the RTP Summer Program, C) If a child is taking the Boston bus to NH on Arrival Day, which of the following is their 'bus ticket', D) About how many days between when a student arrives at RTP can a parent expect to hear from them, E) Why does RTP believe that routines are important, and F) What is the correct series of behaviors in the habit loop?* Responses indicate that learning occurred for all participants (see Table 4).

Table 4. Pre / Post multiple choice survey

Question	Rosie		Debbie		Tonya		Nina		Adam		Total correct (n=5)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
A	0	1	1	1	0	1	0	1	1	1	2	5
B	0	1	0	1	0	1	0	1	1	1	1	5
C	0	1	1	1	0	1	1	1	0	1	2	5
D	0	1	0	1	0	1	0	1	0	1	0	5
E	0	1	1	1	1	1	1	1	0	n / a	3	4 / 4
F	0	0	1	1	0	n / a	0	1	0	n / a	1	2 / 3
% correct	0.0%	83.3%	66.7%	100.0%	16.7%	100.0%	33.3%	100.0%	33.3%	100.0%	Avg % correct	
											30.0%	96.7%

NOTE: 0 = incorrect response, 1 = correct response

NOTE: n/a = not enough time to view video content related to question

NOTE: Adam is Rosie's son; all other participants were unrelated

As inclusion criteria specified that parents must have had a child previously attend the RTP Summer Program, it was assumed that parents would have likely been exposed to some content about the RTP Summer Program previously (e.g., Question A about the purpose of the Behavior Checklist). All were able to answer Question A correctly at post-test, despite only two parents answering this question correctly prior to video content. Similarly, for questions B, C and D, parents were able to answer the question correctly having viewed video content, while only some were able to answer accurately prior to viewing videos. For Questions E and F, competing time commitments during Tonya's and Adam's interview prevented them from streaming video content related pertaining to these questions. Thus, scores corresponding to items marked as 'n/a' were tallied as valid percentages. While the average percentage of correct responses at pre-test was 30.0% across n=5 participants, parents were able to answer 96.7% of questions correctly having viewed video content. The only question at post-test answered incorrectly was a question about the theory of habit development, answered by Rosie.

This theory of habit development posits that all human behavior is resultant of links between cue stimuli and response, where a cue (smartphone screen notification) prompts a routine (enter phone password, open app) in search of a reward (notification successfully checked) (Cialdini, 2017; Duhigg, 2012; Miller & Dollard, 1941; Shanks, 1995). While Rosie was uncertain of the correct theoretical sequence of behaviors, she could recognize the importance of habit development among children in residential treatment, after the video connected to this question:

That's the key! [Rosie gasps] Wow, that's the key. Oh, get out!

WHAT DO YOU THINK?

When they said for [GRANDSON] to react to people at [RTP], he would not do that with Dr. [DOCTOR NAME]. Oh, my god. And the reward-- all this is like what Adam's working with [GRANDSON] to do at home. Oh, my god. No way! Oh, my gosh. I bet you Adam agree with me on that. Oh, my goodness.

YOU SEEM EXCITED FOR ADAM TO SEE THAT PART.

Oh! Yes. YEAH, WHY?

Because it works with-- the cue, and the rewards, and all that. See, Adam rewards [GRANDSON]. So he has all that. Adam does it in his way with [GRANDSON]. When he talks about that with [GRANDSON], how he has to earn all that and do-- but he says, [GRANDSON], how you earned-- I don't want to have to tell you, oh, okay, the kitchen needs cleaned up. You know what I'm saying? And [GRANDSON]'s been doing all-- he goes around-- not with me. I can't. I can't get that. But by hearing this, oh, my God. Maybe I can get start my way of going that way. I don't know. Ooh, I like that.

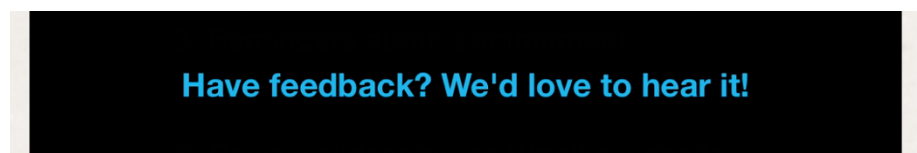
Barriers identified and addressed

Three primary usability barriers were identified as problematic and addressable in the weeks remaining until parents of children attending the 2016 RTP Summer Program would access the new online training. These usability issues were first noted the interview with Debbie, and surprisingly did not deal with simplicity factors, but rather with prompts to activate desired user behavior. Given the Fogg Behavior Model assertion that sufficient motivation, sufficient ability and a prompt must be present for a behavior

to occur, absent prompts would result in unwatched videos (Fogg, 2009). Moreover, it became apparent that changing the location, type and timing of prompts would be far easier to implement than to further alter perceptions of perceived simplicity or attempt to influence short-term motivation given time and resource constraints.

As feedback was desired for all video sessions, the first prompt issue was the presentation of an on-screen hyperlink embedded at the end of the video, whereby clicking this hyperlink would open a two-question Qualtrics survey about user feedback (e.g., *What are we doing well?*, and *How could we improve?*). The design of this prompt was inspired by YouTube's video recommendation engine, which suggests videos to continue watching once the present video has concluded. Using that same approach, a blue hyperlink to provide further feedback was shown at the end of the final video on the page (see Figure 5).

Figure 5. Feedback prompt at end of videos



When asking Debbie if the presentation of this hyperlink was intelligible, she replied:

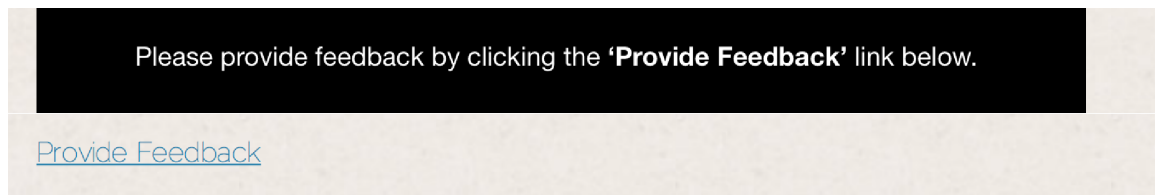
I wouldn't know that this is a link. OAY. HOW COULD THAT BE MORE CLEAR?

Because I think that when I think of a link I look at ya know, like the "w" "w" "w" dot, um, so that I would be like "What? Wheah's ["Where's", Boston

*accent] the link?’’ RIGHT. OKAY. MHM. Yah I wouldn’t, I wouldn’t
 evenathought.*

As this link was important in to capturing additional parent feedback related to the online program, the prompt required modification. To clarify that feedback was sought, Vimeo outro settings were changed from presenting an embedded link to presenting an instructive message which corresponded to a traditional link contained beneath the video (see Figure 6).

Figure 6. Modified prompt requesting feedback



Having clarified the feedback request prompt, similar prompts were added at the end of each video to activate sustained engagement until arriving at the final video on that page (Figure 7 - Figure 9), nudging a parent to navigate through all videos (Thaler & Sunstein, 2008). Having watched the final video in a session, the last video outro would again prompt the user to take action towards providing feedback (Figure 9) via a traditional blue hyperlink (as in Figure 6). Prior to this change, videos were ending on a blank screen, missing direction for subsequent behavior. These changes were made in time for one participant (Adam) to interact with this new feature.

Figure 7. Video prompts to sustain engagement (more videos below)



Figure 8. Video prompts to sustain engagement (one more video)

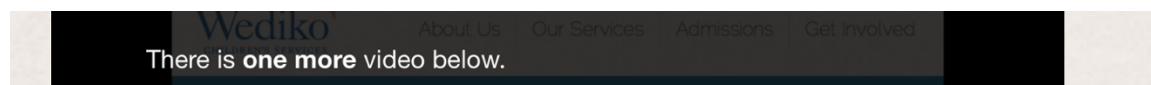
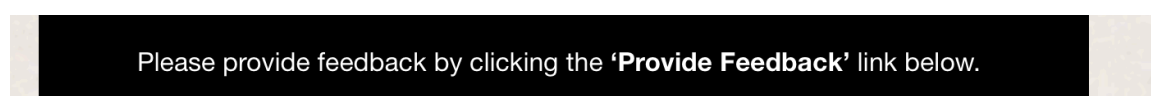


Figure 9. Video prompts to sustain engagement (please provide feedback)



A third important change was also related to a prompt, in the placement of RTP's recommended exercises which paired with same videos (e.g., the video about the Behavior Checklist corresponded to an exercise where parents could practice the Checklist with a partner). These exercises were initially placed at the bottom of the vertically stacked videos for parents to view upon completion of all videos. During Debbie's interview, it became apparent that she was unaware these exercises existed under the last video on the page:

SO THERE'S RECOMMENDED EXERCISES AT THE BOTTOM. Oh there is?

[Debbie uses arrow keys to tap down page] Oh yeah.

WOULD IT MAKE MORE SENSE TO SEE THAT CHECKLIST UNDERNEATH THAT VIDEO, VERSUS THE BOTTOM? I would like that. I would like that, yeah.

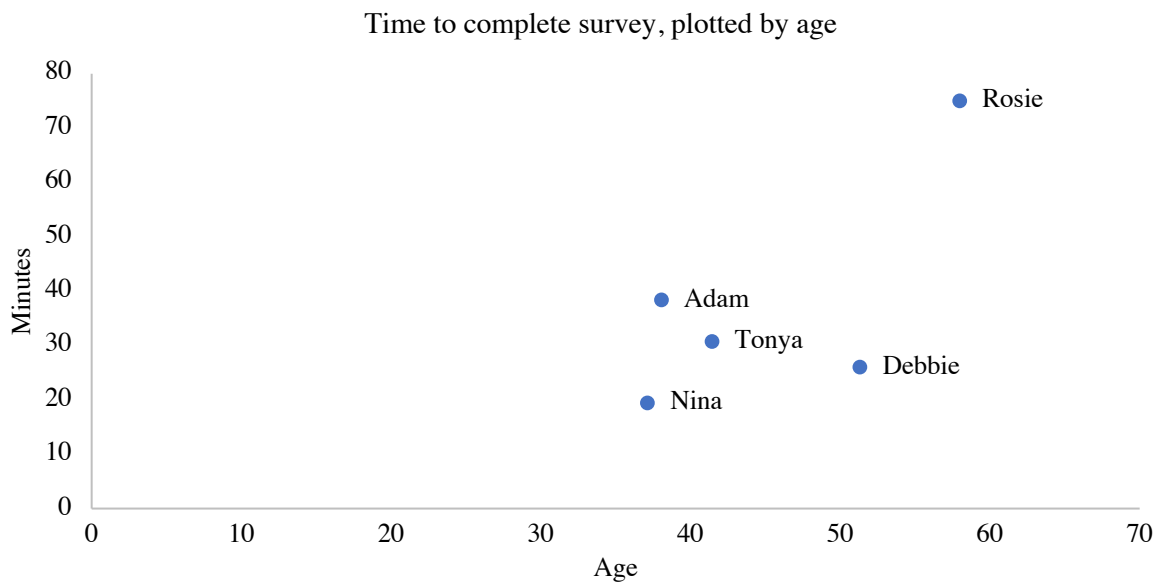
IN TERMS OF THE PLACEMENT ON THE SCREEN, WHERE WOULD YOU PREFER IT TO BE? Up with the...where's she talkin' about it. OKAY. Yep.

OKAY. WE CAN CHANGE THAT. So that you can at least, you know after its over, reference it and if I have to go back and replay it some at least then I can have in my head “Okay this is what they’re talkin’ about” RIGHT. OTHERWISE YOU’VE KINDA MOVED ON. Right. Yep.

Efficiency to complete desired learner behaviors

Variability in perceptions of simplicity may have been due in part to age differences. Mean participant age was 45.2 years (SD=9.1, range 37.2 – 58.0), and the mean time to complete the pre-Qualtrics survey was 37.92 minutes (SD=21.87 minutes, range 19.45 – 75.05 minutes). Figure 10 shows the relationship between parent age and time to survey completion.

Figure 10. Age vs. minutes to survey completion



The pre-Qualtrics survey was selected as a measure of time as this was the only section of the interview that all participants were able to complete without external time pressures (e.g., competing commitments during Tonya's and Adam's interviews). Still, across all interviews, conversations about the survey created time measurement challenges, as each of the $n=5$ were exposed to slightly different conditions given variability in conversation with the PI. Thus, while time-to-task-completion is a standard metric employed in user experience research when evaluating user task performance (Albert & Tullis, 2013), conditions were not sufficiently consistent to rely upon efficiency as an indicator of usability.

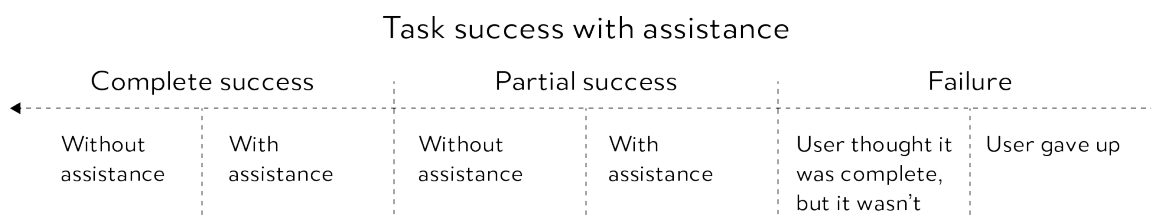
The oldest participant, Rosie (age 58 at the time of interview) had the most difficulty with the online survey. As Rosie said, *"I'm not a computer person. And to do it and then understand all of it, sometimes, without someone being there with me... that would be a little difficult."* To get the most out of RTP's online training, parents similar to Rosie would likely need nearby support to guide them through the online intervention.

Post-hoc analysis of assistance solicited and assistance provided

As the magnitude of interaction between participants and the interviewer was unforeseen, and may have influenced participants' true ability to complete the online training independently, the degree of assistance offered to participants was explored in a post-hoc analysis. Albert & Tullis (2013) present a continuum of task success based of the level of assistance offered during usability studies (see Figure 11). While all participants were able to complete the online training with assistance, some required far more support than others. The post-hoc analysis explored assistance sought and

assistance offered, where assistance sought from participants was coded as a ‘solicitation’.

Figure 11. Continuum of task success



Solicitations were defined as a *participant inquiry with intent to obtain something from the PI*. In every case, assistance was offered in response to a solicitation. If assistance was not solicited, but assistance still was offered (e.g., if the participant was straining to hear and volume was increased by interviewer), this assistance was coded as a ‘proposal’. Two types of ‘proposals’ were coded, either ‘verbal’ proposals when the interviewer asked a probing question or restated the task, or when the interviewer physically engaged with laptop (changed volume or clicked) on behalf of a participant. Whenever physical contact was initiated with the computer (moving the computer, changing volume with volume keys, increasing text size, etc.), the PI made auditory comments so as to appear in transcripts, allowing for instances of physical engagement to be counted using NVivo.

Codes were created in NVivo, applied while reading through transcripts, and then refined to ensure codes were accurate (e.g., NVivo had erroneously collapsed some codes between pages; codes were made mutually exclusive so no overlap occurred). Once codes were cleaned, they were aggregated and grouped according to family (e.g., assistance

during survey, assistance during video, etc.). This grouping revealed themes about assistance offered during the interviews.

Results of post-hoc analysis

Overall, across all five participants, assistance was solicited from the interviewer a total of 83 times (see Table 5). Nearly 82% (68 / 83) of these solicitations occurred during the survey portion of the interview (either pre- or post- survey), with over 55% of solicitations during the survey from Rosie (38/68). Most solicitations from participants dealt with clarifying questions about the survey (“*You want my whole name?*”, with difficulty reading screen instructions (“*I can’t see, can you move it closer?*”), or how to play videos that were embedded in the survey (“*Just click this?*”). Solicitations from Rosie dealt with questions about the survey, but also with questions about basic computer skills (“*If I make a mistake, what do I do?*”).

Table 5. Breakdown of solicitations and proposals

Parent	Solicitation & Response		Verbal proposal		Physical proposal		Total
	Survey	Video	Survey	Video	Survey	Video	
Debbie	4	3	18	10	1	1	37 (17.9%)
Rosie	38	5	22	6	8	14	93 (44.9%)
Tonya	14	6	13	5	1	2	41 (19.8%)
Nina	3	0	5	1	0	0	9 (4.4%)
Adam	9	1	12	4	1	0	27 (13.0%)
Subtotal	68	15	70	26	11	17	207
Total	83		96		28		207

Verbal proposals (i.e., assistance provided without request) were offered for all five participants, and physical proposals for four of five participants (all but Nina). The high number of verbal proposals during the survey portion of the interview dealt principally with survey navigation challenges (e.g., how to use a trackpad, how to use a horizontal slider to enter online survey response, how to navigate the survey using mouse / arrow keys), or when the interviewer could forecast issues that had been encountered by previous interviewees (e.g., dates rejected per incorrect format, interviewee confusion about how to proceed to next page of survey). During the video portion of the interview, verbal proposals explained the website layout (e.g., locating session content under introductory videos, week 1, week 2, etc.), alerting users that the volume on some videos may be louder / softer than expected, or encouraging that participants speak their mind while watching videos.

The high degree of unsolicited physical assistance to Rosie during the video portion occurred in response to her request that the interviewer “do the clicking for her” (per the interviewer’s verbal offer). Otherwise, unsolicited physical assistance was provided to move the computer closer to participants, adjust volume if participants were clearly straining to hear (or if volume was too loud), and adjust the size of text during the survey. Collectively, unsolicited assistance sought to reduce in-the-moment usability issues, as issues became apparent. Given the small sample, and cross-sectional interview, addressing in-the-moment usability issues allowed other barriers to surface.

DISCUSSION

The purpose of Phase 1 was to identify perceived barriers identified by RTP parents that may have interfered with parents' efficiency and completion of desired learner behaviors (navigating and accessing online content) through RTP's online parenting program, and to identify major usability issues (Albert & Tullis, 2013). Building upon steps 6 and 7 of the IDEAS framework (capture user feedback, build minimally viable product), in-depth in-person interviews were used to target barriers to usability and refine RTP's new online program.

The Parent Motivation Inventory (PMI) yielded estimates of parent motivation to participate in child treatment to determine if sufficient motivation would be a barrier to the online training above and beyond perceived simplicity factors. Fogg's five simplicity factors were explored, as were the influence of prompts, to determine which of the three FBM levers (sufficient motivation, sufficient ability, well-timed prompt) would require modification to active parent engagement in the online program (Fogg, 2009).

In addition, an analysis of learning objectives was undertaken to determine if salient video content would be retained at post-test. A high degree of PI task assistance warranted a post-hoc exploration of the influences of help solicited and help offered. Barriers to usability were addressed, finding that prompts would be most feasible to change before the online program would be introduced to parents of the 2016 RTP Summer Program.

Summary and interpretation of findings

Total scores on the Parent Motivation Inventory suggested that this sample of parents were moderately to highly motivated to participate in child treatment, indicating that revision efforts could be focused on understanding barriers to perceived simplicity and timing and type of prompts. While the focus of this study was to understand and remove perceived barriers to use of the online program, perceived barriers may merit deeper exploration in future research, as low perceived ability to change is distinct from barriers to perceived simplicity in learning how to use an online parenting program. Accounting for overall sufficient motivation, attention was committed to understanding simplicity factors and the timing of prompts.

Analysis of simplicity factors revealed differences in brain cycles and physical effort among participants who had varying levels of visual impairment and technology familiarity. Brain cycles were most frequently coded during the survey portion of the interview, which may also be interpreted as higher cognitive load (defined as the extent of demands imposed within time constraints or other limitations (Gerson & Bassuk, 1980)). Research on cognitive load reveals that cognitive busyness limits processing ability during cognitive tasks (Muroff, 2004). While the PI offered support during the usability test, there was not enough time to address barriers to perceived simplicity factors (e.g., increasing text on screen, onboarding about how to stream online video).

For instance, changes to Physical Effort might have involved changes to video volume. However, when these videos were recorded, microphone settings determined floor audio levels. These levels had to be changed for each speaker, increasing

microphone sensitivity for quiet speakers, and decreasing for loud speakers. If the microphone sensitivity was not adjusted for different speakers, audio would become distorted (i.e., capturing overwhelmingly loud audio for loud speakers, and inaudibly quiet levels for soft speakers). While it was possible to slightly modify these audio settings during video editing, and also possible to change speaker volume during the usability test, the microphone captured audio at different levels during raw video capture. Thus, audio levels were inconsistent across videos and resulted in physical effort to access audio, either in straining to hear or in physical task of changing volume. Correcting volume to comfortable levels across videos would have involved re-recording raw video content, or hiring a sound engineer (unfeasible given time and financial constraints).

As RTP's online program was free to parents, it was not possible to further reduce cost of the program to parents, eliminating the Money factor from the list of changes that could have been made to simplicity factors. As videos had already been reduced to lengths empirically demonstrated to maximize online engagement, the Time factor was also unlikely to change. Suggesting that parents watch these videos with a tech savvy peer or helper may be ways to reduce barriers related to Brain cycles and Non-routine; absence of such support may be a barrier to participation for some parents.

It became evident that the majority of usability barriers occurred during the online surveys which, while revealing information about comfort with technology, was not the principal aim of this usability study. Parents did not have trouble playing videos by the time they completed viewing videos in the pre-Qualtrics survey. One of the reasons for

initial trouble with video playback may have been that embedded videos in a survey did not replicate an online video format that some parents were familiar with (e.g., YouTube). Over time, the perception of simplicity increased with practice, as non-routine decreased. One way of making online training appear easier to do may be to design video interventions in formats already familiar to participants.

Thus, changes to prompts became the easiest method of positively influencing parent engagement with RTP's online program. Fogg (2009) describes that there are three types of prompts that may be deployed, each of which tells "people to perform a behavior now" (p. 6). Fogg calls the first prompt a **Spark**, which is used to increase core motivators of pleasure, hope or acceptance (e.g., inspirational video). **Facilitators** are prompts for participants that have sufficient motivation but may lack ability. Finally, **Signals** are prompts for people with sufficient motivation and ability, but need a reminder (Fogg, 2009).

In this study, Signals proved to be the most useful prompt to sustain parent engagement. The purpose of these Signals was to indicate the logical next step in a progression towards task completion. Given the moderate to high levels of parent motivation to be involved in child treatment (evidenced by PMI scores), and the observation that most usability barriers were attributed to the online survey (and challenges to perceived simplicity in accessing videos was less an issue), it seemed that enhancements to prompts would offer the greatest yield in participants completing the video viewing task. As Fogg suggests, if people already have sufficient motivation and ability, only a prompt is required for the desired behavior to occur (p. 6), "helping people

do what they already want to do” (Fogg, 2016a).

Exploring solicitations and responses, it appeared that a) the majority of help requested occurred during the survey, and that b) the survey acted as an onboarding tool, reducing challenges during the video portion of the interview, as parents came to understand how to play / stream online videos (if they did not already know). This insight about onboarding may be particularly important in reducing barriers to technology use for those with low tech literacy. Learning (i.e., task success) did occur for all participants, though was only possible for some with a high degree of solicitation and help provided.

While these results did not support the hypothesis that participants would be able to navigate RTP’s online program successfully and efficiently, with minimal support solicited from the research facilitator, they did illuminate unforeseen barriers to user engagement and provided important contextual information about RTP parents might use this online program. Importantly, it seemed that the majority of usability barriers involved Qualtrics surveys, particularly for older participants, a finding consistent with existing research that older adults can have a harder time using websites, as they appear less able to create mental models of site functionality, leading to poorer web performance (Wagner, Hassanein, & Head, 2014).

In 2001, Marc Prensky popularized the terms ‘digital native’ and ‘digital immigrant’ to suggest the ease with which many millennials (and generations since) have with technology (Prensky, 2001). This technological fluency extends metaphors of acculturation and language acquisition to characterize a metaphorical “accent” that digital immigrants do not possess (e.g., bringing people into an office to see a website rather

than sending the URL, double clicking web links). Related age differences were evident in this study, where technology comfortability was apparent.

LIMITATIONS

Several limitations are worth noting in Phase 1. Principally, the limited sample is too small to generalize to the greater RTP parent population; not all parents may have encountered identical barriers and all parents were recruited from a group that had a longstanding relationship with RTP. Further, two of the participants knew each other (mother / son) and had discussed the interview, thus developing expectations of the interview.

While the principal aim of this study was to understand and reduce friction from usability barriers for parents of children attending the 2016 RTP Summer Program, this sample of parents with prior RTP Summer experience was not representative of all parents with children attending the program for the first time. Additionally, not all participants were able to view all videos in this usability test. While valid percentages accounted for missing responses (Table 2), this study may have benefitted from additional information about impressions of possible barriers to video content. Further, due to resource constraints, inter-coder reliability checks were not run in NVivo. Reliability was sought through process of saturation, which was limited by the small sample.

As a contributor to video scripts, the videographer, creator of survey content, a former RTP clinician, and facilitator of the interviews, it is possible that researcher reactivity created an environment in which favorable comments were rewarded. This

confluence of identities may have created role confusion, in “who” parents believed was conducting the interview (e.g., RTP employee, external evaluator, combination thereof). Researcher reactivity was monitored by writing reflective memos between interviews, monitoring self-observations in a research journal. This multi-role identity aided access to (and allowed for empathy with) participants, but made for a complex interview relationship.

This study would have benefitted from additional information about parent comfort with technology, and an objective ‘count’ of usability barriers that the user could indicate during the interview, (e.g., clicking a button on the screen) or by using eye-tracking technologies to assess the ease of finding sought-after information. Finally, although this usability test aimed to enhance the online program, no information was captured to enhance parent experiences with aspects of non-digital interventions received by parents in 2016 (i.e., phone call support, additional therapeutic supports).

Finally, while only five participants were available using the purposeful sampling procedure, some user experience researchers believe such small samples are sufficient to capture 80-85% of usability issues (Lewis, 1994), by making “assumptions about individual differences in problem discovery” (Woolrych & Cockton, 2001). Still, the “*magic n of 5*” is contested (Sauro & Lewis, 2016; Spool & Schroeder, 2001; Woolrych & Cockton, 2001), with other user experience researchers only finding 35% of usability issues among the first five participants. Leading usability researchers have determined that a sample size of 5-10 is acceptable, provided that a) the test is conducted with a distinct user group who will use the product in similar ways, and b) if the scope of the

design is restricted (as in this study, where the user interface was represented as stacked videos with occasional online surveys) (Albert & Tullis, 2013).

CONCLUSION

As technologies for social good are developed, there is a simultaneous need to rigorously evaluate the design and performance of these new tools. User experience research is necessary to identify design flaws in the early stages of product development through user feedback (Bai & Blackwell, 2012). Social work researchers have called upon helping professionals to learn the design lexicon to build products that can fit into the lives of research participants, as “the design of ethical and effective human service technology applications requires content knowledge and the purposeful integration of design concepts” (LaMendola & Krysik, 2008, p. 406).

Using thematic analysis, usability issues were identified and addressed using the Fogg Behavior Model (FBM). The FBM offers a useful lexicon for diagnosing usability barriers by narrowing possible barriers to the categories of user motivation, perceived ability and prompt type and timing (Fogg, 2009). The results of this study led to changes to prompts to increase the likelihood that engagement in RTP’s parenting program would be sustained. The online program was revised and launched for the 2016 Summer Program, and evaluated in Phase 2.

CHAPTER THREE, PHASE 2

Piloting a combined online psychoeducation program to increase parenting self-efficacy among parents while their child attends short-term residential treatment

Background

Literature on parent wellbeing during the time that children are engaged in treatment is mixed. Some researchers describe this period as an “anguish of separation” (Buchbinder & Bareqet-Moshe, 2011, p. 122), loss, or bereavement (Gottlieb, 1987; Haagenstad, 1992; Jurkovic, Jessee, & Goglia, 1991). Others confirm that this time apart yields multiple benefits to parents, including “increased peace of mind, reduced stress, and greater freedom to pursue interests” (Baker & Blacher, 2002, p. 10). For parents already experiencing an emotional burden, the act of suggesting parent training may be met with resistance, while the act of suggesting training to those enjoying a sense of freedom may experience training as constraints on their autonomy. For parents on either side of the continuum, parent involvement should be maximized by minimizing the perceived burden of parent involvement in child treatment.

Attempting to ease this perceived burden in Phase 1, this second study sought to understand the influence of the online training on parenting self-efficacy and parenting stress. Content of the online training integrated Positive Behavior Supports (PBS) and Collaborative Problem Solving (CPS). PBS is a behavioral intervention whereby parents reinforce links between family values and child behavior by clarifying expectations of behavior in various environmental contexts (Hieneman et al., 2006) (e.g., family value of Safety is linked to expectation of hand washing before meals) and expectations are

reinforced through repeat conditioning sequences of desired responses (e.g., hand washing is positively reinforced with hand washing routines). In addition, parents watched psychoeducational video content about CPS, an intervention focusing on communication skills between parents and children. Among the many communication skills introduced in CPS, parents are taught how to practice empathy in moments of challenging child behavior, express the adult's concern, and invite the child to collaboratively address the problem being experienced (Greene et al., 2004). CPS aims to address parent-child incompatibility through enhanced family communication.

While psychoeducational programs have previously evaluated parenting self-efficacy (Sanders et al., 1999; Sanders & Woolley, 2005; Sofronoff & Farbotko, 2002; Tucker et al., 1998) traditional parent engagement strategies seek to temporarily induce motivation, despite demonstrated high discontinuation rates (Baker et al., 2011); about 50% of parents drop out of parenting programs, even when financial incentives, childcare, refreshments and transportation are available (Frey & Snow, 2005; Kazdin, 1996). Including revisions from Phase 1, the psychoeducational parenting program used FBM activation strategies (Fogg, 2008) to nudge parent engagement in online treatment, in a behavioral (PBS) and non-behavioral (CPS) intervention (see Phase 1 for more detail of intervention components).

This study sought to address the following question: *Do parents participating in the online psychoeducational video intervention experience increases in parenting self-efficacy and decreases in parenting stress?* To address this question, survey and video use data were captured across the six weeks that children were engaged in residential

treatment, and eight weeks post-residential treatment. The longitudinal analysis explored the relationship between video use and parent self-report of parenting self-efficacy and parenting stress, controlling for two parent-level variables known to influence parent engagement in children's mental health treatment, parent age and single parent status.

Aim: Evaluate the eight-module, eight-week combined PBS-CPS training with parents of children at the 2016 RTP Summer Program, assessing the relationship between number of videos watched and changes in PSE (primary outcome) and parenting stress (exploratory outcome). Hypotheses include:

H1: For parents who watched over 50% of training videos, parenting self-efficacy will increase across the study period.

H2: For parents who watched over 50% of training videos, parenting stress will decrease across the study period.

METHODS

This quantitative longitudinal study analyzed anonymized video use data and survey data from parent self-report. This study did not require approval from Boston University IRB as no identifying information was collected (i.e., not considered human-subjects research) during the active study period. RTP received a copy of BU's statement that no IRB was required.

Procedures

Sampling and Recruitment

On June 29, 2016, RTP's Constant Contact email system automated the first of several initial emails to all parents of children attending the 2016 RTP Summer Program

(n=96), announcing RTP's new online parenting program. While emails were sent to all parents, the response rate of parents participating in the online surveys, who also watched videos, was n=68. More parents watched videos, but did not complete online surveys about parenting self-efficacy or parenting stress.

RTP's email system was used for the duration of Phase 2 to send weekly emails (scripted by RTP) to parents as Signal (messages) and Facilitator (links) prompts to activate use of the online program (Fogg, 2009). The June 29 email contained a link to complete a RTP Qualtrics survey which, upon completion, redirected parents to RTP's website to view introductory videos. In the week prior to Arrival Day (residential intake process and first day of the RTP Summer Program), a total of three emails were sent to parents to complete the online survey and explore the Introduction and Session 1 videos (Introduction and Session 1 released together).

These initial emails described that participating in the survey would enter them into a lottery to win one \$20 Amazon gift card. Parents were also informed that if they would like access to the videos, but would rather not complete the survey, RTP could provide the specific URL for access. If parents requested access, they were told they would not be eligible for a gift card. Identical surveys at further time points (mid-treatment, end of treatment, eight follow-up) also entered parents into a lottery for a \$20 gift card at each time point.

Survey Measures

Within the first week of their child enrolling in the RTP Summer Program, parents were invited to participate in the first of four identical surveys, with later

administrations at three, six and 14 weeks (i.e., eight weeks following the completion of RTP), evaluating parenting self-efficacy and parenting stress.

The Parenting Sense of Competence (PSOC) was administered to evaluate parenting self-efficacy. Using a 6-point scale (ranging from 1= “strongly disagree” to 6 = “strongly agree”) on the PSOC, parents rated the extent to which they agree with 16 statements about parenting competence across two subscales, evaluating parenting satisfaction and parenting self-efficacy. The parenting self-efficacy subscale is made up seven items, with a possible range of 7-42, where higher scores indicate greater parenting self-efficacy (e.g., *The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired; I meet my own personal expectations for expertise in caring for my child; If anyone can find the answer to what is troubling my child, I am the one*). The subscale is frequently used as a measure of parenting self-efficacy, and has internal consistency reliability (Cronbach’s alpha = 0.70) and construct validity (Coleman & Karraker, 1998; Gibaud-Wallston & Wandersmann, 1978; Johnston & Mash, 1989). Over a 6-week interval, test-retest correlations on the PSOC ranged from 0.46 to 0.82 (Gibaud-Wallston & Wandersmann, 1978). PSOC convergent and discriminant validity has been reported in various studies with parents of children having differing disorders (Hassall, Rose, & McDonald, 2005; Johnston & Mash, 1989; Lovejoy, Verda, & Hays, 1997; Ohan, Leung, & Johnston, 2000; Rodrigue, Geffken, Clark, Hunt, & Fishel, 1994).

The Parenting Stress Index-Short Form (PSI-SF) was used to evaluate parenting stress. The PSI-SF describe 36 statements on three subscales evaluating parental distress,

parent-child dysfunctional interaction, difficult child, using a 5-point scale (from 1 = “strongly agree” to 5 = “strongly disagree”) to indicate extent of agreement with 36 statements related to parenting stress (e.g., *I feel trapped by my responsibilities as a parent; My child is not able to do as much as I expected; My child's behavior is more of a problem than I expected*). Items are scored from 36 to 180, with higher scores indicating greater overall parenting stress. Internal consistencies for the PSI-SF range from very good to excellent (Reitman, Currier, & Stickle, 2002). The PSI-SF has good test re-retest reliability (Lecavalier et al., 2017), and the correlation between the full 101- item PSI and the PSI-SF is 0.94 (Abidin, 1995).

Data Management

As parents completed the initial (baseline) Qualtrics survey, they were redirected to RTP’s website. Given that all Qualtrics surveys contain a unique survey ID, this survey ID was appended to the redirection link using Qualtrics’ “piped text” feature. Unique survey IDs from Qualtrics were then captured by RTP’s Google Analytics account, and named as unique anonymous user IDs for the study duration. RTP’s web team then linked each of the 41 videos (hosted on the PI’s secure Vimeo account) to a unique javascript code using a Vimeo JavaScript plugin for Google Analytics (vimeo.ga.js). This method allowed every video interaction to be captured anonymously with a unique user identifier. RTP shared a copy of the anonymized video use data with the PI in a secure online portal.

Upon study completion, the video use data file was downloaded and cleaned in Excel (e.g., staff were asked to complete a separate survey linking them to the RTP website, so their video use data could be filtered out). Survey responses were linked to

use data by Qualtrics survey ID, and imported to R Studio (R version 3.4.1) for analysis.

Independent Variable

As a proxy for intervention dosage, the independent variable of interest was the number of video views (i.e., video starts), aggregated across the time parents had access to videos during their child's treatment, and during the follow-up period.

Control Variables

Previous research suggests that parent-level factors such as parent age and single parenthood status may be important determinants of variation in rates of parent engagement in parent training programs. Given that participating in this intervention required basic technology skills, and that older adults in general report less comfort, efficacy, and control over technology than younger adults (Czaja & Sharit, 1998), parent age was included as a control variable.

Single parenthood status has been linked to lower enrollment rates in parent training programs (Baker et al., 2011; Heinrichs et al., 2005; Lengua et al., 1992), suggesting that logistical difficulties such as scheduling conflicts and lack of time may present barriers to parent involvement (Spoth et al., 1996). In an evaluation of the Triple-P parenting program, single-parents were one-fourth as likely to participate, after controlling for income and parent education (Heinrichs et al., 2005). As online psychoeducation designed for simplicity may bypass traditional logistical barriers (acknowledging that two-parent families would also benefit, though single parents may experience greater benefits), online parent training may increase access to parent

treatment for parents experiencing logistical and scheduling barriers.

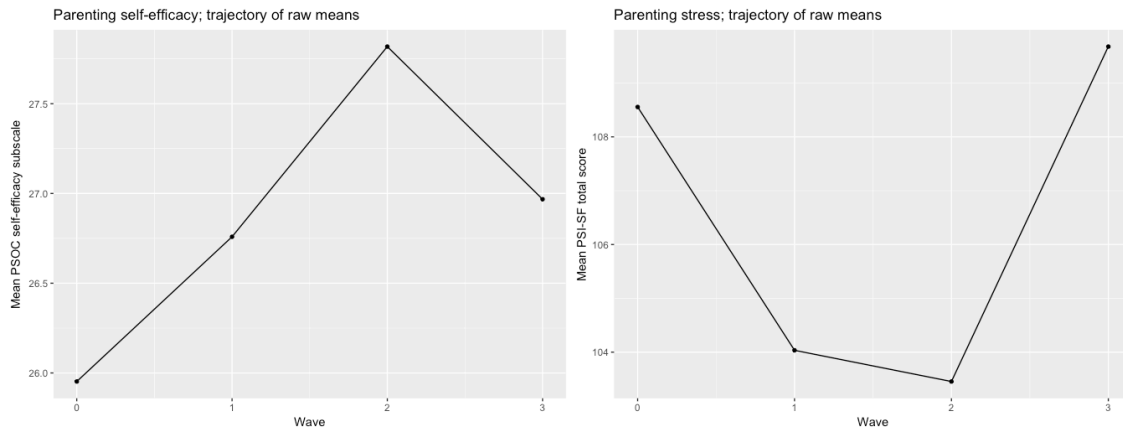
Thus, parent age and parent single status were controlled for their potential association with changes in parenting self-efficacy and parenting stress in the systematic process of model building.

Data Analysis

Descriptive statistics were first run to characterize the parent sample. A linear mixed model approach was then used to evaluate the relationship between video use and parenting self-efficacy / parenting stress over time. Mixed models, with multiple observations at multiple time point for each unit of analysis, are frequently used in longitudinal research as they account for the violation of independence from the correlation of within-subjects repeated measures (Byrne, Fargo, Montgomery, Munley, & Culhane, 2014; Hox, Moerbeek, & van de Schoot, 2010). In addition, multilevel models can accommodate unbalanced data structures, where data may be missing for participants at one or multiple time points (Byrne et al., 2014; Tom, Bosker, & Bosker, 1999). Such was the case for the present study, as not all parents completed surveys at all four waves.

Descriptive statistics revealed increasing parenting self-efficacy while children are in residential treatment, decreasing after children had been home for approximately eight weeks, but not below the initial level of parenting self-efficacy at baseline (see Figure 12). An inverse pattern was observed for parenting stress, with decreases in mean stress while children were engaged in residential care, and the return of parenting stress above baseline about eight weeks after children had returned home (Figure 12).

Descriptive statistics are summarized in Table 6.

Figure 12. Trajectory of raw means for parenting self-efficacy and parenting stress**Table 6. Means and SDs at each wave for parenting self-efficacy and parenting stress**

Study wave	Parenting self-efficacy				Parenting stress			
	0	1	2	3	0	1	2	3
N	63	29	22	31	63	29	22	31
Mean	25.95	26.76	27.82	26.97	108.56	104.04	103.45	109.68
SD	5.98	6.62	4.56	5.72	21.50	22.69	20.42	21.74
Range	10-37	11-38	18-35	15-37	44-147	48-155	64-148	56-149

Next, a sequential model building approach followed Singer and Willet's (2003) process for analyzing longitudinal data with multilevel model structures. Data were structured in two levels, with measurement time as the first level, and parent self-report of parenting self-efficacy and parenting stress as the second level. Using the nlme package in R Studio (R version 3.4.1), participant IDs were treated as random effects, and timing of surveys as fixed effects. A model was first estimated for each dependent variable using only time as a predictor, in an unconditional means model for parenting self-efficacy and for parenting stress. Time was then included as a predictor in the level-1 submodel in an unconditional growth model for parenting self-efficacy and parenting stress in Model 2 (see Table 8 and Table 9 for taxonomies of model building for

parenting self-efficacy, and parenting stress, respectively). Model 3 was built seeking to reduce the unexplained outcome variation, adding video dosage (total video plays at or below 50%=0, above 50% =1) as a predictor of initial status and change over time. Further models were tested controlling for parent age (model 4) and for parent single status (model 5), before a final model was run that best fit the data (model 6), exploring effects of video dosage on parenting self-efficacy controlling for age, and effects of video dosage on parenting stress controlling for single parent status.

RESULTS

Sample characteristics

Table 7 displays demographic information for the 68 parents who completed surveys and viewed videos. Video use data suggests that many other parents watched videos, but did not participate in surveys; demographic information was not available about parents who only watched videos. On average, the $n=68$ parents were aged 49.23 ($SD=9.36$, 33-72). Out of a possible 41 videos, the average number of video starts was 18.99 ($SD=14.36$, 1-56). Twenty-two percent of parents ($n=15$) were single (never married), 25.0% were divorced ($n=17$), and 52.9% were married ($n=36$). Ten parents completed surveys at all four time points, 12 completed surveys at only three time points, 23 at only two time points, and 23 at just one time point.

Table 7. Parent age and relationship status (Overall n=68)

Mean parent age	49.23 (9.36), 33-72
Mean video views	18.99 (14.36), 1-56
Single (never married)	22.06% (15)
Divorced	25.00% (17)
Married	52.94% (36)

Table 8 displays a taxonomy of model building exploring the effect of video on parenting self-efficacy, while Table 9 presents an identical model building procedure for parenting-stress (see end of Phase 2).

Parenting self-efficacy

Model 1 in Table 8 shows results of the unconditional means model; rejection of the null hypothesis ($p < .001$) confirmed the average change in parenting self-efficacy during RTP's parenting program was non-zero. Squaring the estimated fixed effect of 5.12 yielded 26.19, indicating that parents reported moderate parenting self-efficacy, as children were enrolled in residential treatment; squaring allows assumptions of linearity with time at level-one and at level-2 (Singer & Willett, 2003). Model 2 in Table 8 displays results of the unconditional growth model; consistent with the first hypothesis, parenting self-efficacy did significantly increase across the study period, though the increase was gradual.

Model 3 in Table 8 included video dosage as a predictor of initial status and change in parenting self-efficacy; for ease of exposition, parents who watched 50% or fewer of videos available are referred to as *low-view*, and parents watching more than

50% videos as *high-view*. The estimated initial parenting self-efficacy score for the average low-view parent was 5.11 ($p < .001$); the estimated difference in initial parenting self-efficacy between high and low-view parents was -0.15 ($p = .350$); the estimated average rate of change in parenting self-efficacy for low-view parents was 0.06 ($p = 0.096$), and the estimated difference in the rate of change in parenting self-efficacy for high and low-view parents was essentially zero (0.01; $p = 0.835$). This model suggests that high-view parents have slightly lower levels of parenting self-efficacy at baseline (although this difference does not appear to be statistically significant), and that their rates of change in parenting self-efficacy do not change from beginning to end of the study period. With a ceiling parenting self-efficacy score of 42, squaring the initial estimate (5.11 to 26.11) of parenting self-efficacy reveals that parents had more room to grow, but did not.

Model 4 in Table 8 assessed the effects of video dosage on initial status and rates of changes in parenting self-efficacy, controlling for effects of parent age on initial status and rate of change. Controlling for the effects of age, the estimated average rate of change in initial parenting self-efficacy for low-view parents was -0.05 ($p = 0.756$), and the estimated difference in the rate of change in parenting self-efficacy between high and low-view parents was essentially zero (-0.001, $p = 0.992$). This model provides a controlled response to the second hypothesis; high-view parents have slightly lower levels of parenting self-efficacy at baseline (though this result is not significant), and experience gradual increases in parenting self-efficacy across the study period. The predicted linear increase in parenting self-efficacy (0.002) was non-significant ($p =$

0.422). The magnitude of difference in parenting self-efficacy was lower in Model 4 (-0.05) than in Model 3 (-0.15), having controlled for age.

Model 5 in Table 8 controlled for the effects of parent single status on initial status and rate of change rather than controlling for parent age. Controlling for the effects of single parent status, the estimated difference in initial parenting self-efficacy between high and low-view parents was -0.106 ($p = 0.512$), and the estimated difference in the rate of change in parenting self-efficacy between high and low-view parents was essentially zero (0.017, $p = 0.776$). Again, high-view parents had slightly lower levels of parenting self-efficacy at baseline (although again, it does not appear that this difference was statistically significant), and these rates scarcely changed across the study period. Using aggregate video views as an independent variable, controlling for parent single status did not fit the data as well as controlling for parent age, given increases in the Aikake information criterion (AIC) (Singer & Willet, 2003). Thus the final model in Table 8 controlled only for parent age.

Model 6 in Table 8 included parent age as a predictor of initial status and change over time, but video dosage as a predictor only of initial status. This final model best fits the data, given the drop in the AIC. Controlling for the effects of parent age, the estimated difference in initial parenting self-efficacy was 0.048 ($p=0.716$). Controlling for the effects of video starts, for every additional year increase in parent age, average initial parenting self-efficacy was 0.03 lower and the average rate of change in parenting self-efficacy is 0.002 higher (again, the result is not significant). Parents starting more videos had lower parenting self-efficacy at baseline, though their rate of change in

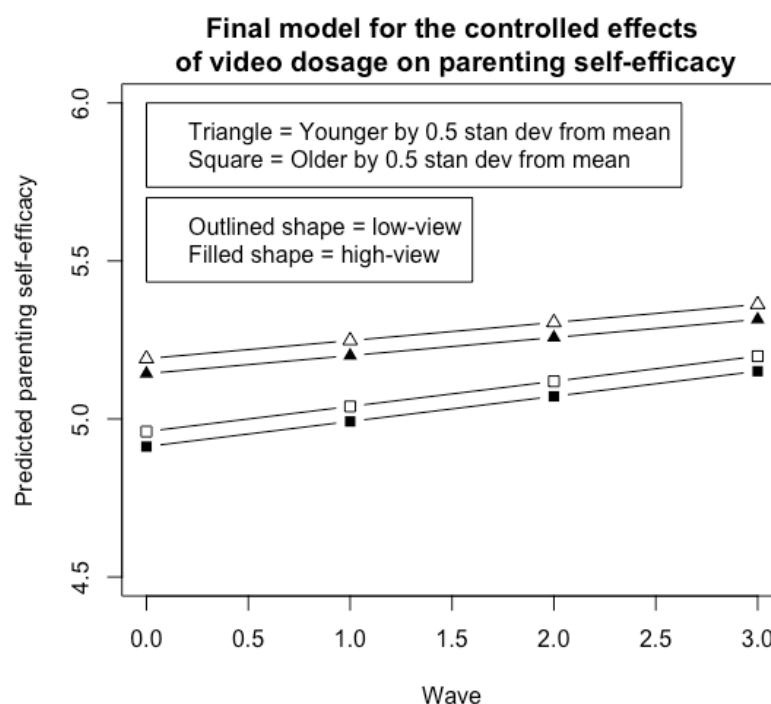
parenting self-efficacy was essentially identical to those starting fewer videos. Parent age was negatively associated with initial parenting self-efficacy, but positively associated with the rate of change; there was room to increase parenting self-efficacy scores, but essentially no change occurred. Using the standard deviation of parent age (9.36), age values of 44.55 and 53.91 were selected as half a standard deviation from the sample mean (49.23), referred to here as ‘Younger and ‘Older’. Fitted values are visualized in Figure 13.

Table 8. Fitting a taxonomy of multilevel models for change to psychoeducational program use and parenting self-efficacy (n=68)

			Models					
		Parameter	1	2	3	4	5	6
Fixed Effects Initial Status, π_{0i}	Intercept	γ_{00}	5.118***	5.056***	5.110***	6.289***	5.055***	6.289***
	<i>VIDEO</i>	γ_{01}			-0.146	-0.047	-0.106	-0.048
	<i>parAGE</i>	γ_{02}				-0.025***		- 0.025***
	<i>singleStatus</i>	γ_{02}					0.181	
Rate of change, π_{1i}	Intercept	γ_{10}		0.067*	0.064	-0.049	0.056	-0.049
	<i>VIDEO</i>	γ_{11}			0.012	-0.001	0.017	
	<i>parAGE</i>	γ_{12}				0.002		0.002
	<i>singleStatus</i>	γ_{12}					0.040	
Variance components								
Level 1	Within-person	σ_e^2	0.108	0.067	0.067	0.067	0.067	0.067
Level 2	In initial status	σ_0^2	0.249	0.329	0.324	0.271	0.319	0.271
	In rate of change	σ_1^2		0.016	0.016	0.015	0.016	0.015
	AIC		209.66	204.83	207.84	201.93	209.78	199.93
	BIC		218.59	222.69	231.66	231.69	239.55	226.72
	logLik		- 101.83	- 96.42	-95.92	-90.96	-94.89	-90.96

NOTE: These models predict parenting self-efficacy between survey waves 0 and 3 as a function of video exposure (at level-1) and a variety of combinations of video and parent age / single status (at level-2). Parameter estimates have been transformed by taking the square root of raw parenting self-efficacy scores from the self-efficacy subscale on the PSOC. * p < 0.05 ** p < .01 *** p < .001

Figure 13. Final fitted model for parenting self-efficacy (sq root)



Parenting stress

Table 9 displays a model building taxonomy for parenting stress, starting with an unconditional means model in Model 1. Rejection of the null hypothesis ($p < .001$) confirms the average change in parenting stress during RTP's parenting program was non-zero. Model 1 in Table 9 presents a single fixed effect estimate mean outcome of 10.346. Squaring this result transforms the value into its more interpretable form of 107.04 on the Parenting Stress Inventory Short Form. This raw score is considered within the 'normal' range for parenting stress; the range for high stress scores are 163 to 174, with clinically significant stress scores above 174. Model 2 in Table 9 displays results of the unconditional growth model, predicting a non-significant gradual decrease in parenting stress for the average parent across the study period ($p = 0.474$).

Model 3 in Table 9 included video dosage as a predictor of initial status (e.g., parenting stress at baseline) and change in parenting stress. The estimated initial parenting stress score for the average low-view parent was 10.37 ($p < .001$); the estimated difference in initial parenting stress between high and low-view parents was 0.01 ($p = 0.967$); the estimated rate of change in parenting stress for low-view parent was -0.07 ($p = 0.096$), and the estimated difference in the rate of change in parenting stress for high and low-view parents was essentially zero (0.09; $p = 0.258$). This model suggests that high-view parents have higher levels of parenting stress at baseline, though their rates of change scarcely differ across the study period (e.g., parenting stress scores could have dropped further, but did not).

Model 4 in Table 9 assessed the effects of video dosage on initial status and rates of changes in parenting stress, controlling for effects of parent age on initial status and rate of change. Controlling for effects of age, the estimated difference in initial parenting stress between high and low-view parents is 0.06 ($p = 0.829$), and the estimated rate of change in parenting stress for low-view parents was again essentially zero (0.10), $p = 0.242$). This model provides a controlled response to the second hypothesis; while high-view parents have slightly higher levels of parenting stress at baseline, there is essentially no difference in their rate of change. The predicted linear rate of decrease in parenting stress (-0.001) is non-significant ($p = 0.732$).

Model 5 in Table 9 controls for the effects of parent single status on initial status and rate of change. Controlling for the effects of single parent status, the estimated difference in initial parenting stress between high and low-view parents is -0.65 ($p =$

0.050), and the estimated rate of change in parenting stress for low-view parents is 0.11 ($p = 0.168$). Contrasting Model 4, once controlling for the effects of single parent status, high-view parents had slightly lower levels of parenting stress at baseline, and while these rates scarcely change across time. Model 5 predicts a positive rate of change in parenting stress for single parents (0.15, $p = 0.188$) compared to non-single parents. Controlling for parent single status fits the data better than controlling for parent age, given drop in the Aikake information criterion (AIC) (Singer & Willett, 2003), thus the final parenting stress model controls continues to control for parent single status.

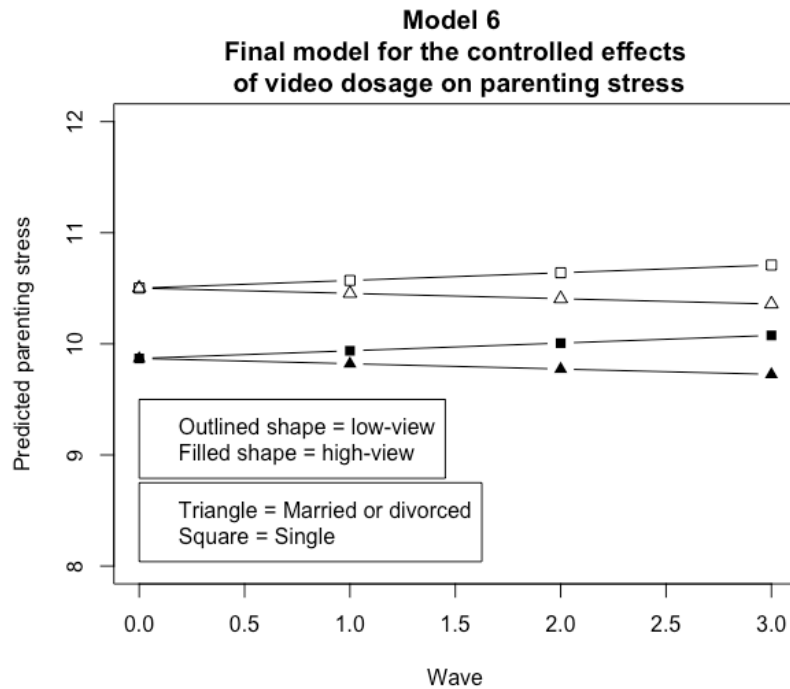
Model 6 in Table 9 included single parent status as a predictor of initial status and change over time, but video dosage as a predictor only of initial status. This final model best fits the data, given the drop in the AIC. The estimated difference in parents' high-view baseline parenting stress is 0.62 ($p = 0.059$) lower than that of parents viewing fewer than 50% of videos; controlling for single parent status, higher video viewing was associated with less parenting stress at baseline. Single parents (high or low view), were predicted to have gradually increasing levels parenting stress compared with non-single parents. See in Figure 14 for fitted values.

Table 9. Fitting a taxonomy of multilevel models for change to psychoeducational program use and parenting stress (n=68)

		Parameter	Models					
			1	2	3	4	5	6
Fixed Effects Initial Status, π_{0i}	Intercept	γ_{00}	10.346***	10.366***	10.365***	11.052***	10.548***	10.502***
	<i>VIDEO</i>	γ_{01}			0.012	0.058	-0.113	-0.012
	<i>parAGE</i>	γ_{02}				-0.014		
	<i>singleStatus</i>	γ_{02}					-0.649	-0.622
Rate of change, π_{1i}	Intercept	γ_{10}		-0.028	-0.071	-0.003	-0.107	-0.048
	<i>VIDEO</i>	γ_{11}			0.089	0.095	0.114	
	<i>parAGE</i>	γ_{12}				-0.001		
	<i>singleStatus</i>	γ_{12}					0.151	0.117
Variance components								
Level 1	Within-person	σ_e^2	0.199	0.161	0.162	0.164	0.154	0.155
Level 2	In initial status	σ_0^2	0.963	0.996	1.002	0.984	0.948	0.942
	In rate of change	σ_1^2		0.019	0.018	0.017	0.022	0.023
	AIC		341.828	346.478	349.022	351.562	348.344	348.294
	BIC		350.759	364.338	372.836	381.329	378.112	375.085
	logLik		-167.914	-167.239	-166.511	-165.781	-164.172	-165.147

NOTE: These models predict parenting stress between survey waves 0 and 3 as a function of video exposure (at level-1) and a variety of combinations of video and parent age / single status (at level-2). Models 3, 4 and 5 enter the level-2 predictors in their raw form. Parameter estimates have been transformed by taking the square root of raw parenting stress scores from the PSI-SF. * $p < 0.05$ ** $p < .01$ *** $p < .001$

Figure 14. Final fitted model for parenting stress (sq root)



Post-hoc exploration of means: high-view vs. low-view parents

To explore possible group differences, descriptive statistics were calculated for low- and high-view groups in Table 10 and Table 11. These tables draw attention to the proportion of parents in the first wave comparing membership in low and high-view groups; of the 63 parents that participated in the first study wave, 38 (60.3%) were in the low-view group while 25 (39.7%) were in the high-view group. Across the study period, minimal variation is evident for both parenting self-efficacy and parenting stress within and between these two membership groups.

Table 10. Descriptive statistics for low-view

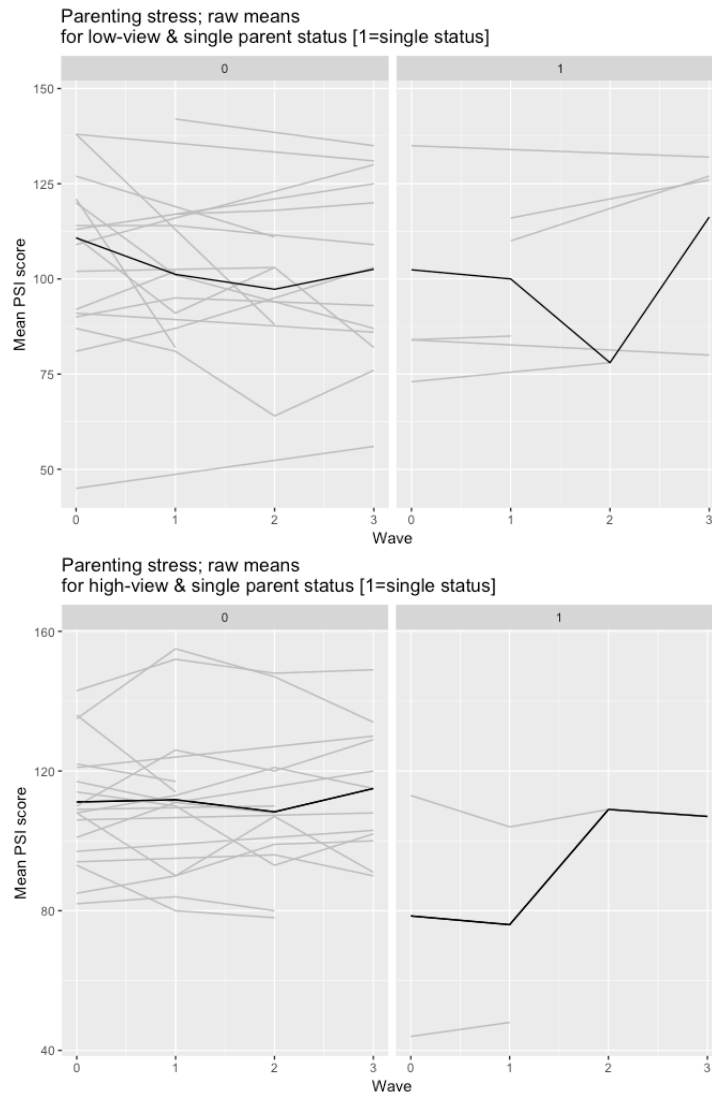
	Parenting self-efficacy				Parenting stress			
Study wave	0	1	2	3	0	1	2	3
N	38	14	8	17	38	14	8	17
Mean	26.58	27.5	29.25	27.24	108.58	100.86	94.88	105.76
SD	5.73	6.67	3.01	5.68	21.45	17.33	17.78	24.64
Range	14-37	11-36	24-33	16-35	45-147	81-142	64-118	56-135

Table 11. Descriptive statistics for high-view

	Parenting self-efficacy				Parenting stress			
Study wave	0	1	2	3	0	1	2	3
N	25	15	14	14	25	15	14	14
Mean	25.00	26.07	27.00	26.64	108.52	107.00	108.36	114.43
SD	6.35	6.72	5.17	5.96	22.02	27.05	20.79	17.30
Range	10-37	13-38	18-35	15-37	44-145	48-155	78-148	90-149

Inconsistent with the overall raw means for all parents (Figure 12), visualizing the trend in raw means for high-view parents demonstrates that parenting stress did not consistently fall during the time that children were away; Figure 15 demonstrates that the pattern of parenting stress for low-view single parents was consistent with the overall group, high view parents experienced a different pattern of parenting stress across the study period. Low-view non-single parents also had different pattern of parenting stress compared to the overall group, with lower parenting stress at eight-week follow-up compared to baseline. Note that the two visualizations in Figure 15 contain different y-axes scaling.

Figure 15. Parenting stress raw means: low-view (top) vs. high-view (bottom)



DISCUSSION

The aim of this phase of research was to evaluate RTP's combined PBS-CPS training with parents of children at the 2016 RTP Summer Program, assessing parenting self-efficacy as a primary outcome and parenting stress as an exploratory outcome. A mixed model building approach was taken to analyze effects of video dosage (i.e., low-

vs high-view) on parenting self-efficacy and parenting stress at four survey waves.

Unconditional means models were first built to understand general trends before a model building procedure sought to find best fit between video dosage and parenting self-efficacy and parenting stress. Best model fit was revealed between parenting self-efficacy controlling for parent age, and parenting stress controlling for parent single status.

Summary and interpretation of findings

Visualizations of raw means (Figure 12) display that parenting self-efficacy increases across the study period while children are in residential treatment before dropping at eight-week follow-up, to a level higher than at baseline (though these changes are minimal). In a reverse pattern, parenting stress decreases across the study period, before increasing at eight-week follow-up, indicating slightly higher levels of parenting stress than at baseline. Though minimal change occurred, the direction of these trajectories when children return home is consistent with existing evidence that many families are uncertain how to continue a child's therapeutic progress once their return home, a time when parents express "fears of the unknown" (Hess et al., 2012, p. 155) during this major life transition.

Between baseline and eight-month follow-up, mean parenting self-efficacy changes from 25.95 to 26.97. Such minimal change is unlikely to reflect meaningful difference in parenting self-efficacy as children begin residential treatment, and when children have been home for two months. Though encouraging that parenting self-efficacy at follow-up did not fall below baseline levels, parenting self-efficacy was highest (27.82) towards the end of child treatment. From the lowest score (baseline) to

the highest score (before children transitioned home), the percent increase in parenting self-efficacy was 7.2%. The percent increase between baseline and eight-month follow-up was 3.9%, suggesting very limited changes in self-perceptions of parenting ability during a critically important time of parent involvement in children's continuity of care.

Consistent with the first hypothesis, the model predicted that the parenting self-efficacy of high-view parents increased across the study period, though the coefficient was not statistically significant. Non-significance could suggest there is no true difference, the sample size may have been too small, or survey measures may not have been sufficiently sensitive to capture changes in parenting self-efficacy or parenting stress in high/low groups). However, this projection does not tell the entire story, as the raw means visualization showed a drop in parenting self-efficacy once children have returned home. Parenting age appeared to account for some changes in parenting self-efficacy across the study period.

While older parents had slightly lower levels of parenting self-efficacy at baseline compared with younger parents, the rate of change in parenting self-efficacy was slightly higher for older parents; it may simply be that these parents had more room for change. In addition, older parents appeared to have a marginally higher rate of change in parenting self-efficacy than did younger parents. Young parent age has been associated with poorer child outcomes (Firestone & Witt, 1982; Lundahl et al., 2006). It may be that younger parents are initially more optimistic of the potential impacts of therapeutic experience or (if they are very young parents) they may find parenting harder to prioritize among competing commitments; older parents may have more skills available to

complete programs and implement program components. Low self-efficacy appraisals might also reflect a parent's mindset that they have to make up some skill deficit, or the video training might alarm parents that they have 'much ground to make up' (Dweck, 2006). Video dosage (i.e., total videos watched) did not seem to predict differences in parenting self-efficacy between younger and older parents.

Partially consistent with the second hypothesis, a visualization of raw means indicates parenting stress did decrease across the study period, though results from the linear mixed model suggested that single parent status predicted increased parenting stress and non-single status predicted decreasing stress. Social support is known to buffer deleterious effects of depression in mothers (Cutrona & Troutman, 1986), though disconfirming evidence has been found that social support is not reliably related to parenting stress levels (Raikes & Thompson, 2005). Still, the final model predicting parenting stress did not support hope that online parent training would be associated with equal benefit for single and non-single parents.

Video dosage (i.e., total videos watched) does suggest differences in parenting self-efficacy between single and married / divorced parents; both single and married / divorced parents have the same level of parenting stress at baseline, but across the study period, single parents (either high- or low-view) were predicted to have increased stress across time, a finding reinforced by Figure 15 showing raw means for parenting stress, low/high view, and single/non-single parent status.

The overall raw means visualization suggests there may be an important influence of time not accounted for in these analyses. Residential treatment is a significant

intervention for the family, not only for the opportunity to add skills, but also the possibility to interrupt maladaptive parent-child functioning. Parent perceptions of this time away from their children are known to include parent-oriented pursuits related to education, self-development or career advancement; some parents have noted improved family relationships, increased harmony, and decreased burden of care (Baker & Blacher, 2002). Thus, the perceptions of this time should be considered as a major influence on parent training while children are engaged in residential treatment.

Consistent with the raw means visualization, previous research exploring the relationship of parenting self-efficacy and parenting stress found (using PSOC and PSI-SF measures in a sample of mothers of children with intellectual disabilities) that parents with higher levels of parenting self-esteem (i.e., overall PSOC score) simultaneously experienced lower parenting stress, and that the parenting self-efficacy subscale of the PSOC demonstrated significant inverse correlations with overall parenting stress (Hassall et al., 2005). In the current study, total parenting stress scores fell in the normal (i.e., non-clinical) range, suggesting that parents have adjusted their lives to parents living with significant learning and behavioral challenges; the raw means visualization may be displaying a bump in parenting stress and decrease in parenting self-efficacy as parents re-engage in the parenting task, having just recently experienced several weeks of reduced parenting responsibility.

The post-hoc exploration of means revealed a higher proportion of membership of the low-view group was evident in the first study wave; a small group of parents watched more than 50% of videos. The retroactive group assignment of low/high view parents is a

useful designation when considering the services that parents felt were necessary, though does not account for when parents became high-view (i.e., at what point they achieved watching more than 50% of videos). Since higher views were associated with lower initial parenting self-efficacy (from the final mixed model), and associated with increases in raw mean parenting stress, parents watching a greater number of videos may have valued this resource.

LIMITATIONS

Several limitations should be noted. First, although mixed models can account for unbalanced data structures (i.e., missing data), 58 of the 68 parents (85.3%) did not have observations at all four survey waves. Second, as an open trial, this study is limited to observation; having a control group would allow for more robust analysis. Third, the sensitivity of instruments used to determine PSOC and PSE would have to be very delicate to detect such nuanced changes in such a short period of time; changes in self-efficacy and enduring parenting stress may take longer to materialize than the study duration. Fourth, while data about socioeconomic status (SES) was available, these data were collected in ranges of \$10,000, rendering analyses reliant upon continuous data impossible (though categorical analyses would be possible). As SES is a known predictor of parent training programs (Baker et al., 2011), SES should be explored in future studies as a control variable. Fifth, while this sampling procedure benefitted from having access to the control variables age and parent single status, few parents were single status; this sampling strategy was limited by not being able to recruit based on these variables. Relatedly, divorced parents were not counted as single status parents. Sixth,

characterizing video use as high/low view simplifies the influence of video dosage; a more nuanced method of analyzing video use may have been to treat the number of videos as a time-varying covariate (e.g., number of videos watched at 3 vs 6 weeks). Finally, video use data was exclusive to parents completing surveys, which linked video use with survey measures; this study was not able to analyze changes in parenting self-efficacy and parenting stress for all parents with video access.

CONCLUSION

Preparing children and families to enhance child and family functioning is a major goal of residential programs. From this perspective, findings from this phase of dissertation research should be useful in designing future tech-informed parent-level interventions while children are engaged in residential treatment. Future research that extends findings from this study should consider adding a waitlist control group to consider the impact of time (e.g., delayed video intervention), in comparison to parents who received the video intervention while their children were engaged in residential care. Additionally, extending the time between survey waves and having a longer follow-up period may give parents more opportunity to embed aspects of the online training into their lives in live practice with their children. Researchers may consider adding a brief questionnaire to assess quality of life or related constructs to determine what other psychological factors may account for the drop in parenting self-efficacy and spike in parenting stress when children return home.

The empirical literature emphasizes that parents who are less stressed and have higher self-efficacy beliefs are more involved with their child's treatment and

development, and therefore are more likely to promote and provide the contexts for positive child outcomes. As such, it is essential that residential programs and researchers create and evaluate interventions designed to encourage these desirable factors in daily family life, especially in preparation of a child's return home from residential treatment. Phase 3 of this dissertation research series aimed to understand the possible lasting impacts of RTP's online new training program, eight weeks after children had returned home.

CHAPTER FOUR - PHASE 3

Perceptions of new family routines post-treatment: What, if anything, has changed?

Background

Previous studies have shown long-term gains in parenting self-efficacy following parent training (Tucker et al., 1998), and long-term maintenance of gains in PBS (Binnendyk & Lucyshyn, 2009) and CPS (Greene et al., 2003). While research suggests that enduring behavior change can result from routinized practice of these new parenting skills, research on post-residential treatment parenting behavior has not used the lens of family routines to understand how parent training is applied. An understanding of family routines may help to define how families seek to sustain their child's recent treatment gains in post-residential home aftercare.

Literature on family routines describes families who engage in regular and predictable routines as promoting close and healthy relationships (Fiese & Parke, 2002). Higher levels of family routine have been linked with lower symptoms of child hyperactivity, impulsivity, and conduct disorder (Lanza & Drabick, 2011). For families with young children, it "is likely that competent parents are more effective in creating family routines and that satisfying routines provide a sense of competence" (Fiese & Parke, 2002, p. 385). Family routines can concurrently support structured family activity, endorse value systems, and provide order to daily life (Boyce, Jensen, James, & Peacock, 1983; Larson, 2006).

Family routines have been defined as an "enveloping framework within which daily lives are given shape and meaning" (Koome et al., 2012, p. 320), characterized by

dailiness, regularity, predictability, and coordinated action (Bagby, Dickie, & Baranek, 2012; Boyd, McCarty, & Sethi, 2014; Case-Smith & O'Brien, 2013; Evans & Rodger, 2008; Fiese, 2007; Rodger & Umaibalan, 2011). Routines might be developed to meet goals, to structure time to meet quotidian demands, or to maintain connectedness and family time (Bagby et al., 2012; Evans & Rodger, 2008; Schaaf, Toth-Cohen, Johnson, Outten, & Benevides, 2011). In addition to facilitating family cultural beliefs, routines can promote stability in everyday life (Schaaf et al., 2011). While routines and habits represent two different constructs of patterned behavior, “both constructs affect the stability of functioning within the home on a daily basis” (Crowe, 2002, p. 92). Given their influence within the home, family routines and habits might inform the transition between residential treatment and home-based continuity of care.

This study examined the transition home from residential treatment at the end of summer and over an eight-week period into the first two months of Fall when children are also returning to school. An eight-week follow-up is consistent with when problem behavior tends to accelerate in the academic calendar (when new family routines might be tested); for elementary and middle school-age students, the month of October represents a peak in average office disciplinary referrals (Gion, McIntosh, & Horner, 2014).

This can be an especially challenging period of time for families with the dual-transition challenge of residential treatment and start of the new academic year. To address the dearth of research on family routines in post-residential home aftercare, the following research questions guided this third and final research phase eight weeks after

children have returned home: *What are the longer-term effects of RTP's online parent program? Are parents continuing to access the online training as booster sessions? If so, which aspects of training are regularly accessed? Have parents created new routines to implement PBS and / or CPS? If so, how have these new family routines been helpful?*

Aim: Assess the extent to which the combined PBS and CPS program has resulted in changes to family routines at eight-week post-residential follow-up by conducting 20 in-depth key informant parent interviews eight weeks after children have returned home.

Hypothesis: Parents reporting high PSE scores at follow-up will describe using PBS and CPS strategies.

METHODS

This is a mixed methods follow-up study conducted eight weeks after children returned home from residential treatment, exploring possible parent-level changes associated with RTP's online parent program using parent self-report from key informant interviews. This study was approved by the Boston University IRB and RTP's IRB. This study analyzes qualitative data from n=20 in-depth phone interviews, quantitative video use data (captured using Google Analytics), and quantitative data from the Parenting Sense of Competence (PSOC) survey administered during phone interviews.

Sampling and Recruitment

A convenience sampling procedure was used to recruit participants, whereby parents responded to an email invitation (Appendix 1) approximately two weeks before children returned home from the 2016 RTP Summer Program. Twenty-two parents (out of possible 96 families with children at the 2016 Summer Program, response rate 22.9%)

signed up for the interview by completing an online survey linked in a recruitment email. All parents of children attending RTP in 2016 were included in this recruitment strategy. By signing up, parents understood they would receive a \$20 Amazon gift card following the completion of a 60-minute recorded phone conversation between one parent and the PI. This phone call was scheduled a time convenient for parents approximately eight weeks after children returned home from residential treatment.

Procedures

Twenty-one interviews were scheduled, and n=20 interviews took place between October 13 and November 4, 2016. Prior to each call, parents were emailed a copy of informed consent forms. A semi-structured interview schedule was used to guide the conversation (see Appendix 2). Following each call, parents were sent a brief thank-you email with additional study information (e.g., study rationale, PI contact information, BU IRB contact information), as required by the Boston University IRB.

Survey Measure

The interviewer asked parents via phone to respond to items from the Parenting Sense of Competence (PSOC) scale to assess parenting self-efficacy. Parents rated the extent of their agreement with 16 statements about parenting competence on two subscales, evaluating parenting satisfaction and parenting self-efficacy. The parenting self-efficacy subscale is composed of seven items, with a possible range of 7-42, where higher scores indicate greater parenting self-efficacy. For more information about the PSOC, please refer to Phase 2.

Data management and Analysis

Raw electronic data was de-identified and stored on a password-protected secure drive. All phone calls were recorded using a desktop microphone. Audio was scrubbed of identifiers and uploaded to the same secure transcription service portal as in Phase 1. This portal automated transcription of audio, before transcripts were downloaded and further cleaned by the PI. A final cleaning and data familiarization procedure was completed before uploading data to NVivo for qualitative analysis.

Quantitative analysis

As in Phase 2, Google Analytics was used to capture anonymized data about video starts across the time that children were engaged in residential treatment, and in the months thereafter. This data was downloaded to Microsoft Excel for Mac (version 15.33), cleaned and then imported to Tableau (version 10.4) for data visualization. Color was added to distinguish between psychoeducation video sessions (released to all parents while children were engaged in treatment), and a calculation was added to proportionally illustrate aggregate daily video starts (i.e., more starts = larger plot size).

RTP provided time-limited access to identify video use data for the $n=20$ participants, after which the key linking identifying information was destroyed. Data from the Parenting Sense of Competence (PSOC) scale were captured during parent phone interviews, and tallied in Microsoft Excel before running a linear regression in SPSS for Mac (version 25) using the parenting self-efficacy subscale score as a dependent variable and video starts as an independent variable.

As a video hosting platform, Vimeo offers geolocation data that can identify the

city, state and country in which videos are played. These data were exported to Excel, before being manually transferred onto maps using Adobe Illustrator (Creative Cloud 2017), exported as .png files and imported into Microsoft Word for Mac (version 15.33).

Qualitative Analysis

Analysis in NVivo followed construction of a detailed codebook, which was deployed across all n=20 transcripts by the PI. A detailed inductive thematic analysis generated a story of parents' overall experience of parenting behavior in the eight weeks since their child had returned home from residential treatment. Compelling quotes were selected as exemplar parent experiences, connecting research questions to transcript data (Braun & Clarke, 2006).

Codebook Development

Codebook development followed a multiphase process with independent coding support from a research assistant (RA, same as in Phase 1). A sample of transcripts were coded, resolving coding disagreements, before applying the codebook on the full set of transcripts once acceptable levels of agreement have been reached (Campbell, Quincy, Osserman, & Pedersen, 2013). Five of the 20 cleaned transcripts were purposefully selected by the PI to generate the Phase 3 codebook, as these transcripts represented a continuum of responses between 'no change in family routine' to 'complete change in family routine', responding to the central research question of potential longer-term impacts of RTP's online training.

A data familiarization process involved the RA and PI separately reading the five

transcripts and suggesting initial codes, following the coding template recommended by Guest and MacQueen (2008) (code, brief code definition, full code definition, when to use this code, when not to use this code, example of code). Adhering to Braun & Clarke's (2006) process of inductive thematic analysis, potential themes were reviewed in a meeting between the RA and PI. At this stage, a negotiated agreement approach was adopted in place of statistical intercoder reliability, for two reasons.

First, an intercoder reliability statistic was not a good fit for these data. The most common intercoder reliability statistic (Krippendorff's kappa coefficient) assumes all codes have an equal probability of being used (Campbell et al., 2013). This assumption was dropped, as not all children of parents in the sample transitioned home at the same time (i.e., one child discharged early), impacting the parent's expressed willingness to complete RTP's psychoeducational online program. Secondly, the use of kappa assumes that all coders have the same qualifications (Campbell et al., 2013), which was also not the case as the PI had worked with the population far longer than the RA. Compared with intercoder reliability, negotiated agreement is recognized as advantageous where generating new insights is the central aim, as was the focus in the current study (Campbell et al., 2013; Morrissey, 1974).

Agreement was achieved through conversation of code definitions, during a meeting in which evolving codes were printed and laid on a large table. If both coders had captured a similar theme, (e.g., RA code 'awareness of family needs realized' and PI code 'family pattern recognition'; RA code 'a lot of work' and PI code, 'parenting hard'), codes were collapsed and relabeled. Code criteria were also refined in the collaborative

and iterative process of negotiated agreement. For example, the RA pointed out that the hesitancy that some parents expressed with new online training was influenced by their child's previous experience with RTP; if parents were new to RTP, hesitancy was influenced by factors external to RTP. Thus, the code which had captured 'training hesitancy' was restricted to capture only those with children having prior RTP experience, and another code was expanded to capture parent hesitancy among those new to RTP.

Coding approach

Coding did not adhere to individual questions, but rather treated related questions thematically (see Appendix 2 for semi-structured interview guide), yielding seven thematic results, A-G:

- Results from section A followed the related questions *“As a parent, how was your experience this summer? How do you think the watching of the videos might have influenced your parenting? Were there things you picked up from the videos?”*
- Results from section B and C followed questions: *“What aspect(s) of the online training did you enjoy during the summer / since the summer? What aspect(s) of the online training did you not enjoy during the summer / since the summer? Were there aspects of the online training you found confusing?”*
- Section D describes responses to questions about video content (PBS and CPS), as well as the questions: *“What might you add to these videos to make them better? How could they be made more relevant to your family?”*

- Section E follows questions: *“Did you share the link to the online training with any other parents or professionals? How many? Do any sessions from the online program stand out?”*

- Section F involves responses to questions *“Would it make a difference to hear from other parents on the videos? Is there anything else that you that you think would be important to share before we end our interview today? Do you have any questions/final comments?”*

- Section G involved responses to questions about family routines, as well as questions: *“Do you feel you are applying skills at home, that you learned in the online program? How has parenting been since your child had returned home? Did you at any point return to the online program to view videos since your child returned home? If yes, what materials (videos, PDFs on the Family Program website) have you reviewed? Did you tend to watch these videos at the same time of day (for example one part talked about watching them right when she woke up)? When problems come up, how have you solved them since your child returned home?”*

Section H adds a quantitative dimension to qualitative themes with video use data visualizations and a linear regression predicting self-reported parenting self-efficacy (dependent variable) from aggregate video starts.

RESULTS

Among the $n=20$ participants, eighteen were female and two were male. Nineteen participants were from the United States, and one participant was from Europe. Eight parents (40.0%) had children who had previously attended the RTP Summer Program. On

average, parents were age 49.6 years ($SD = 8.3$, 34-68), with mean child age 14.4 years ($SD = 2.3$, 11 – 19). Parent age in Phase 3 is representative of parent age in Phase 2 (mean age 49.23, $SD = 9.36$, 33-72).

Responding to one of the first interview questions, “*What brought your family to [RTP]?*”, parents described that by the time children reach RTP, the family had typically endured social hardship. For families characterizing this hardship, residential treatment came to represent a level of need exceeding the abilities of the parenting system and / or their local supportive therapeutic ecosystem(s). As one parent described, “*I think, like most parents who bring their children to [RTP], they've come to a place where they feel they can't handle things on their own*” (c10)².

Parents tended to contextualize their story of finding RTP in the chronology of events that led families to residential treatment, seeking the necessary supports to meet their child’s unique needs (e.g., advocating for additional classroom assistance, finding an educational consultant, locating intensive summer treatment). While the RTP Summer Program is designed to augment child and parent ability to enhance family well-being, ten parents (50%) also referred to residential treatment as a time for respite. Asking “*As a parent, how was your experience this summer*”?, one parent responded:

I thoroughly enjoyed myself. It was great that I could actually leave steak knives out and not have to worry about accidentally leaving a bottle of Tylenol on the counter, you know stupid stuff like that. Being able to sleep at night, not because I have someone walking around upstairs and wondering what the hell she's going to do. So from that aspect, it was great. As far as my experience with the [RTP] classes, that is another story. (c15)

² Participant IDs

Given Fogg's (2009) theory that the perception of simplicity is a crucial factor in determining whether or not a desired behavior will occur (where the desired behavior involved watching online psychoeducational videos), parents were asked about their perceptions of the online program using open-ended questions (i.e., aspects they enjoyed about the training / did not enjoy), following parent responses as they narrowed their initial global perceptions in specific experiences. The aggregate story illustrates impressions of the overall training and factors influencing use, deterministic of how an online parenting program does (or does not) convert into robust post-residential family routines.

Parent reflections on the online video training were diverse, and seemed to vary as a function of: A) expectations of RTP's services for parents if the family had prior RTP experience, B) perceptions of simplicity associated with viewing video content, and C) initial impressions of the usefulness of the online training. All parents discussed D) content of the online program with specific feedback, while some described E) that they had shared the training with friends, family, and trusted professionals. Among those disappointed by the online program, they eagerly spoke about F) future iterations of RTP's online program, interested in discussing the promise of this program should certain features be enhanced. Few parents G) discussed new routines and other new child habits, describing instead therapeutic momentum their family had recently achieved (therapeutic momentum is a phrase regularly used at RTP, implying that aspects of parenting have become somewhat easier since the RTP Summer Program, though this ease may not be experienced daily). Those who had not developed new routines or

behaviors based on the RTP online program described their own unique approach to providing continuity of care, identifying family work that remained. Exploring H) the use data of video starts revealed that peak video views followed the 24-48 hours after parents had last seen their child, and the overwhelming majority of video use occurred while children were in treatment; only 3.0% of total video views occurred after children had returned home. Parents were not prompted or reminded to return to the videos after child had transitioned home.

A. Changing parent expectations

The eight parents (40%) familiar with previous RTP parent programming (e.g., psychodynamic individualized family therapy prior to 2016) expressed ambivalence toward the new online training, correctly assuming additional training would require additional work. As one parent reflected on RTP's change in program focus from a psychodynamic therapy model to the three-tiered psychoeducational system of support (i.e., videos + cabin group phone calls + additional family supports), she noted that *"this summer definitely went very differently as far as watching the videos, as opposed to having counseling sessions, the way it was before"* (c7). For another returning parent, the announcement of a new approach to training was negatively perceived, initially.

So our experience with it, so yes, we, kind of, dreaded it. And I don't want to say we felt like we would pooh-pooh it. We were like, oh really? Rats. You know? This was going to be our time with-- a little bit of time with just regular life at home, and now we were going to have all this. Actually, as it evolved, we really, really, really enjoyed it. (c3)

With RTP's journey to a skills-based psychoeducation parenting curriculum from an individualized psychotherapy approach for each family, families that had experienced

RTP before the 2016 shift in parent training felt that the training was detached from their child:

... there's a big disconnect when you're learning how to work on all these things, but your child is somewhere else. And you're not really sure what's going on with him there. You know what I mean? And [RTP Coordinator], being in the Boston office, doesn't really know what's happening up in-- even though she can read the notes-- like what's happening actually at camp, so how you can kind of pool it all together. It was just a little separate this year, the family therapy part of it. (c4)

B. Perceived simplicity / barriers of online training

Five parents (20%) felt that the “videos got too long”, citing competing time commitments as the primary reason for watching fewer videos. Within this subgroup, one parent noted that the videos presented by RTP were shorter (total time 63 minutes, 50 seconds across 18 videos); by contrast that the Collaborative Problem Solving (CPS) content was more time intensive (total time 127 minutes, 14 seconds across 24 videos); see full list of videos with presenters and average time per video session in Appendix 3. For one parent, it was a surprise to encounter longer videos, given the perception of shorter RTP trainings seen earlier:

That was only thing because I thought it was something that I was going to be able to watch quickly and right away. Then I realized that it wasn't so I had to find, carve out some time to be able to dedicate to those, especially for the CPS stuff. (c8)

The perception of simplicity seemed to be further impacted by the type device parents used to access the online program. As the same parent reported watching videos on her phone, “you would think that a five or six-minute video is not long, but it actually is long if you're watching it on your phone” (c8). She continued that it might be helpful in the videos to recommend a place where parents could sit and watch these videos, given their

length.

The five parents (20%) noting that ‘videos got too long’ suggested each video itself seemed easy enough to complete (between three and seven minutes), yet, the total time accumulated quickly if several of these videos were stacked together; *“it's only five or six minutes, that may seem short, but once you start watching them it can feel longer”* (c8). To address this concern, another parent suggested some way of advertising the estimated total amount of time for each week’s session, so that she might budget the total time for the videos required each week, recommending that the RTP website *“could say, you know, you can easily watch these in a half an hour, or it'll take less than half an hour-- just to give you some sort of scope of what time commitment I was making”* (c3).

Video length seemed to affect perceived simplicity of RTP’s online program; short videos appeared to allow parents to fit videos into their day:

... I really liked the videos. I thought they were very informative, and they made a lot of sense. And they were short enough where I could break them up. It wasn't like three-hour long sessions every week. I think it was pretty well developed just because sometimes you only have that few minutes. So to have a video broken up into like three or four, and they're five or 10 minutes long, was really nice. (c17)

C. Impressions of video usefulness

Ten parents (50.0%) felt the video training was too broad to make a difference in their parenting, expressing that they were already experts in providing care for their child, some of whom carried multiple diagnoses. Thus, these videos were perceived as unhelpful in specific diagnostic categories:

I just found that it was a waste of time for me personally. I think that the videos would have been more beneficial had they been tailored a little bit to different

types of disorders, whether it was more developmental delays, having some videos for those. (c15)

Others agreed that future videos could use a ‘menu’ format, perhaps with different tracks or options that parents choose among. These wouldn’t have to be diagnostic labels, but broader behavioral themes:

I think creating different sort of tracks. Maybe you still have to-- you know, one for social emotional, one for impulsivity. One for executive function. And then we could pick and choose what we want to see amongst those. (c16)

Impressions of limited utility were also made clear with statements about the videos as being ‘entry level’ (“*I guess I could see where it would work for more low-level behaviors*” [c1]), or statements reflecting competence developed from years of working with their child (“*I probably could have written the scripts for the videos*” [c11]).

Impressions of low utility were also coded when parents referred to their earlier statements about how difficult parenting their child could be, and (having been exposed to a range of professional advice) were already familiar with the central ideas in these videos. One parent referred to the videos as a “*starter solution*” (c15), no longer a good fit for her acquired parenting skills, reflecting that “*when you're looking at that cookie-cutter frame to try to teach you how to best respond to your child...I already have been doing all those things, so I didn't gain any insight into something new to try*” (c15).

Impressions of low utility were also coded when parents reflected on the quality of videos. Six parents (30.0%) characterized these videos as low quality, with descriptions that “*they were relatively amateurishly produced*” (c11), “*a person standing against a white background kind of mumbling to a camera isn't a great delivery format*” (c11), and “*I thought the production was really kind of poor*” (c5). More than one parent

suggested the video background was too plain:

...if you're going to ask parents to take time away from work and stare at these videos-- while the content is really useful-- put something on the backdrop. Just looking at a beige wall. (c5)

Others acknowledged that this was a new venture for RTP, noting “*the delivery by the [RTP] staff was pretty good, all things considered*” (c16). When asked what was meant by ‘all things considered’, this parent acknowledged that RTP was “*not a professional production company*” (c16). In addition to the visual elements, two parents (10%) expressed that the audio quality was variable; “*different speakers-- some would be very clear and loud, others were very quiet and you had to really strain to hear them*” (c3). These issues notwithstanding, parents did express appreciation of the efforts put forth. In fact, one parent anticipated improvements, expressing that although the editing of the videos presented by RTP was “*jarring*”, she hoped that “*maybe as time goes on and the little movies get more refined that won't be as much of an issue*” (c7).

One parent described in detail the routine of video viewing she had developed, speaking specifically about how she approached viewing CPS video content:

You know, I would watch mine-- actually, this is probably embarrassing but, I watched mine in bed before I got up and got dressed in the morning. 'Cause I could just watch it on my cell phone. And I knew when I got up I was going to start doing all these millions of things. So I would sit there and they weren't too long. They handled each part-- it was as if I had imagined that he gave this whatever, two hour, whatever it was, hour long seminar, for [RTP] and then they chopped it into the video parts. He was only there one day, I'm sure. However, it must have been prearranged between [RTP] and him to say, all right, we want to break this into-- I don't know-- five, whatever videos. So we need to have specific breaks. How will we chunk out those topics? So they felt like very different topics. It didn't feel like, oh, he's stopped mid-sentence, and now next week we find out the next piece. They were self-contained units of a very manageable length, very

clear cut. I'm going to talk about this, and here's what it is, and now I've told you. You know, beginning, middle and end-- again, he's a professional presenter. He did a great job. (c3)

D. Impressions of video content

Two content-specific themes emerged about the central approaches taught to parent in Collaborative Problem Solving (CPS) and Positive Behavior Supports (PBS): parents overwhelmingly preferred CPS to PBS, and ten (50%) parents were uncertain about what PBS actually was. Having identified PBS and CPS as the two main interventions presented, parents were asked if either of the two approaches were new to them. One parent responded in general, and when asked if she was describing PBS or CPS, she expressed uncertainty:

Yeah, that's a good point. I guess I'm speaking more about Collaborative Problem Solving. And it's funny, as you're talking, I'm sort of scrambling in my mind to sort of distinguish the two. When you say Positive Behavior Support, I'm not-- you're talking about, sort of, praising our child for doing well? Or setting him up to succeed? I'm not exactly sure where you're going with that. But my head's kind of around Collaborative Problem Solving. (c10)

Confusion over PBS was consistent; one parent expressed uncertainty in how the family might restructure time towards the practice of new behavioral expectations following from the RTP Summer Program, despite that PBS videos had communicated this message, in spoken presentation and in summary text at the end of videos; “... *I'm baffled as to how you would even do that... Organize family time to support family expectations?*” (c1). Another parent described how she was implementing her interpretation of PBS, which she reported trying since her son returned home:

I guess, finding at least one small positive thing. I wouldn't say good, but positive thing has really helped with [CHILD NAME] about his situation. And if he--

which he doesn't really anymore—but if he feels like he's messed up on something or he's not doing a good job, or whatever, I will remind him, you know, of one small positive thing that he's done in that situation that has helped. Even if it hasn't turned out the way he wanted it, I can just think about one small positive thing—well, at least you smiled, you know, or-- not at least, you smiled. I should say, well, you smiled, and that's everything, you know, to encourage that. (c13)

Other parents described that they were unlikely to use PBS in their home because they had experienced burnout from sticker charts or other reinforcement interventions. One parent, as she tried to remember if she had watched the PBS videos, remarked:

I don't think any of the parents coming into this program-- that it's our first rodeo. Positive that just felt a little like, oh, come on. I know you guys are just getting out of school, but as parents, we've been at this a while. Our kids are going into teenagers. And that sounds very flip when I say it like that. That's not how I thought about it, but in summary, yeah, I was-- it felt like, okay, okay. Positive Behavior Support, sticker charts, I know. We know. Token economies-- yeah, live and breathe them. Seen them in every different iteration. (c5)

For one parent who indicated she had known about PBS, she was not able to reproduce the central assumptions of the model. Though she reported familiarity with PBS, when asked to describe the model, she was not able to do so; “*I have a hard time explaining to people the different systems, you know what I mean?*” (c20).

When asked to reflect on the videos in general, twelve parents (60%) described CPS in highly positive terms; these videos were at the *top of their experience*, or were *mind-expanding*. Other parents shared this sentiment, sharing that the CPS material was *the most valuable stuff*, lamenting that this training came at the end of the summer. The majority of parents could retain and restate the CPS philosophy that “kids do well if they can”, which many said helped them to approach their children since the RTP Summer Program.

Tacitly, a preference for CPS videos was reflected in thirteen (65%) participant

responses to my open-ended questions about their experiences with the program. When asking general questions about the online program, parents used pronouns *he*, *him*, or *the doctor* to describe what they had learned from the videos, referencing the presenter of CPS content (a developer of CPS). For example, in response to my question ‘Were there things you picked up from the videos?’, one parent said that she tries “*to utilize a lot of those vocabulary that he suggested we use*” (c17) [emphasis mine]. In response to my question “how do you think watching the videos might have influenced your parenting?”, another parent said “*Well, I do think it was very helpful. I do-- I had gone to hear him speak once before*” (c12) [emphasis mine]. The divide between the PBS and CPS training was perhaps best summarized by one parent, who folded the PBS training and other videos into ‘RTP videos’, while CPS training was filed under ‘CPS developer’, “*The ones done by [RTP] not so great. The ones done by-- the [CPS developer] ones were fantastic*” (c3).

E. Unexpected behavior: Sharing videos with family, friends and professionals

While not initially on my semi-structured interview guide, n=11 (55%) parents described that they had shared the videos with other parents; “*I thought they were great. I forwarded them to so many people I knew*” (c2). In consequent interviews, I asked parents if they had shared the videos. Parents seemed to share videos with their support networks for three reasons: 1) perceived utility for peers in parent social networks, 2) advancing existing therapeutic work with professionals, and 3) in defense of their parenting approach if family members had criticized their parenting previously. When the training was perceived as useful, parents tended to share the link to the videos in the

following way:

I was also going to just add that some friends of ours, or family of ours, that are dealing with similar issues, but have not had the [RTP] experience, we've actually sent them links to some of this stuff. I'm not even sure they can open the links. But I've been talking it up to other people. (c10)

To advance work within a parent's existing therapeutic network, one parent shared the training to advance the family's therapeutic work:

Well, we shared it with [CHILD NAME]'s psychologist. I just shared the first like, the first set of it. Because I'm like, this is what they're trying to go through here. You know, this is a good thing. Because she's like kind of our family psychologist. My daughter also goes to her. And so she's the one-- so she's kind of been in the trenches with us forever. So we shared that with her. (c4)

Another parent discussed how these videos would be helpful to them in defining what was already working for their family. The videos seemed to provide context in a generational divide, whereby the parent's mother created pressures regarding parenting:

It would be interesting to show it to my parents, which I haven't done either. MAYBE JUST TELL ME WHY YOU WOULD BE INTERESTED IN DOING THAT. Because they fall into the category of people who've have said that I get taken advantage of. And so it would be nice to have someone completely unrelated to me pointing out that it really has nothing to do with anything. IT SOUNDS LIKE IT WOULD REALLY BACK YOU UP -- BACK UP YOUR PERSPECTIVE SOME. Exactly. That would be nice to have a professional voice backing up my opinions and practices. My mom's always been of the, well, if they don't want to do it, that's too bad. Just tell them it's going to be that way, or else. I'm like "Yep, that's what you used to tell me". And she's like, "and you didn't give me any guff". I'm like, nope, but these are my kids. And I don't necessarily agree with the way you did it. (c7)

Surprising network effects

Having included the question about sharing videos in the interview guide, parents reported that videos were shared with 139 individuals. Because Vimeo provides

aggregate information about video use by region, it was possible to determine during the study period video views by country. Between June 2016 and January 2017, it appears that videos were loaded in nine countries (see Figure 16), played in four countries (Figure 17) and finished (viewed to completion) in the same countries videos in which videos were played.

Figure 16. Video loads in USA, Mexico, Brazil, England, Spain, Portugal, the Netherlands, Sweden and Russia

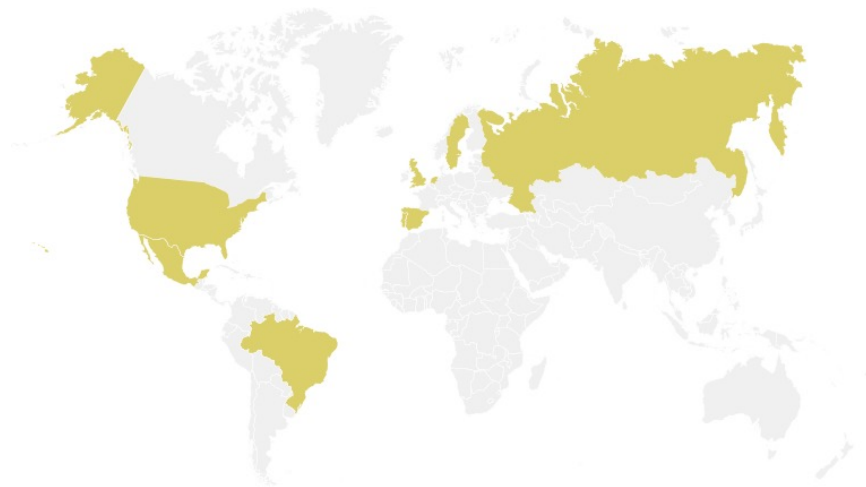
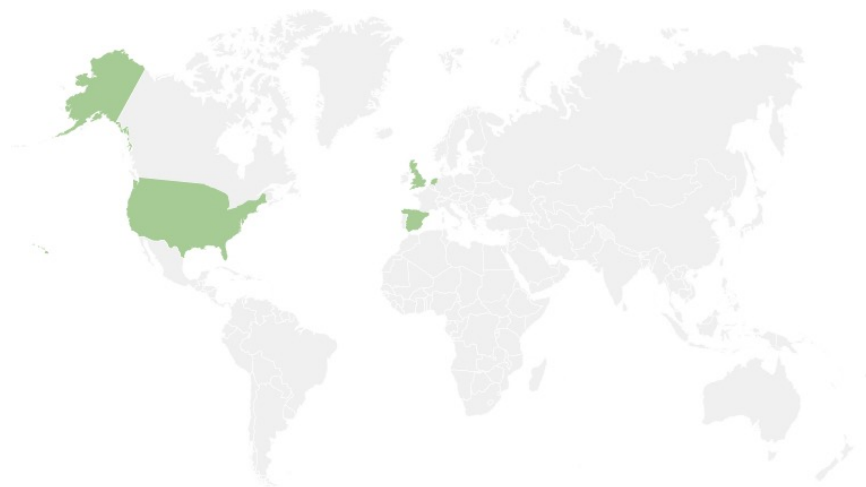
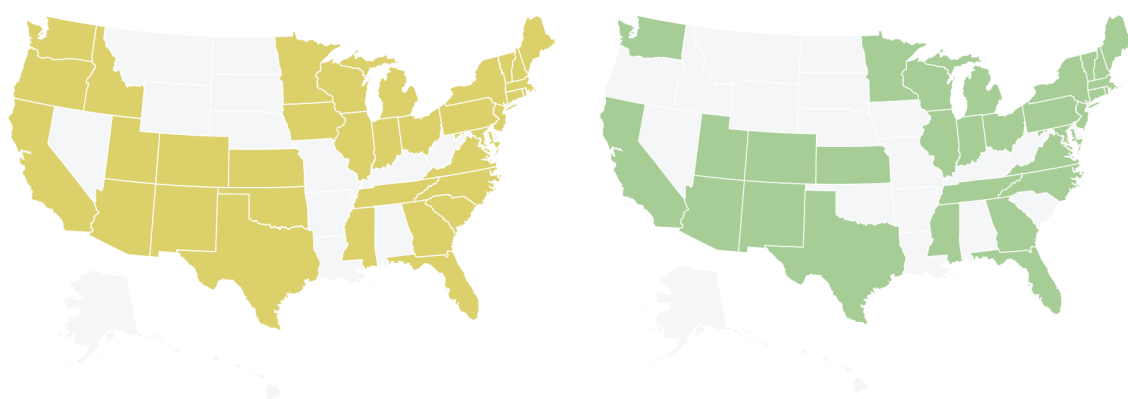


Figure 17. Videos played and completed in USA, England, Spain, and the Netherlands



Within the United States, videos were loaded in 37 states and played in 32 states (Figure 18). Two thirds of US plays were from New England states. This video use data, while it cannot be traced to parents within or outside of RTP, indicates that the videos enjoyed a surprisingly large network effect.

Figure 18. Videos loaded (at left) and played (at right) in the United States



F. Design discourse: promise for future iterations of RTP's online program

Nineteen (95%) parents had feedback about the direction of the online program. Parents expressed interest in hearing from other parents on the videos, rather than just from professionals. When asked if it would have made a difference to hear from other parents, one participant reflected:

You know, that might have been a good idea, because that would be probably a nice way to share how they handle certain situations and any positive feedback or things that definitely don't work for them. If you're in this experience, you're kind of at a loss, so anything that has worked for someone you want to try, because you need some type of answer. And if it doesn't work, maybe that's something you want to avoid or maybe you still want to try it and find out for yourself. But it's a great source of wisdom so I think that probably would have been a good idea actually. (c15)

There were unique requests from parents for specific video content, including how to

work with children when parents are separated and have different parenting styles, how to work with siblings of children with special needs, specific tips about how to get children to bed, and how to reduce screen time. Another parent discussed the importance of the research she had to do to learn about her child's unique needs, leading to conversation about video content designed to provide information about 'best practice' advice to seek reliable information online (e.g., peer review articles, information from hospital affiliated universities). One parent suggested that video content would be more palatable if presented using a storytelling format, to help parents retain psychoeducation content.

G. New family routines, new parenting behaviors, or status quo

There was little variability in changes to new family routines attributable to the 2016 RTP online program; just one parent in this sample (5.0%) indicated that the online training had contributed to a new family lexicon and resulted in new family routines. Responding to my question (asked of all parents) about how the online videos might have influenced her parenting, she said:

A ton. You know, I think we're like most parents, that things that work with a typical kid just kind of blow up in your face. And we have a typical kid. Our younger daughter is neurotypical. So things that work for her, don't work for my son, by and large. So I think for us, he's a really explosive kid. And I think that inadvertently, we were playing into escalating him a lot. And so, yeah, I mean, just this morning, as my husband went off to a meeting, there's an issue we're dealing with. He goes, we really ought to plan B this later. And that's the way we talk now. (c10)

Plan B references an approach in Collaborative Problem Solving, whereby parents invite collaborative conversation with their child. Plan A involves the adult imposing their will, while Plan C gives the child most power in decision making. She elaborated with a

hypothetical example:

[CHILD NAME]'s got a psychology test. Are we going to plan A it, and try to get him to study at home? Are we going to let him just do it in his learning strategies class at school? We're going to plan C it. I mean, we talk, we say, plan A, B, and C. That's a normal, everyday part of our language now. (c10)

This parent indicated that, as a result of the psychoeducational training, there was much less escalation in their home since the parenting team (two-parent heterosexual couple) were more strongly aligned. She confirmed that the skills being practiced and traction using CPS were new since the training this summer.

Six parents (30.0%) (including the parent with the new lexicon) described new routines related to the videos, but it was unclear for five of the six parents if these routines had been sustained as family routines with children post-discharge. For instance, one parent developed the regular practice of rehearsing the language from the videos during her day, so she could use them when her child returned home. This same parent had also taken the step of posting clear expectations on the family refrigerator, but was not able to list these expectations during the interview, suggesting that the routinization so central to PBS had not yet been achieved. Another parent described pride in not always using Plan A, though it was not evident to what extent this behavior had become routine.

Other examples suggesting attempts at routinization were characterized by contextualized or contingent language such as “*I’m trying to...*”, “*...little things like that*”, or “*I think initially...*”. Another parent expressed hesitancy about desired routines actually becoming routine, having taken steps towards changing the home environment by posting family values:

A lot of times they blow me off, but sometimes they listen. But it's good to have it though, up there. It's like what you guys said, at least it's there. It's written there. It's on the wall. I can just kind of point to it. I can say, you know, this is what you guys have to do.

SOMETHING TO REFER TO THAT'S PHYSICALLY POSTED. Right. Right. SO WOULD YOU SAY THAT A NEW ROUTINE THAT YOU STARTED SINCE THE ONLINE PROGRAM IS POSTING THAT AND POINTING TO IT?

Yeah. The actual expectations part of it, like because it makes sense. That how can you tell them they're not meeting expectations, if you don't specifically lay out what the expectations are. It makes total sense. (c4)

Sixteen (80%) parents described some new type of parenting behavior or aspiration since their child returning home from the 2016 RTP Summer Program.

Examples of such attempts included *a little more mindfulness, trying to express empathy, modeling behavior, recognizing feelings, being more gentle, giving space, being more involved, organizing a little bit better, approaching her differently, trying to mimic a checklist similar to camp, using some of the phrasing, always trying, being better listeners, not talking about things in the moment, getting better on the empathy part, making expectations clear, thinking about problems in relation to what it is with the trigger points as opposed to in the middle of the problem, and the plan A-B-C thing.*

One of these 16 parents commented positively about the online training, but didn't provide details about the extent of change:

A typical parent reaction would be to punish a child. You don't punish a child like [CHILD NAME]. You give consequences and rewards, and it's all about positive reinforcement, ignoring certain behaviors so they go away. We learned a lot that was definitely reiterated a lot in the videos. So it changed us completely. We really don't parent him the way we would parent him before. (c2)

Ten parents (50.0%) noted a bounded benefit to their child's summer treatment.

Generally, parent language tended to reflect a pattern noted by their children's behavior in similar short-term treatments:

I don't know that it made a lasting difference in his behavior at home. But that's kind of the norm for him in these sorts of programs. He does very well in the programs. But the behavior doesn't generally improve after the programs. (c11)

The return of previous behaviors may be recognized by the family, but a preference for peace can prevent parents from wanting to intervene:

...she's doing pretty well, so I didn't want-- yeah, so I just kind of didn't want to push her on anything, so we haven't followed up with that as much, even though we've been trying... (c8)

While the online training was useful to some parents, others felt that they could not implement skills learned with their child.

And so when we would try-- my hope was to be able to use the skills that we had picked up from the training and begin to talk to [CHILD NAME]. But [CHILD NAME] will not talk if she doesn't want to. And she takes any desire on my part, or my husband's part, to talk to her about problems as interference. And she is not going to be interfered with. So we haven't found a way to even open that door. (c9)

H. Actual video use – data visualization, proportional starts, and linear regression

Seventy-four of the 96 parents (77.1%) in the 2016 Summer Program started videos tracked by Google Analytics. Videos were scarcely watched once children returned home from residential treatment on August 18, 2016. Figure 19 displays video starts by session and day (for survey respondents only), where larger circles indicate higher number of video starts on that day. This visualization demonstrates that after August 18, 2016, only 39 videos were started, contrasted by 1,260 starts prior to August 18. No prompts prompted video watching after children had returned home.

Figure 19. Overall starts by session, across time (larger view June-August in Appendix 4)

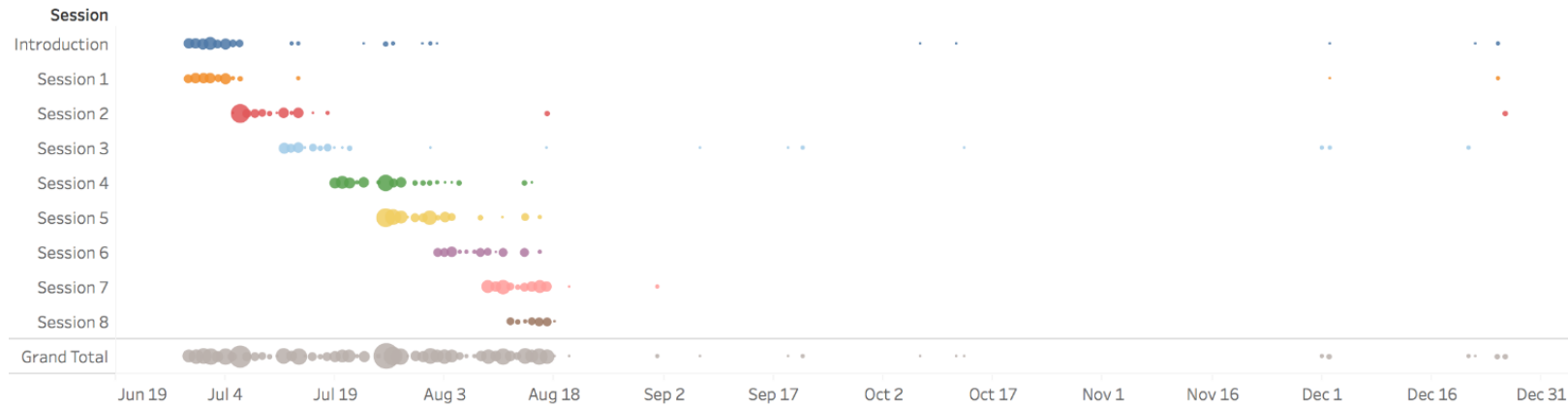
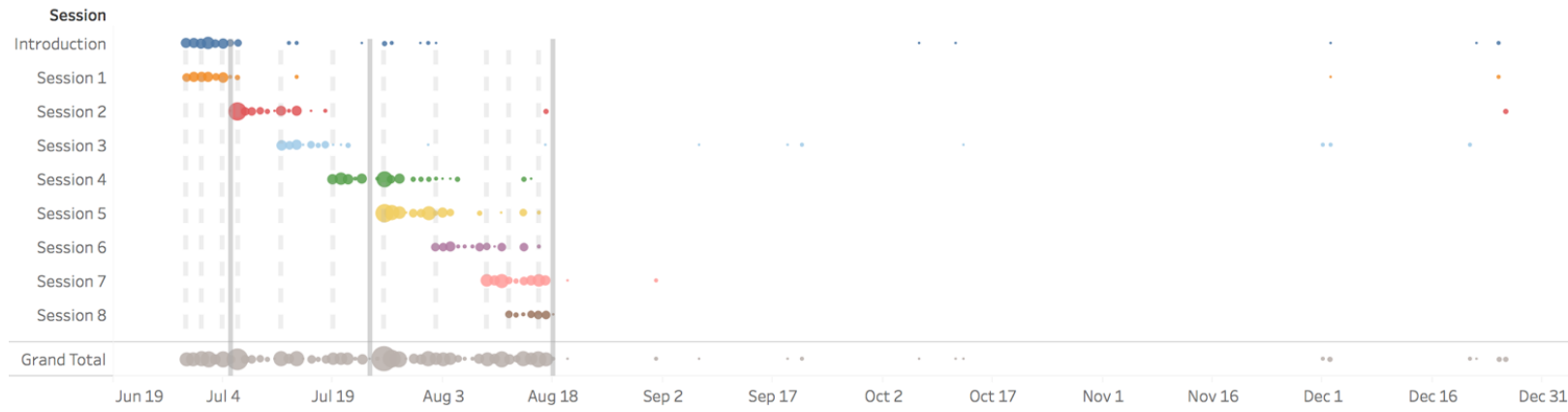


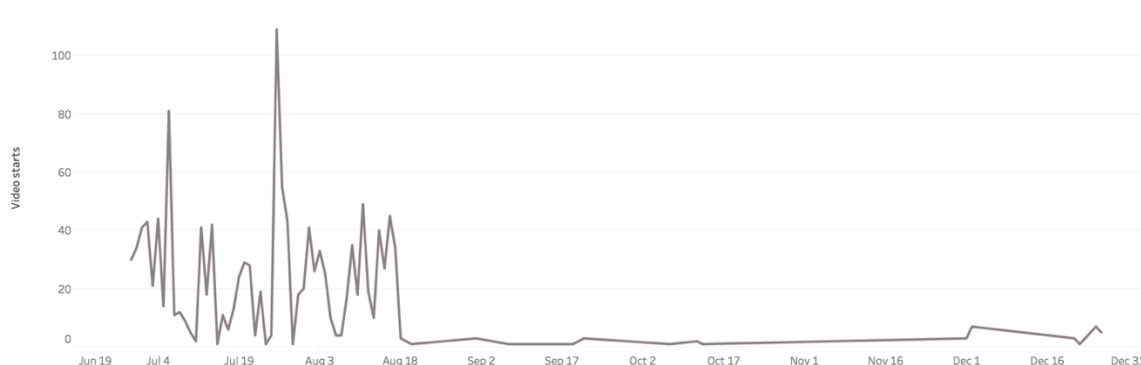
Figure 20. Overall starts: dotted lines = email prompts, solid lines = parents with children in person



Noteworthy in Figure 19 are the two largest circles under Grand Total, representing the two days when the videos received most plays (i.e., starts, views) in a single day. These two peak views occurred 24-48 hours after parents had just seen their child. The first occurs on July 6, after parents had dropped off their child at RTP's residential campus on July 5 (81 videos played); this is the first solid bar (Figure 20). The second peak occurs 48 hours after parents had visited their child at mid-treatment, on Visitor's Day (109 videos played); second solid bar. The third solid bar in Figure 20 corresponds to when children return home from residential treatment (transition home), when parents see their child for the third time during treatment. Peak views only follow the first two of these three in-person parent/child interactions.

In total, eleven email prompts were sent to parents to prompt use of the online training. These were typically sent once a week, with more prompts at the beginning (as reminders to initiate the online training) and the end (to remind parents of the details of Departure Day, when children would transition home). Prompts were sent on the same days when videos were released. Figure 21 visualizes overall video starts by day.

Figure 21. Overall video starts, across time



One parent reflected that ongoing support might have been useful once children returned home, which might have helped the skills promoted in the online program to be practiced:

I mean, I think maybe what would be really good is three phone calls in the first week, two in the subsequent week, and one in the third week to kind of give some guidance that's practical to each parent as to how they can handle specific situations. Because in six phone calls, there's going to be some recurring themes. YEAH. I HEAR YOU ON THAT. ACROSS THE SIX WEEKS, WE DO GET A REAL GOOD SENSE OF WHAT'S GOING ON. AND YOU'D LIKE TO KNOW WHAT WORKED FOR US WHILE WE WERE ALL AT [RTP] TOGETHER. IS THAT TRUE?

Yeah. I would. And I-- you guys are the experts, not me. But my presumption would be that if I was able to more mimic the same methods that [CHILD NAME] was getting used to, that would make it all that much more powerful.

Proportion of video starts by session

As each session of video content contained a different number of videos, a different picture emerges when considering the proportion of possible video starts (i.e., of the total number of possible videos to watch in each session, how many did parents actually ‘play’). Table 12 presents these data, where the number of parents starting videos in each session is displayed (# Parents). While overall there were n=96 parents with children attending the 2016 RTP Summer Program, 74 of the 96 parents (77.1%) watched videos. Among those n=74 parents that did watch videos, there was variability in viewing across the study period, with the percentage of parents playing videos decreasing from 77.0% in the Introduction to 36.5% in the last session.

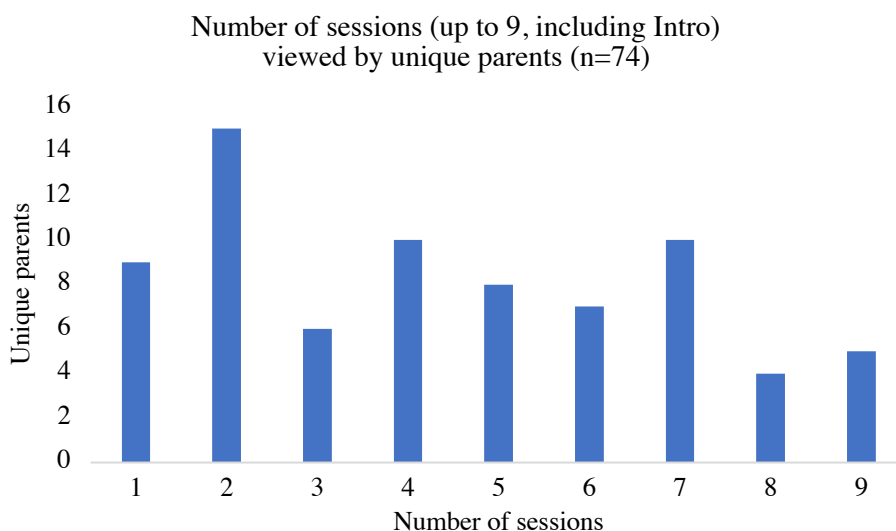
While sessions were released across time, parents could return to videos at a later date, (although 63.5% of parents did not re-watch any videos). As videos from previous sessions could be re-watched, Table 12 represents aggregate video starts and should not

be interpreted as a time series. Table 12 limited up to one view per video per parent (whether or not they watched videos more than once). The Percentage of starts is a proportion of video starts based on the number of parents viewing videos in a session multiplied by the number of videos in that could be watched in that session. For example, in the Introduction session, 57 of the 74 parents (77.0%) watched videos in the Introduction. As three videos were available in the Introduction session, a total of 171 videos could have been watched; 144 of the 171 videos were started in the Introduction session (84.2%).

Table 12. Proportion of video starts (n=74)

Session	Intro	1	2	3	4	5	6	7	8
# Parents	57	43	40	37	36	39	23	24	27
% Parents	77.0%	58.1%	54.1%	50.0%	48.6%	52.7%	31.1%	32.4%	36.5%
Percentage of starts	84.2%	64.5%	76.0%	85.6%	81.5%	83.3%	95.7%	77.6%	96.3%
# Videos / session	3	4	5	3	6	6	4	8	2

Figure 22 counts the unique number of sessions that parents watched, demonstrating variability in intervention dosage. For instance, nine parents participated in just one session, while five parents watched videos in all nine sessions. The majority of parents (15 of the 74, 20.3%) participated in two of the nine sessions available. Note that Figure 22 does not characterize the number of videos that could have been watched in each session.

Figure 22. Number of sessions viewed by unique parents

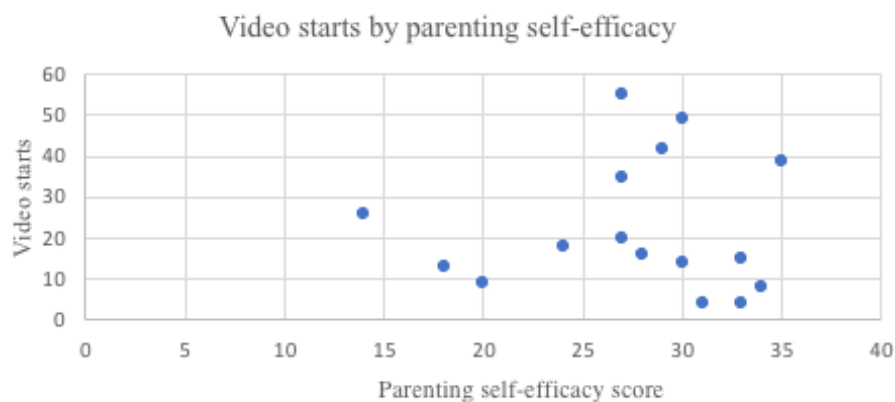
Parenting self-efficacy survey results

During these eight-week follow-up interviews, 19 parents (95%) responded to the Parenting Sense of Competence (PSOC) measure; one refused as she felt the surveys through the summer were not strengths-based, and that the PSOC seemed “*more like a depression survey*”. Mean scores parenting self-efficacy subscale scores for the n=19 interviewees were 27.26 (SD=6.20, range 14 – 36), virtually the same mean parenting self-efficacy at follow-up compared with overall respondents (n=31) at the fourth and final PSOC survey available to all parents in Phase 2 (mean parenting self-efficacy was 26.97 (SD=5.72, range 15 – 37)).

Matching was possible for 16 of the 19 interviewees across their use data in Phase 2, losing two of the nineteen (who had not completed an online survey so did not have use data), and collapsing a duplicate entry from the same family. The number of starts for these 16 parents across the intervention are plotted against parenting self-efficacy score at

the time of their eight-week follow up interview (see Figure 23). Running a model summary in SPSS (version 24) yielded $R=.022$, and a nonsignificant linear regression demonstrated that for every additional video start, parenting self-efficacy increases by .060 units ($p=.936$).

Figure 23. Video starts by parenting self-efficacy



While there was a range in parenting self-efficacy and in video starts, the majority of Phase 3 participants had higher self-efficacy. Parents with the highest number of video starts all reported higher self-efficacy scores.

DISCUSSION

The goal of this research phase was to determine, through the lens of family routines, the extent to which parents had developed new parenting behaviors grounded in empirically supported treatments to which children had recently received in residential treatment. While just one parent directly linked the videos to the development of new family routines, all parents offered their perspectives on the usefulness of the training, and opportunities that may improve the training. Videos appeared to have traveled

internationally through parenting networks, and several parents described their rationale for sharing the online video training. Video use data was explored, revealing that when children return home, virtually no parents continued viewing video content (no prompts encouraged post-residential video viewing). Proportions of video starts were explored, illustrating that the percentage of parents viewing videos decreased across the time that videos were released.

Summary and interpretation of findings

Minimal changes to family routines

There was little evidence that, since their children had returned home, the skills in the online program had translated into new, robust family routines. While many parents described aspects of a change process, their descriptions were not supportive of new and enduring family routines. Only one parent in the sample expressed confidence in her description that their family lexicon had shifted to integrate the online training into everyday family life, and was practicing the skills with her partner. This parent had described watching the online sessions with her partner. Provided that the two-parent system is strong and aligned in their approach to parenting, a two-parent family system may encounter fewer obstacles to sustain the training once children return home, as skills are discussed between parents to deepen salient content. However, another parent pair described watching together, but the husband felt distracted by the many edits contained in the RTP videos (referring to this editing as "jarring"), limiting his perceived ability to engage with psychoeducational content. Future exploration of video viewing with other supportive people (either together in the same room, or separately watching the same

content to discuss later) may reveal important patterns in how psychoeducational video training converts into new family routines. Online psychoeducation may maximize opportunities for parents to achieve consistency in the parenting that children receive, even if they live separately.

Novelty of the online program for those with prior experience

For parents with previous RTP experience, perceptions of the online training were shaped in part by comparison to previous therapeutic services. Thus, perceptions of limited utility may be partly a consequence of philosophical shifts at the organization level. Future iterations of the online program might consider including in introductory videos a description of previous services and rationale for moving towards a skills-based psychoeducational family model; it may matter to parents to know about programmatic changes they will be experiencing.

Unmoderated online learning

While the online content was not interactive (e.g., no interactive role play scenarios selecting among video responses), the videos did serve as an agenda for the weekly cabin group phone calls. In this way, the psychoeducational content was reviewed and discussed, but not practiced with children while in treatment. Still, use of the online training was not directly moderated, and there is evidence that unmoderated online training is less effective than online moderated supports (Day & Sanders, 2018; Lindsay, Smith, Bellaby, & Baker, 2009). Additionally, unmoderated online learning environments might do well to consider learner profiles, as engagement is sustained when “participants feel challenged and/or have clear goals for participating” (Renninger, Cai, Lewis, Adams,

& Ernst, 2011, p. 244). As some parents did indicate, their perceived level of ability far surpassed the skills offered in the online training; early in the program, these parents may have perceived little benefit, limiting their engagement.

Practice makes perfect

A consistent critique voiced by parents was the desire to practice the skills presented in the videos with their child during learning. The importance of ‘live practice’ with children cannot be underestimated, especially as psychoeducational knowledge may not translate into enhanced parenting self-efficacy for all parents. Extensive research about self-efficacy beliefs confirms that the identifiable attributes of parenting self-efficacy are parenting confidence, knowledge, self-perceived ability, and the strength of these beliefs, while a person’s perceived ability to initiate new parenting behavior and achieve mastery over that behavior is an antecedent to parenting self-efficacy (Bandura, 1977; Coleman & Karraker, 1998; Gist & Mitchell, 1992; Vance & Brandon, 2017). Among the most important parenting self-efficacy attributes is the strength of confidence in performing a behavior, as this influences the amount of effort a parent might make to perform parenting behavior (Coleman & Karraker, 1998). As parents’ confidence and mastery parenting experiences supporting their child’s developmental successes are reciprocally linked (Gist & Mitchell, 1992; Vance & Brandon, 2017), giving parents an opportunity to apply recently learned skills appears necessary to increase parenting self-efficacy.

The timing for this practice might be approached gradually, as parents and children are first reunited. Graded exposure to new parenting practices may be wise from

at least two perspectives. First, children returning home from residential treatment may present with behaviors reminiscent of those that led families to seek residential care, as these behaviors are familiar. Parents may be met with behavioral difficulties, and though they may have the knowledge of PBS and CPS, they do not yet have the evidence that these approaches will work with their child; self-efficacy beliefs have not yet been established, and parents may not have the confidence (or sufficient skills) yet to integrate into daily life. There is evidence that changes in parenting self-efficacy beliefs as a result of parenting programs are detectable twelve months post-intervention (Tucker et al., 1998), though this evidence dealt with specific parenting behaviors (praise, labeling behaviors) rather than the implementation of an evidence-based treatment (e.g., PBS or CPS). Moreover, parents were not able to integrate this online training into their actual parenting, having only a few weeks after children returned home to deploy their home intervention (and no reminders to access the material). Collectively, this may have accounted for the near-zero rate change in parenting self-efficacy between the eight weeks that children were discharged, and parent phone interviews.

The second reason to gradually practice new parenting skills fits with the Fogg Behavior Model; motivation is less necessary if the behavior seems easy enough to do (Fogg, 2009). If motivation is sufficient, and the target behavior seems easy enough to accomplish, all that is needed then is the prompt to practice. Such prompts could be designed as an automated email engagement campaign in post-residential daily life.

Factors that may have influenced the development of routines

Exploring the longer-term effects of RTP's online training, just one in twenty parents described new robust, new family routines attributable to RTP's parenting program. Several factors may have contributed to the limited application of the complete online program once children returned home, including high expectations of technology and video (i.e., variable audio quality, not all speakers in the videos were experts in their field or confident on camera), more videos to be watched than expected, the near-exclusive interest in CPS, and the absence of ongoing support to connect video skills to 'live' parent-child practice. While the short length of videos was deemed a success by parents, redesigning this new online parenting program might meet high expectations and increase the likelihood that parents would apply the online training once children return home.

Preference for Collaborative Problem Solving

Most parents favored CPS content over Positive Behavior Supports (PBS), and many were unable to describe the basic PBS approach. Preference for CPS may have occurred for several reasons. As the total training video time for PBS videos was 15 minutes (three videos in one session), compared to the training time of 130 minutes for CPS (24 videos across four sessions), the opportunity for parent exposure to CPS content far outweighed PBS. Further, RTP was fortunate to have a developer of the CPS model present CPS content to parents. This developer is an internationally recognized mental health expert, and RTP's PBS presenter (while delivering cogent information in his three videos) does not enjoy comparable notoriety.

Given this developer's knowledge of CPS and confidence as a presenter, his videos contained no edits, likely increasing the credibility of CPS content. By contrast, the RTP videos featuring about routine and habit contained an average of 9.16 cuts per minute (removing bloopers, false starts, etc.). This frequency of edits was likely why one parent characterized RTP's videos as 'jarring'. With one cut approximately every seven seconds, those viewing RTP videos would have needed undivided attention to capture and retain important information (Cialdini, 2017); to increase the perception of simplicity during video viewing, the number of cuts within the same scene should be as few as possible.

Further, PBS content was presented earlier in the summer than CPS content, so (as a consequence of the recency effect) CPS would likely have been more memorable to parents during the follow-up interview. Collectively, the possible 'expert effect', eight times the length of video exposure, 'jarring' contrasting videos, and the recency of CPS training may have created favorable conditions for CPS. As PBS is a behavioral intervention (while CPS is a cognitive behavioral intervention), where quotidian family routines are meant to enact clearly defined behavioral expectations to realize family values, confusion about PBS suggests few parents would have developed new routines as a result of RTP's new online intervention. Alternatively, parents may not have been sufficiently engaged in the online program to experience its potential benefits, resulting in uncertainty about PBS in general.

LIMITATIONS

Several limitations exist in Phase 3. First, results of this qualitative study are

limited to the small sample of parents interviewed, and cannot be assumed to generalize to the broader RTP population, or to parents of children in residential treatment in general. While consistent memoing was undertaken during the analysis and writing phase of this research, unintended researcher influences may have distorted interpretations of the data given the PI's role in intervention development and interview questioning. Although parent feedback was used to enhance the usability of the training, parent involvement was not part of training development, and may greatly improve the relevance of training videos. As interviews were conducted with the PI, parents may have been less forthcoming with feedback as not to offend the PI. Although the quantitative use data provides another window in the extent to which parents used the online training, use data was not available for the entire sample of parents who participated in the online training. Finally, video starts are not a reliable indicator of engagement with video content; parents might have started videos but have been engaged in other cognitively demanding tasks at the same time.

CONCLUSION

Parents can and will use an online program in support of their child's continued care following residential treatment. Creating and hosting an online program appears feasible, and parents are interested in enhancements which may lead to greater acceptance of online parent psychoeducation. Still, factors influencing the credibility and trustworthiness of online interventions are important; parents have high expectations of video production and of the technologies they choose to adopt. Technologies developed by helping professionals will receive the same scrutiny as all other technologies parents

choose to use. Collaboration between helping professionals, designers and developers to create interventions that fit seamlessly into parent ecology will be essential to meet these high expectations, and increase the likelihood that digital interventions achieve their aims.

Using natural surges in motivation to help parents do hard the things they express wanting to do (i.e., applying aspects of unfamiliar parenting training) may be an exciting area of future research. As peak motivation for parents appears to occur in the 24-48 hours after they have seen their child, prompting parents to take action in these momentary windows might explored as a strategy to extend and deepen the therapeutic work children initiate in residential treatment. Connecting commitments during these peaks in motivation to simple, small parenting behaviors when children return home may gradually build parenting confidence and self-efficacy beliefs.

Finally, enduring changes in parenting self-efficacy may take live practice where new skills may be practiced, either when people are physically together, or when skill practice occurs via webcam. While unmoderated learning environments may be important in allowing training to fit into parents' lives, parenting skills must be enacted to be useful. Such practice might be connected to momentary windows of peak motivation. By refining the existing videos to meet high expectations of parents, and creating prompts during natural surges of high motivation, it may be possible to improve the quality of home aftercare as children return home from residential treatment.

CHAPTER FIVE – OVERALL DISCUSSION

This dissertation research series was designed to a) refine a bespoke online parenting program via in-person usability test, b) understand the effects of the revised program on parenting self-efficacy and parenting stress, c) and explore the possible applications of the parent training in daily life eight weeks after children had returned home from short-term residential treatment. This discussion explores findings related to hypotheses from each phase, linking findings to existing literature. Implications of these findings for research, practice and policy are explored, and limitations of this dissertation research series are discussed.

Testing hypotheses

Phase 1 Hypothesis: What are the perceived barriers identified by RTP parents that may interfere with parents' efficiency and completion of desired learner behaviors (navigating and accessing online content) through RTP's online parenting program? Although it was hypothesized in Phase 1 that parents would be able to navigate RTP's online program successfully and efficiently, with minimal support solicited from the PI, some parents frequently solicited support.

Main findings from Phase 1

Total scores on the Parent Motivation Inventory indicated RTP parents would likely have sufficient motivation to learn and use an online program in support of their child's treatment. Exploration of Fogg's (2009) simplicity factors demonstrated high frequency of Brain cycles (e.g., having to think hard to complete a task), particularly

among participants who had varying levels of visual impairment and technology familiarity. A high degree of PI-participants interaction (i.e., support-seeking) was necessary for some participants to complete the usability study. Support-seeking revealed a major usability barrier reflecting parent uncertainty about how to autonomously navigate the online program. While other usability barriers were apparent, autonomous navigation would be necessary for any parent to experience program benefits.

Explanation of findings and link to literature. The Fogg Behavior Model provided an understanding of barriers to parent involvement in online psychoeducation, in both simplicity factors and timing and type of prompts. While the aim of Phase 1 was to understand barriers to parents use of the online training, barriers to usability focused on the digital product, and did not consider the critical contextual factors of a child's transition home. For instance, planning the new school year is another major life transition (especially for a child with learning and behavior challenges) for which families must prepare shortly after their child returns home. This cross-fading of major transitions can create family difficulties as children briefly settle into post-residential routines, before academic demands are soon added to existing post-residential routines, which (in addition) are different from the daily routines in recent milieu treatment. Research supports that this rapid juxtaposition of environments and demands can be destabilizing for parents and children (Day, Pal, & Goldberg, 1994; Hess et al., 2012).

Although it was hoped that the online training might help parents navigate this challenge by helping parents to create routines in support of consistent and predictable

environments (via Positive Behavior Supports), and also help children and adults address parent-child communication problems (with Collaborative Problem Solving), the video training may not have been specific enough about how parents might integrate this combined online training into daily family routines in the weeks following residential treatment. In other words, although certain usability barriers of the training were located and addressed in Phase 1, this phase may have offered a false sense of security that the training would be adopted if the training itself was usable. While product usability is essential (without a rich understanding of product usability issues, parent interventions may fail to add value), digital products are only useful if critical contextual barriers are also given due attention.

At least one major parenting program acknowledges this issue. While the Incredible Years (IY) parenting program can be a standalone training, its authors acknowledge the importance of the transition of care between school and home, IY authors describe that linking the IY program “within PBS schools holds promise for promoting consistent environments across home and school settings” (Webster-Stratton & Herman, 2010, p. 50). While high integration is ideal, developing these in-person services is time and labor-intensive; simplicity factors are as important for those involved in program implantation as for program recipients. While one contribution of this dissertation is the application of the Fogg Behavior Model (FBM) to online parent training, the FBM might also be used to make the integration of parent training into daily life easier to do (Fogg, 2009). Using the FBM to achieve such integration might exist at the content level (modifying RTP’s existing online psychoeducation), and program level

(using existing technologies that parents know how to use in support of ongoing post-residential aftercare).

From the perspective of psychoeducational video content, several opportunities exist towards more successful integration of parent training into everyday life. First, the linkage between parent training and post-residential treatment must be made clear. Content at the outset of parent training should emphasize the purpose of these videos is preparation for the transition home – as the present training stands, this connection is mentioned, but not highlighted. Video content might cover how professionals suggest incorporating the training, and how actual parents have done so. Also at the content level, PBS-CPS integration must be made very clear within video content. One way of blending these methodologies would be to establish the PBS matrix (e.g., connect family values to expectations, and create family routines in order to realize those values) during communication with children about what the post-residential family values should be. Should disagreement occur, CPS might be used to navigate these disagreements. Similarly, once PBS is created and operating in the home, problems that come up around PBS implementation may be addressed using the communication skills inherent in the CPS approach. RTP approached the integration of these trainings in this way, using CPS to make PBS easier to do. As is done in other interactive parenting programs where parents choose among various video responses to undesirable child behavior (Cotter, Bacallao, Smokowski, & Robertson, 2013; Gordon, 2000), video vignettes might demonstrate examples and use of skills integrating PBS and CPS.

Second, at the program level, live practice of the new skills should be prioritized

before children return home, given that time to practice new skills is regarded an important component of any parent training program (Breitenstein, Brager, Ocampo, & Fogg, 2017). Telehealth research supports that caregivers believe technology can help them “technology can help them to make caregiving more efficient, effective, safer and less stressful when delivering care” (Chi & Demiris, 2015, p. 2). In these exchanges, for parents feeling that this might too hard to do, using the FBM could help increase the perception of simplicity of skill practice. For instance, one of the core CPS skills is encouraging the adult to express empathy with the child concern. In early skill live practice while the child is still away, parents (if just learning CPS) may consider practicing empathy with challenges that children describe while at RTP. For parents with more advanced knowledge of CPS, they may work on more advanced skills that are harder to do.

Sustaining these changes might involve email notifications or text reminders as they relate to the specific challenges on which families are working (Evans, Wallace, & Snider, 2012). Should they be interested, it may be feasible for parents to enroll in email-supported aftercare, to receive a newsletter-like subscription of typical barriers to child treatment in the first few weeks as children return home. This newsletter could feature additional psychoeducation, or additional interactive learning content related to specific post-residential challenges, such as video demonstrations, role plays, or parents sharing examples of using skills effectively.

This dissertation sought to positively influence parent ability by attempting to make parent training easier to do. While Phase 1 achieved the aim of understanding

barriers to perceived simplicity under controlled conditions (e.g., during the usability test), changes to prompts forecasted that parents would be able to access this psychoeducational content while children were away, with the assumption that parents would then apply the training in home-based post-residential aftercare. Phase 2 explored the extent to which parent-level changes occurred during the time that the online training was available, evaluating changes in parenting self-efficacy and parenting stress.

Phase 2 Hypothesis: Do parents participating in the online psychoeducational video intervention experience increases in parenting self-efficacy and decreases in parenting stress? Findings suggest that change did occur in the hypothesized direction, though this change was minimal, and findings were nonsignificant. The trajectory of these changes varied by parent age and parent single-status. Perceptions of increased parenting self-efficacy and decreased parenting stress may be inaccurate in absence of active parenting challenges, while children were in treatment.

Main findings from Phase 2

Results indicated that the majority of RTP parents in 2016 could and did attempt to use an online parenting program in support of their child, though use of the training was associated with minimal parent-level change in self-efficacy and parenting stress. Raw means for the overall sample suggested that parenting self-efficacy slightly increases while children are away (decreasing once children return home), and that parenting stress slightly decreases while children are away (increasing once children

return home). Linear mixed model analyses in Phase 2 predicted a nonsignificant gradual positive slope between video dosage and parenting self-efficacy for both parents watching less than 50% of videos and more than 50% of videos (i.e., low and high view). For parenting stress, best model fit was predicted by parent single status; parenting stress was predicted to increase for single parents, regardless of the number of videos watched, though results were nonsignificant.

Explanation of findings and link to literature. Similar to these results, research on the Incredible Years program has also revealed no meaningful difference in parenting self-efficacy as a result of parent training (Letarte, Normandeau, & Allard, 2010), using the Parenting Self-Agency Measure to evaluate overall confidence in parenting. As with the Parenting Sense of Competence Measure in this dissertation series, both measures capture global assessment of parenting self-efficacy rather than parenting self-efficacy in a specific parenting domain (supporting transitions between activities) or task (expressing empathy with child concern, as in Collaborative Problem Solving). This conceptual clarity is important, given that RTP's intervention sought to build specific parenting competencies and apply them during a child's transition home from residential treatment, each of which may have been more accurately measured using domain- and task-specific parenting self-efficacy measures.

Domain- or task-specific self-efficacy refer to a variety of sub-domains in parenting, summing them to achieve the level of self-belief in discrete parenting arenas (Jones & Prinz, 2005). Although domain and task-specific parenting self-efficacy

measures exist (Harty, 2009), to the best of my knowledge they do not exist to evaluate the domain of parents supporting children's transition home from residential treatment, nor do they address the specific tasks of implementing Positive Behavior Supports and Collaborative Problem Solving. Research about domain-specific parenting self-efficacy has been explored with respect to major life transitions in an internet-based intervention, among new fathers between four and eight weeks after the birth of their child (Hudson, Campbell-Grossman, Ofe Fleck, Elek, & Shipman, 2003). Parenting self-efficacy was evaluated using the Infant Care Survey (Froman, 1986) which measures parent confidence in knowledge and skills in the areas of infant health, safety, and diet, rendering this a domain-specific measure of self-efficacy beliefs. Researchers found that parenting self-efficacy scores for fathers in the intervention group (with access to an information library with hundreds of files [about infant growth and development, infant care, infant health, and concerns of new fathers], asynchronous discussion forums, and email access to advanced practice nurses [n=14]) significantly improved from 4 to 8 weeks following birth, while parenting self-efficacy scores for fathers in the Comparison Group (n=20) did not significantly change (Hudson et al., 2003).

Domain-specific parenting self-efficacy scales have been created for perceived parent ability to influence children's physical health in the domains of diet, physical activity, sedentary behavior and screen time behaviors (Norman, Bohman, Nyberg, & Schäfer Elinder, 2017) and task-specific parenting self-efficacy has been explored as an antecedent for Internet-specific parenting practices (Glatz, Crowe, & Buchanan, 2018).

For this dissertation, a general parenting self-efficacy measure was selected as a)

it is among the most frequently cited measures of parenting self-efficacy, and b) domain- and task-specific measures supporting transition from child treatment do not yet appear to exist. More accurate representations of parenting self-efficacy would be revealed with sensitive instruments to evaluate transitional change at the domain and task-specific level.

Relatedly, global or general self-efficacy measures views self-efficacy as stable, with application across parenting domains (Sherer & Adams, 1983). Results from Phase 2 indicated that global parenting self-efficacy scarcely changes across a six-week period. This result is intuitive, especially given that questions about parenting self-efficacy were mostly (i.e., three of four study waves) asked in absence of active parenting while children were engaged in residential treatment. Given that the change was minimal, it may indicate stability in global or general parenting self-efficacy across the study period.

General parenting self-efficacy seems to be a slow-moving construct influenced by perceived parenting challenges; literature suggests that parenting self-efficacy increases during early childhood (Weaver, Shaw, Dishion, & Wilson, 2008) and decreases as children begin adolescence (Glatz & Buchanan, 2015). Across the lifespan, new parenting skills are necessary to navigate new parenting hurdles – nuanced instruments capturing domain- and task-specific parenting self-efficacy would render more specific results and should be used to detect hypothesized parent-level changes associated with online parent psychoeducational interventions.

While the exact linkage between parenting self-efficacy and parenting stress is not yet entirely known, raw means in Phase 2 reflect trends in the literature of the ‘see-saw’ effect of the two constructs, supporting the hypothesized direction of Phase 2 data (at

least, at the global level). Given that one of the sources of parenting self-efficacy beliefs comes partly from direct parenting experience (Vance & Brandon, 2017), the slow growth rate for parenting self-efficacy may be partly attributable to the lack of in-person experiences with children to practice parenting skills being learned, though it more likely that task-specific measures could detect more nuanced parent-level change.

The finding that parenting stress was predicted to increase for single parents, regardless of the number of videos watched, suggests the need for additional exploration of social supports provided to single parents during a child's residential treatment (though this result was marginally significant). Literature on barriers to family involvement suggests that, by the time a child reaches residential treatment, their community supports may have already been exhausted (Davis, 2016). Qualitative evidence of provider perspectives on aftercare youth services indicates that next of kin may experience burnout as they are called upon for support (Sharrock, Dollard, Armstrong, & Rohrer, 2013). Married or divorced parents may have a wider social network than do single parents, and experience less parenting stress than do single parents. Research into stress and social support validates this hypothesis; compared to married mothers, single mothers have reported exposure to greater distal and proximal stressors (Cairney, Boyle, Offord, & Racine, 2003).

As general parenting self-efficacy and parenting stress appear to slightly fluctuate in the eight weeks following residential treatment, changes to RTP's video content might consider incorporating findings from the literature about the role of mindset as it relates to post-residential parenting. Given that mindsets have the ability to "change the meaning

of failure” (Dweck, 2006, p. 33), and that parents report challenges in this time, practicing a ‘growth mindset’ rather than a ‘fixed mindset’ may help them reframe post-residential challenges as opportunities to practice the skills they have recently received.

Whereas Phase 2 sought to understand the effect of the new online training on parenting self-efficacy and parenting stress, Phase 3 explored the extent to which parents had incorporated the training into family routines, eight weeks after children had transitioned home from residential treatment.

Phase 3 Hypothesis: Parents reporting high parenting self-efficacy scores at follow-up will describe using PBS and CPS strategies. Phase 3 sought to understand the longer-term impacts of the online program, hypothesizing that parents with higher parenting self-efficacy scores at follow-up would describe applying evidence-based parent training (Positive Behavior Supports and Collaborative Problem Solving) as new family routines. This hypothesis was refuted both by qualitative data (just 5.0% of the sample [one parent in 20] attributed new family routines in Collaborative Problem Solving to the online training), and by quantitative data (the one parent who had described these routines scored in the moderate range on parenting self-efficacy, lower than half of the other Phase 3 participants).

Main findings from Phase 3

Although the online program was widely accessed by parents and their domestic/international network(s), little change in family routines was attributed to the

online program by parents. Video use data revealed that when children return home, virtually no parents returned to video content. Proportions of video starts illustrated that the percentage of parents viewing videos fell across the time that videos were released. Those families who had been working with RTP previously, were familiar with the psychodynamic parent support model and therefore experienced a philosophical shift in the organization with the new pilot online psychoeducation program (in 2016). Surprised by the change, the news created Non-routine, reducing their perception of simplicity, and presenting a barrier to parent involvement. These findings fit with the trajectory of raw means for parenting self-efficacy and parenting stress seen in Phase 2; slight reductions in stress and increases in self-efficacy beliefs may have been influenced by a pause in actively parenting a child with socioemotional challenges during the time that the child was engaged in residential treatment.

Explanation of findings and link to literature. Changes made to prompts in Phase 1 were reflected upon by parents in Phase 3, describing their openness to the digital nudges at the end of each video, which appear to have successfully sustained within-session engagement in the online training. Despite parents welcoming the influence of these prompts while children were attending residential treatment, visualizations of video use data revealed that parents did not return to the online video training once children have returned home. Parents may not have returned to the online training for several reasons.

Existing literature about the longer-term effects of residential treatment on parents

has found that the more time that has passed since treatment correlates with more positive appraisals of positive life change (Blacher, Baker, & Feinfield, 1999). This result may be due in part to the challenges of transitions home from residential treatment, during which time children can regress to previous problematic behaviors given that these behaviors are familiar and thus provide familiarity during moments of unpredictability (e.g., transition home from residential treatment). Regressive behavior can create apprehension for families concerned about set-backs (Hess et al., 2012). For parents experiencing such concerns, some may not have felt satisfied with the effects of treatment for their child, limiting willingness to apply recently learned skills.

Limited new family routines may also be attributable to insufficient exposure to the video training; while some parents re-watched videos several times, for each consequent session the percent of parents viewing decreased from 77.3% in the first session to 36.5% in the last session. This is typical of digital parenting interventions, with reductions in engagement across the study period, and parents spending less time in later sessions than in earlier sessions (Breitenstein et al., 2017). Given that prompts were not created to nudge continued engagement once children had transitioned home, families were not prompted to access the existing library of online videos as a home aftercare resource. The Fogg Behavior Model supposes that if videos were played in conjunction with prompts presented, parents would be sufficiently motivated and able to have engaged in an autonomous online psychoeducation program; automating prompts in post-residential aftercare may have prompted additional video views, even at low levels of motivation (Fogg, 2016c).

Qualitative evidence about the family perspective of residential treatment claim that families wish to be involved in their child's treatment process (Demmitt & Joanning, 1998). Given that the intervention development process did not consult parents (except to understand barriers to usability in Phase 1), parent buy-in may have been greater if the program had been developed with greater parent involvement. Such interest was confirmed by parents in Phase 3. While the online training was grounded in evidence-based practice, research suggests that parents may wish to expand their involvement in residential treatment "from being clients to also being experts" (Demmitt & Joanning, 1998, p. 60).

Relatedly, limited continued use of the skills presented in the online program may stem from parents disliking the training in its current format. Known barriers to continued engagement of parent training programs include dislike of activities, perception of the program as unhelpful, lack of support to enact change as instructed, and family circumstance making training suggestions implausible (Koerting et al., 2013). Given that supportive aftercare services have been linked with greater post-residential family stability (Hair, 2005), and that low family participation threatens the effectiveness of post-treatment training effectiveness (Koerting et al., 2013), findings from this dissertation suggest important implications for parent training at residential treatment programs.

Comparison to other online parenting programs

While the three major parenting programs (Incredible Years, Triple-P, Parenting

Wisely) offer different approaches to parent-level changes in the hopes that changes at the parent level will translate to the child, each feature video as an intervention component. Triple-P Online takes a public health approach to parenting by leveraging a multi-tier system of parenting interventions for universal and targeted interventions across increasing levels of behavior intensity, offering videos, personalized activities, podcasts, and reminders via text and email (Baker, 2017).

Parenting Wisely is a parenting intervention using interactive video to augment parenting competence and to reduce child problem behaviors whereby participants watch video enactments of common family conflicts and choose among several response strategies (Cotter et al., 2013; Gordon, 2000). Many other online parenting programs exist, but have a smaller literature base, and are often for infants or very young children (Baggett et al., 2017; Breitenstein et al., 2017; Breitenstein & Gross, 2013; Luu et al., 2017), specific child challenges like traumatic brain injury (Antonini et al., 2014), children with autism (Parsons, Cordier, Vaz, & Lee, 2017), among other programs for specific child challenges.

While video is a common denominator in parenting programs, simply watching videos is likely insufficient to engender lasting parent-level change for most parents. Literature on parent training interventions support that interactive training (e.g., computerized programs) can be more effective in improving child behavior when compared to noninteractive training (e.g., watching videos) (Baumel, Pawar, Kane, & Correll, 2016). Thus, one of the reasons that parents may not have applied video training is that videos were passively received; engagement with online video is an indicator of

involvement, but not necessarily an indicator of learning (Mintz & Aagaard, 2012). Research into who benefits from online learning reveals relevant findings for this study, in that resistance to web-based learning follows a) weak Internet self-efficacy beliefs, and b) inadequate tools to access the internet (Thompson & Lynch, 2003). Internet self-efficacy mediated this relationship; for those people with limited access to proper equipment, they were less likely to develop strong internet self-efficacy beliefs and thus dislike web-based instruction (Thompson & Lynch, 2003). Held together, increasing access to Internet-connected devices in support of mobile mental health (Muroff et al., 2017), and including interactive components of parenting interventions, may be two ways of supporting more families as children transition home from residential treatment.

In comparison to moderated support via phone, parents participating in a self-guided parenting intervention were significantly less likely to complete online training sessions compared to parents in the moderated condition, and parents receiving additional supports were more satisfied and engaged in the treatment (Day & Sanders, 2018). These results suggest that synchronous supports may be helpful in the dissemination and application of online parent training. Especially given that brief contact with clinicians resulted in significant child and parent outcomes (Day & Sanders, 2018), adding practitioner supports may yield greater program benefits compared with self-guided online parenting interventions alone.

Dissertation contribution

To the best of my knowledge, no other online parenting program exists in support of a child's transition home following residential treatment, training parents in the

treatments to which children have recently been exposed, while being explicit about the importance of linking the online training to a child's recent treatment experience in post-residential continuity of care. While there were differences in how the training was disseminated to parents and children (staff were trained in Positive Behavior Supports and Collaborative Problem Solving, using these skills with children, while parents received psychoeducational video and participated in group phone calls), this was RTP's first attempt at integrating child-level change in milieu treatment with parent-level change using web-based psychoeducation. While RTP supports Positive Behavior Supports at the universal level (i.e., all children know the RTP values) and communicated this to parents in the videos, the extent to which children were exposed to Collaborative Problem Solving (CPS) was more likely a function of staff and supervisor ability. Though beyond the scope of this dissertation, stronger staff may have more closely followed the CPS training, and children in groups with these staff may have returned home with greater skill in integrating CPS language into routine communication.

Phase 2 raw means demonstrated a slight change in trajectory for parenting self-efficacy and parenting stress before children returned home, and eight weeks after children have been home, noted by minor reductions in parenting self-efficacy and increases in parenting stress. While the aim of this dissertation had been to bolster parenting ability in preparation for this critical moment, asynchronous post-residential video did not affect parent-level change during this transition window. The benefits of major parenting programs deserve exploration during major life transitions to investigate the extent to which their known benefits may extend to support families during critical

transitions (e.g., returning home from hospital, residential treatment, moving to a new home, etc.). Major parenting programs recognize that although their interventions may stand alone, a wide lens is necessary as children return home from residential care (Adner, 2012). If parenting is to evolve into partnership with residential settings (Martone, Kemp, & Pearson, 1989), major online parenting programs may consider building out content in support of a child's post-residential recovery.

Given the unique features of short-term residential treatment, with a known timeline to discharge, parenting programs should continue to support psychoeducation curricula which integrates empirically supported practices of their existing programs with the understanding that transitions are important moments for continued care. Critical elements for inclusion in parenting programs are 1) analysis of 'product-program-place usability', to include user analysis of digital product components and awareness of the interaction of common contextual and environmental post-treatment barriers or influences, 2) consideration of domain- and task-specific parenting self-efficacy measures that yield accurate representations of desired parent-level change that are conceptually linked to the parenting intervention under examination, and 3) including interactive components along with videos that feature parents in addition to professionals, ideally offering live opportunities for skill-practice with parents in real-time.

Implications

Residential treatment programs are ideally positioned to promote parenting services designed for simplicity. These results suggest that when evidence-based psychoeducation is made available to parents, a majority of parents will attempt to access

content, though fewer may ultimately apply that content to family routines when their children return home from residential treatment. However, these results also indicate that longer-term change is limited in the absence of direct practice of newly-learned skills with children, and that parents are unlikely to return to online training in the absence of continued prompts. Thus, refinements to this pilot program will be necessary to expand its potential benefits.

Training clinicians in the Fogg Behavior Model (FBM) may offer a new perspective into why behaviors do / do not occur, as helping professionals understand the deciding role that prompts, sufficient motivation and perceived ability play in behavior change. As perceived ability is composed of several simplicity factors, interventions designed to influence these simplicity factors may result in desired change. Training parents in the FBM may yield insight into their own parenting behaviors (e.g., *When motivation wanes, how can I make something appear easier to do?*) to support a child's transition home from residential treatment. These same skills might be also taught to children, offering a powerfully simple understanding of behavior activation that families could share in support of children's post-residential aftercare.

Including parents in the development of persuasive technologies may reveal strategies resulting in broader post-residential adoption and application of parent training; researchers have often encouraged collaboration with community partners and stakeholders to enhance research design and implementation (Hair, 2005; Stroul, 1996). Phase 3 revealed that 95% of respondents would have liked to hear from other parents in the videos. Group-based psychoeducational parenting interventions may offer some

benefits above individualized trainings; for parents of children who exhibited behavior problems, among those who spoke English as a second language, 19% were willing to attend office-based parents training, while 63% were willing to attend a parenting group (Cunningham, Bremner, & Boyle, 1995; Taylor et al., 2008). The Incredible Years program has blended online self-administered program content with the group-based format; out of a total of 128 parenting goals (e.g., positive parenting strategies, limit setting, ignoring, and time out) set by participants, 50% progress was made on over 100 goals and complete progress was made on nearly 70 goals (Taylor et al., 2008).

Similar research designs incorporating technologies must be flexible enough to incorporate user feedback and allow the technology to evolve during the research lifecycle; flexible research designs incorporating technology are now advocated by the National Institute of Mental Health (NIMH, 2017). Study designs incorporating both asynchronous digital components and synchronous group-based components might enhance understanding of what families want and need during post-residential aftercare.

The findings of this dissertation emphasize the importance of aftercare services at the parent level. While changes at the micro- and mezzo-levels are important in family systems and residential treatment programs, policy change is also critical in establishing and sustaining evidence-based interventions. Federal agencies should consider task-forces to identify funding opportunities supporting aftercare, given its critical importance to long-term child outcomes (Burns, Hoagwood, & Mrazek, 1999; Chamberlain, 1999; Hair, 2005; Zimmerman et al., 1998). Long-term change following residential treatment appears unlikely if conditions for continued care are not addressed. This dissertation may

offer preliminary evidence supporting funding for enhancing persuasive technologies in support of post-residential aftercare. As many families cannot afford traditional aftercare resources (Sternberg et al., 2013), these families must be empowered to take an active role in swaying political will to meet their needs.

Policymakers and stakeholders should consider developing and implementing policies that make residential aftercare more affordable and accessible (e.g., providing mobile technologies to families to access persuasive technologies) and fund research that enhances the perceived simplicity of post-residential aftercare. Research in London has found parenting interventions could save “£2.5k per family over 25 years and could save the criminal justice system £145k per person over the life course” (Duncan, MacGillivray, & Renfrew, 2017, p. 1). Other research has paid attention to overall costs in delivering treatment to behaviorally-challenge children for parents and classrooms; analysis of the Incredible Years program estimated the per-child costs to parents at \$1,739, and the per-child cost to classrooms at \$287 (Foster et al., 2007).

Interactive online video training may be one way of reducing costs. State and federal government should invest in digital mental health treatments, working to lower the development costs of these programs through government subsidies to expand the availability of online parent training to support families during post-residential continuity of care. If found effective, digital aftercare solutions may be linked to and benefit from mental health-related reimbursements by some healthcare insurers. While the potential societal benefits of residential treatment are obvious (e.g., addressing major mental health concerns, increased child and family well-being, developing a more precise clinical

picture of challenges the child/family presently faces), these benefits are at risk without extended supports in the weeks following residential treatment, provided empirical evidence can demonstrate beneficial effects.

Implications for Social Work

This dissertation sought to advance scientific knowledge in social work by leveraging technology for social good, consistent with the American Academy of Social Work and Social Welfare grand challenges to “Harness technology for social good” (Uehara et al., 2013). For the social work field, findings of this dissertation may inform social work researchers about how to develop and evaluate technology-based interventions, and explore opportunities to build bespoke technology solutions supporting clinical work with families of children in residential treatment. The Fogg Behavior Model may be a useful conceptual framework to guide development and understanding of such mobile health interventions. As this dissertation adhered to online learning best practice (Guo et al., 2014), these results may encourage other social work researchers to adopt similar approaches to online psychoeducation.

Adoption of online parent training may address specific disparities experienced by parents who are not able to attend traditional in-person parenting programs. Speaking to the potential of online self-help parent training, Triple-P developers posit that (in the absence of extra support and motivation provided by a therapist), parents experiencing adversities such as single parent status, poor parental mental health, low income or transportation barriers may benefit from online parent training (Baker & Sanders, 2017).

Experiences of disadvantage, high distress, and conflict are known to compromise parenting resources, which can result in less nurturing and more punitive parent-child interactions (Baggett et al., 2017; Duncan, Magnuson, & Votruba-Drzal, 2014). Studies have demonstrated that improvement in as a result of web-based parenting interventions was predicted by pre-intervention levels of maladaptive parenting (Baker & Sanders, 2017). Engagement patterns in web-based treatments have shown similar rates of engagement for parents at either high or low risk for child maltreatment; for high-risk mothers compared to low-risk mothers, a higher dose of a targeted online parenting intervention resulted in a higher frequency of observed positive parenting behavior and reduced child abuse potential (Baggett et al., 2017).

Logistical barriers such as lack of child care for siblings (Owens et al., 2002) can impact participation for in-person therapies that may be particularly useful to lower-income families. Provided there is phone reception, technology allows for the delivery of psychoeducation regardless of location (Newman, 2004), and emerging technologies have been received positively without reduction in adherence or satisfaction (Ruskin et al., 2004). Online parenting programs may be able to reach those clients that in-person programs cannot (Tate & Zabinski, 2004). Online parent training may improve access to mental health care in support of child and family wellbeing, as remotely delivered interventions support access to marginalized groups. Especially for marginalized parents in rural areas, including rural participants in mental health research is necessary to address health-related inequities (López, Qanungo, Jenkins, & Acierno, 2018).

Compared to parents in a comparison group, parents who participate in brief, strengths-based parenting interventions showed gains in global parenting self-efficacy (as measured using the Parenting Sense of Competence Efficacy subscale), indicative of greater perceived ability to successfully rear their children (Ludmer, Sanches, Propp, & Andrade, 2017; Waters & Sun, 2016). For studies that do not primarily attempt to influence parenting self-efficacy, online parenting interventions have been associated with reducing the risk of child maltreatment (Baggett et al., 2017) and reductions of ineffective parenting strategies and more confidence working with child behavioral concerns (Baker, Sanders, Turner, & Morawska, 2017).

Consistent with Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1977, 2005), social work scholars posit that a child's transition home to the community be intentional and integrated into post-residential daily life (Hair, 2005; Leichtman, 2008; Leichtman & Leichtman, 2001). Effective use of residential services should come to include adjunctive aftercare services designed for perceived simplicity; as technology expands its role in social work settings, it should be used to improve the quality of mental health practice during major life transitions.

OVERALL LIMITATIONS

Given the small sample sizes across each research phase, the principal limitation is generalizability of findings. As this dissertation focused on one Northeastern US residential treatment program featuring the pilot of a bespoke online parenting program, outcomes are unique to parent participants from the 2016 RTP Summer Program. Additionally, each study has unique limitations. Although the Phase 1 provides a detailed

description of barriers to usability, a high degree of assistance was provided to participants; it is possible that researcher reactivity influenced their natural ability to complete tasks independently. Phase 1 also encountered recruitment issues, resulting in a small sample size. In Phase 2, the measures selected to evaluate parenting self-efficacy and parenting stress may not have been sensitive enough to detect change at such proximal measurement waves. Moreover, parents were asked questions about parenting constructs across a period of time where parents were not actively parenting their child in treatment; results may not reflect a reliable assessment of parenting constructs as intended. In Phase 3, parents were invited to sign up for phone interviews, and may have been influenced by unknown selection effects, biasing some parents to offer their perspectives of the online training and its potential impact on family routines.

With regard to the measures used to evaluate parenting constructs, the full version of Parenting Stress Index is grounded in attachment theory, with parent stress resulting from the “complex interplay among parent, child and situation” (Abidin, 1990, p. 298). Given that children were not present during the majority of assessments, no ‘situations’ were occurring, so parent responses on an attachment-based inventory may have led parents to be less critical of child problems contributing to parent stress. Parents reported in Phase 3 that questions on the Parenting Stress Index-Short Form led them to experience the questions as a “depression survey”; measures framed as strengths-based assessments may have been met with greater acceptance and yielded different results. While it was anticipated that the skills of PBS and CPS would result in positive changes to parenting self-efficacy and reductions in parent stress, appraisals of global self-efficacy

and attachment-related parenting stress seem unlikely to have reflected specific parent ability in these evidence-based treatments.

Across all phases, it was not possible to separate benefits of CPS or PBS, though a number of parents expressed preference for CPS. Results were further limited by the lack of randomization, and convenience sampling methods. Additionally, parents participating in weekly phone calls and parents who received additional therapeutic supports from RTP would have experienced a different level of intervention than parents who only viewed psychoeducation video content; this dosage is not accounted for in the present studies. These overall limitations warrant further research to further explore how online psychoeducational video may enhance parenting ability to support post-residential continuity of care. Perhaps most importantly, no information on child outcomes was available; at a minimum, these results would benefit from child-level data about the extent to which children learned and practiced the skills of Positive Behavior Supports and Collaborative Problems Solving while at the 2016 RTP Summer Program.

Future research

While this dissertation sought to answer a series of research questions, results suggest potential for further study. In Phase 1, usability barriers related to autonomous navigation of the online program were identified and addressed by adding prompts to nudge subsequent training engagement. Phase 1 findings emphasized the importance of perceived simplicity during onboarding (i.e., initial learning curve) in online psychoeducation. Future research into parent training for children engaged in residential treatment should consider parent confidence / experience in using technology, as well as

universal design features (e.g., ability to change size of onscreen text for parents with visual impairments) to ensure all parents have the opportunity to benefit from online training.

Biometric research may reveal additional insight into attentional processes while parents view psychoeducational videos. The most common type of biometric research is eye tracking, a non-invasive technology providing quantitative measures of attention during task completion (Lei, Sala, & Jasra, 2017). These technologies should be used to support understanding of where and when perceived simplicity breaks down as parents navigate online psychoeducation. Further, biometric research could be used to test hypotheses about the extent to which videos could be edited (i.e., novice actors on camera requiring video editor to make many scene changes) before the message is obscured as Brain Cycles become too high (Cialdini, 2017).

For parents with lower technology literacy, future research should evaluate the effects on engagement of online training when provided synchronous tech support (e.g., clinician with technical capacity, tech-savvy family member, live chat support) to evaluate the extent that added support addresses perceived technical barriers, resulting in more autonomous application of parent training. Given that family support is predictive of post-discharge adjustment (Taylor & Alpert, 1973), understanding the influence of social support as parents a) learn how to use online parent training, and b) apply that training as children return home, would lend important insight into how best to help less technically experienced families during digital intervention and post-residential aftercare. Specifically, future research might explore the role that skilled social support plays

during parent training onboarding of parents with technical experience; a thorough, simple and skippable (for parents with greater tech comfort) onboarding process may help parents familiarize themselves with technology interventions, apply recently learned skills with children, and possibly result in increased parenting self-efficacy and decreased parenting stress.

Although Phase 2 evaluated parenting self-efficacy and parenting stress longitudinally, most observations occurred when participants were not actively parenting their child in treatment. Given that parenting self-efficacy and parenting stress are largely derived from direct parenting experience, measurement of these constructs while children are engaged in residential treatment may have not revealed the most accurate depictions of these constructs, but instead evaluated some state of temporarily suspended parenting responsibility. As the intent of this dissertation research series was to increase parenting self-efficacy and reduce parenting stress, further study is necessary to understand the impact of online psychoeducation longitudinally as parents resume quotidian parenting. Domain- and task-specific measures of parenting self-efficacy in post-residential aftercare would support such evaluation.

With more precise measurement, treating video starts as a time-varying covariate rather than high/low view may reveal more nuanced impressions of changes as a result of the timing of videos watched (e.g., *How does the timing of video viewing affect changes in parenting self-efficacy and parenting stress?*). While high/low dosage may fit conceptually with global measurement, and with the Phase 2 research question (i.e., above/below 50% video starts), unexplained outcome variation may be reduced with

more finely tuned instruments and time-sensitive predictors.

Future research of the online program may evaluate potential added benefits of live skill practice with children via webcam, giving parents the opportunity to rehearse aspects of family routines in evidence-based treatments before children transition home. Research may also explore the extent to which parents might learn about evidence-based trainings from children during home-based post-residential aftercare, given that children are exposed to evidence-based treatments grounded in daily routines, during residential treatment.

Child age may play an important role in parenting self-efficacy and parenting stress; previous research suggests that parents of younger child may experience greater levels of stress and lower adjustment to child placement than parents of older children (Baker & Blacher, 2002). Child age should be evaluated as a predictor of parent engagement and parent psychological constructs while children are in residential treatment.

Phase 3 found limited longer-term effects of the online program. Major or multiple barriers to perceived ability may turn parents off entirely to online psychoeducation and, as Tseng and Fogg (1999) have suggested, lost credibility in technology can be difficult to regain. Perceptions of low quality are conceptually linked impressions of credibility. Tseng and Fogg (1999) published a matrix of product acceptance or rejection of content based on user perceptions (see Table 13).

Table 13. Credibility matrix (Tseng & Fogg, 1999)

	User perceives product as <u>credible</u>	User perceives product as <u>not credible</u>
Product is <u>credible</u>	Appropriate acceptance	Incredulity Error
Product is <u>not credible</u>	Gullibility Error	Appropriate rejection

Given that Positive Behavior Supports and Collaborative Problem Solving each have strong empirical support during intervention development, video content was assumed to be interpreted as credible. However, as evidenced in Phase 3, much of the training was rejected by parents perceiving the content as not credible. Thus, future research should integrate stakeholder feedback to reduce incredulity error, and make enhancements such that users will be more likely to perceive psychoeducational video interventions as credible.

Future intervention research should seek to remove perceived barriers to family involvement in post-residential aftercare. Research into barriers of family involvement has established two major barrier types in family circumstances (i.e., transportation and distance) and facility characteristics (Kruzich, Jivanjee, Robinson, & Friesen, 2003). Persuasive technologies can and will address circumstantial barriers, allowing researchers and practitioners to focus on barriers attributable to family characteristics (e.g., little consideration for cultural values, lack of communication, etc.) (Kruzich et al., 2003).

For residential treatment centers where parent involvement is a prerequisite to

child enrollment (assuming parent motivation will be sufficiently high to engage in child treatment), the Fogg Behavior Model (FBM) presents a framework and lexicon for creating, evaluating and enhancing family-centered supports during and after milieu treatment. Given that the FBM assumes that behavior occurs only when sufficient motivation, sufficient ability and a prompt are present, and that there is a trade-off between motivation and ability (i.e., when prompted, behaviors occur with high motivation and low perceived ability and conversely with low motivation and high perceived ability), opportunities exist to explore the levers of motivation and perceived ability.

While this dissertation research series initially sought to make parent training easier to do by removing barriers to perceived simplicity, future approaches to behavior activation should seek to understand when optimal motivation naturally occurs, and to provide prompts at these moments (e.g., 24-48 hours after parents see their child). In accordance with the FBM, high motivation makes behaviors that are seemingly harder to do more possible when prompted; when natural surge in motivation are present, Fogg indicates that only a prompt may be required to help people to do hard things (Fogg, 2016c). Research into momentary peak parenting motivation may usher in a new approach to enhancing post-residential aftercare services, nudging commitment towards post-residential continuity of care.

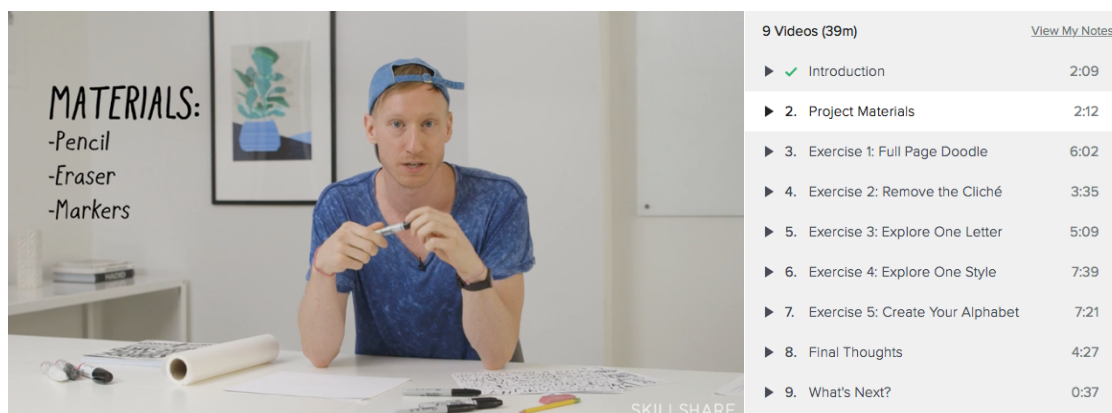
This pilot intervention did not enhance outcomes; additional research warrants further exploration of preliminary effects while also incorporating training refinements. If preliminary data suggests that the training is associated with improved outcomes, the

IDEAS framework might be applied in the two additional next steps - step 9 (evaluate efficacy in randomized control trial (RCT) and step 10 (share intervention and findings of RCT). A RCT of aftercare prompts provided to either 1) parents immediately when children transition home or 2) usual post-residential care control group may be one method of exploring the potential benefits of autonomous post-residential aftercare support via psychoeducation intervention. Results of this RCT should be widely shared with researchers and practitioners to advance the state of intervention research and digital health behavior change interventions in post-residential aftercare.

Two redesign opportunities

In Phase 3, parents offered ample feedback about how the online program might be enhanced. While the prompts at the end of each video seemed to successfully have nudged parents to stay engaged in the online program, it seems parents would have appreciated more clarity about the overall time commitment required by each session. Existing online learning platforms feature simple user interfaces, and clearly define the number of videos, total time, how long each video will be (see Figure 24). Such platforms are interactive, and might allow parents to communicate with each other, and with RTP staff. If learning platforms can be designed to be HIPAA-compliant, and residential programs can retain ownership over their content, residential programs might consider industry collaboration to meet high parent expectations.

Figure 24. Skillshare layout of video-based learning objectives, and time required



The second redesign might involve a specific strategy to augment home aftercare services, the central problem being addressed in this research series. As context, just 3.0% of starts (39 starts) occurring in the months after children returned home. The Fogg Behavior Model specifies that behavior occurs only when sufficient motivation, ability and a prompt are present. No prompts were set up to continue viewing videos after children returned home, so unless parents were somehow cued to take action, videos were not watched.

About one third of parents returned to start videos multiple times. This return to content occurred for videos by RTP and by a CPS developer, so quality of video content was not a sole determinant in returning to videos. Several reasons may account for returns to content. Two-parent systems watched the same videos from the same computer at different times of day per varying schedules, the same parents may have re-watched videos to develop a better grasp of the nuanced CPS content, or some videos may have been confusing given their perceived low-production value and would need to be reviewed again. However, given theories of credibility (Tseng & Fogg, 1999), it is

unlikely parents returned to videos they found confusing. Figure 19 in Phase 3 demonstrates atrophied use of the videos over time, with high bursts of use following initial email prompts. During the time that children are engaged in residential treatment, most parents start videos, though this use stops once children return home.

Lessons learned: technology comfort and creative confidence

In Phase 1, more assistance was provided to participants than initially expected. For some, the complexity of user tasks required to complete an online survey and navigate a series of online videos appeared difficult without support, and is a relevant finding for the development and dissemination of technology-based interventions among parents of children completing residential treatment. Though the videos were designed for simplicity, basic comfort with technology skills was assumed. As this assumption was not valid, the online intervention was less simple than initially conceived.

Secondly, building a collaborative tech-based intervention in the human services field is a major investment from all involved, and those participating may have varying comfort levels appearing on camera. In support of this study, early prototypes lent creative confidence (i.e., process of recognizing and accessing creative potential) (Kelley & Kelley, 2013) to the rapid prototyping process to demonstrate that the project was realizable. For example, the first video created (influential, but not used) was filmed on an iPhone in a laundry room, texted to the PI for editing, and returned to the actor within 24 hours. This process validation confirmed the approach, which became the norm for the remainder of video creation (e.g., rapid turnaround of filming and editing to preview

finalized videos), totaling 41 videos for parents of children attending the 2016 RTP Summer Program.

OVERALL CONCLUSION

When children return home from residential treatment, the cadre support that became familiar to children is no longer available. This can pose challenges to continuity of care, as a child's baseline functioning may have changed through significant intervention with similar supports unrealistic in the home setting. While tech-supported approaches to continuity of care are not yet widely used in residential treatment, this dissertation research series provides preliminary evidence that parents are interested in this type of service, and are specific in the ways that online training may be made more relevant and meaningful to supporting their child's home aftercare. Involving parents in future iterations of the online program will help guide future psychoeducation content, and provide a richer understanding of how to meet specific needs of families during this critical transition.

At the time of this writing, this is the first application of Fogg's typology of simplicity and the Fogg Behavior Model (Fogg, 2009) as they relate to online training for parents of children in residential treatment. These initial findings suggest that the Fogg Behavior Model provides a powerfully simple lexicon for diagnosing and addressing barriers to online psychoeducation. Parents desire certain features to heighten their experience of online psychoeducation - a rich understanding of these needs will support enhanced online treatments.

Given the ultimate aim of optimizing parenting ability to provide evidence-based

continuity of care, it would benefit stakeholders and intervention researchers working with residential programs to locate digital tools that parents already know how to use, and design interventions that fit seamlessly into their lives to support children's recently initiated treatment gains as they transition home. All parenting programs face the challenge about the extent to which their intervention will yield meaningful therapeutic change in daily family life. Making parent training easier to do, and making parent training integration easier to do during major life transitions, will be equally important in realizing the opportunities that technology may serve during home-based post-residential aftercare.

“Persuasive technology will increasingly be utilized to enhance existing evidence-based interventions - the question is how to go about it.”

LaMendola & Krysik, 2008, p. 419

APPENDICES

Appendix 1: Convenience sampling recruitment

Greetings!

[STAFF NAME] is sending you this email to let you know of a research opportunity eight weeks after your child returns home from the RTP Summer Program.

The study would involve one phone call, which would last about 60 minutes. You would receive a \$20 Amazon gift card for your time! We are hoping to interview 30 individual parents for this study.

You can [click here to sign up](#).

The purpose of this research is to help RTP evaluate this new online program, to improve the quality of RTP's services offered to parents / guardians. The study is being conducted by Winslow Robinson, LCSW, a doctoral student at the Boston University School of Social Work.

Participation is voluntary and you may decide not to continue participation at your discretion. The interview will be audio-recorded, but no presentations or reports will include names of specific participants. All records of this study will be kept confidential and safely stored so that only study staff directly associated with the study will have access to the materials.

If you have any questions regarding the research or your participation in it, feel free to ask them of investigator Winslow Robinson, LCSW, who may be reached at [by email](#) or by calling [xxx-xxx-xxxx](#).

The risks for participating in this phone interview are minimal. We hope that by contributing to the development of this online parenting program you may help us to develop a new service that is helpful to other parents / guardians while their child attends the RTP Summer Program.

Please know that your responses to any of the questions you will be asked will in no way impact your eligibility for RTP's services (for example, acceptance to the 2017 Summer Program).

Thank you!

[STAFF NAME]
Family Program Manager
Clinical Consultant
RTP Summer Program

For technical difficulties, please call the RTP Boston Office and ask for [STAFF] (xxx-xxx-xxxx), or email [\[STAFF\]](#).

For questions about the Family Program, or to give feedback, you can call or email your Family Program Clinician or contact [STAFF NAME], Family Program Manager by [email](#).

For questions about your child and programming in NH, please call or email your Clinical Group Supervisor (xxx-xxx-xxxx)

Appendix 2: Semi-structured interview guide

Hi [parent name]!

Thank you for taking the time to connect with me today! My name is Winslow Robinson and I'm working on my PhD in social work at Boston University. This interview is for my dissertation, which is evaluating RTP's new online parenting program. I'm interested in learning about your experience with RTP's online program (if you used it, or not), and any feedback you might have to improve the program for next summer.

Our conversation will be recorded, and will take about one hour. Do you have any questions before we begin?

- 1. Please state your full name and date of birth for the recording.*
- 2. What is your child's date of birth? Was this your child's first summer at RTP?*
- 3. So, what brought your family to RTP?*
- 4. As a parent, how was your experience this summer?*
- 5. Online training*
 - a. Thinking back to this summer, there were weekly videos sessions available online. I know this was a long time ago, but you might have had the opportunity to watch some of these videos. How do you think the watching of the videos might have influenced your parenting? Were there things you picked up from the videos?*
 - b. What aspect(s) of the online training did you enjoy during the summer / since the summer?*

- c. *What aspect(s) of the online training did you not enjoy during the summer / since the summer?*
- d. *Were there aspects of the online training you found confusing?*
- e. *Did you at any point return to the online program to view videos since your child returned home? If yes, what materials (videos, PDFs on the Family Program website) have you reviewed?*
- f. *Did you tend to watch these videos at the same time of day (for example one part talked about watching them right when she woke up)*
- g. *Did you share the link to the online training with any other parents or professionals?*
 - i. *How many?*
- h. *How did you access the online program (phone, computer)?*
- i. *What percentage of the videos would you say you watched?*
- j. *Do any sessions from the online program stand out?*
- k. *Do you feel you are applying skills at home, that you learned in the online program?*
- l. *What might you add to these videos to make them better? How could they be made more relevant to your family?*
- m. *Would it make a difference to hear from other parents on the videos?*
- n. *How has parenting been since your child had returned home?*

GENERAL PARENTING SELF-EFFICACY

So now I'm going to ask you several questions that you may have seen recently in the online survey. Please respond to each item, indicating your agreement or disagreement with each statement.

1=strongly disagree and 6=strongly agree

- 1. *The problems of taking care of a child are easy to solve once you know how your actions affect your child, an understanding I have acquired.*

2. *Even though being a (parent) could be rewarding, I am frustrated now while my child is at his/her present age.*
3. *I go to bed the same way I wake up in the morning - feeling I have not accomplished a whole lot.*
4. *I do not know what it is, but sometimes when I'm supposed to be in control, I feel more like the one being manipulated.*
5. *My (parent) was better prepared to be a good (parent) than I am.*
6. *I would make a fine model for a new (parent) to follow in order to learn what she/he would need to know in order to be a good (parent).*
7. *Being a (parent) is manageable, and any problems are easily solved.*
8. *A difficult problem in being a (parent) is not knowing whether you're doing a good job or a bad one.*
9. *Sometimes I feel like I'm not getting anything done.*
10. *I meet my own personal expectations for expertise in caring for my child.*
11. *If anyone can find the answer to what is troubling my child, I am the one.*
12. *My talents and interests are in other areas, not in being a (parent).*
13. *Considering how long I've been a (parent), I feel thoroughly familiar with this role.*
14. *If being a (parent) of a child were only more interesting, I would be motivated to do a better job as a (parent).*
15. *I honestly believe I have all the skills necessary to be a good (parent) to my child.*
16. *Being a (parent) makes me tense and anxious.*

6. *The videos described two approaches to working with kids called Positive Behavior Supports and Collaborative Problem Solving. Were either of these new to you? Have you used either of these approaches since your child returned home?*

a. *IF CPS:*

- i. *The core skills of Collaborative Problem Solving are expressing empathy, identifying adult concern, and inviting children to solve problems collaboratively with adults.*

Which of these skills have you used most? If the skills have been helpful, please explain how. What about using them has been difficult?

7. *PBS: When you signed up for RTP's online program in the Fall, you were invited to describe a vision for your family.*

8. *Vision*

1. *What do you like about yourselves as a family?*

2. *What would you like to change?*

9. *Expectations*

a. *Do you have rules in your home? Are the rules posted in a common place (e.g., refrigerator)? What are these rules?*

b. *How do you teach those rules? Do you as a parent / guardian hold yourself to the rules?*

c. *What current expectations do you have of your children?*

d. *Do these expectations vary across circumstances (times of day, home vs. grocery store)?*

e. *What are the rewards when expectations are met? Consequences when they are not met?*

10. *Routines*

a. *What family routines has your family maintained since **before your child attended** the RTP Summer Program?*

b. *What family routines has your family established **since your child returned home** from the RTP Summer Program?*

11. *Habits*

a. *What habits exist in the family (parent or child) that are desirable?*

- b. Have you noticed any new habits since he / she returned home from RTP?*
- c. Are there any negative child habits you wish your child might change?*
- d. Are there any parenting habits that you would like to change?*

Just a few more questions:

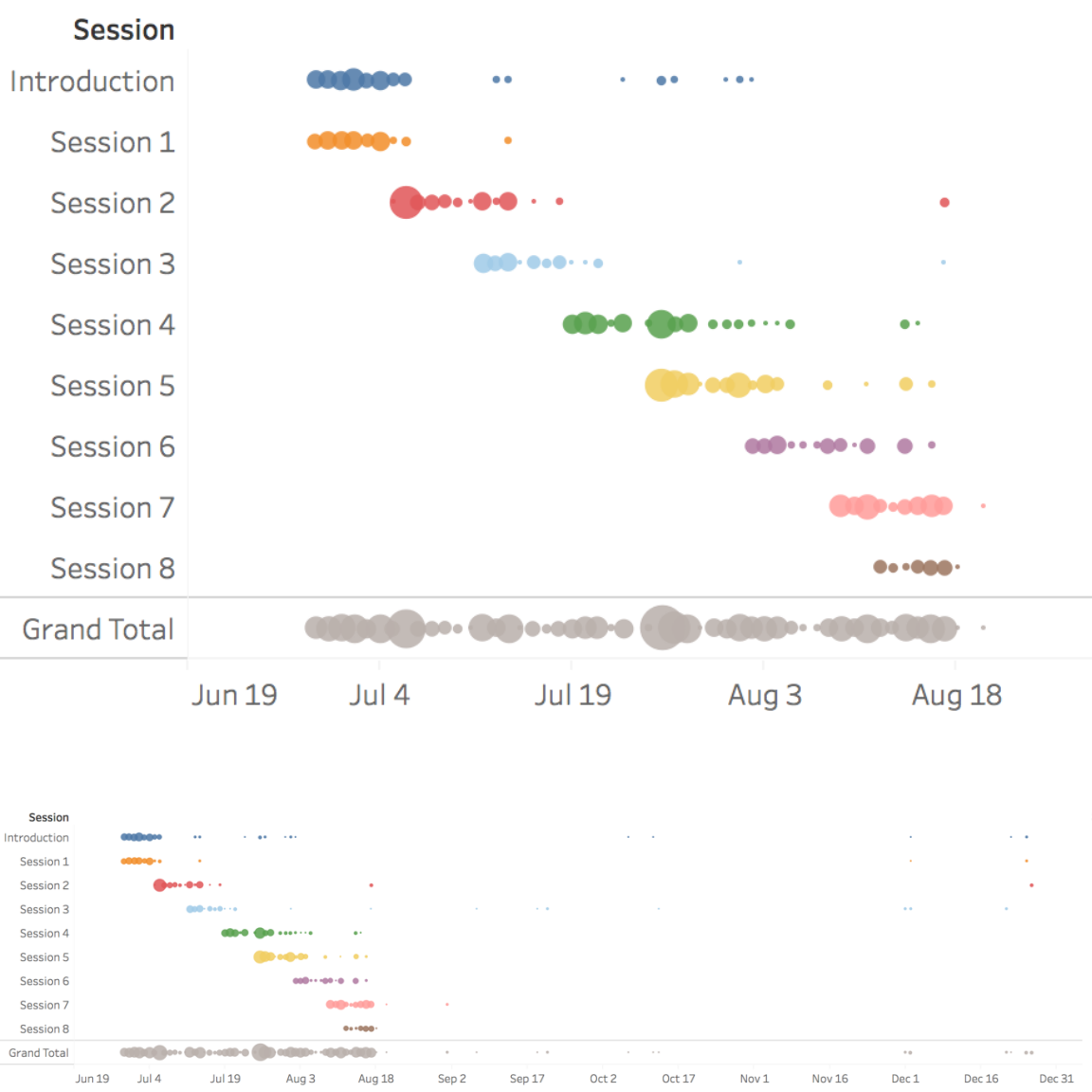
- 1. When problems come up, how have you solved them since your child returned home?*
- 2. What is important to you as a family?*
- 3. End interview*
 - Is there anything else that you think would be important to share before we end our interview today? Do you have any questions/final comments?*
- TURN OFF RECORDER and CONFIRM ADDRESS to send \$20 Amazon gift card*

Appendix 3: Video list

Session	Presenter	Video title	Video length	Avg Session Length
Welcome	RTP	Welcome	00:01:32	00:01:32
Introduction	RTP	Family Program introduction	00:00:59	
	RTP	How to use these videos	00:03:05	Avg length
	RTP	Family Program features	00:00:55	00:01:40
Session 1	RTP	NH Arrival Day	00:03:45	
	RTP	Boston Arrival Day	00:04:09	
	RTP	Common concerns	00:04:08	Avg length
	RTP	Preparing for concerns	00:07:45	00:04:57
Session 2	RTP	Routines and structures	00:03:23	
	RTP	Space to grow	00:05:52	
	RTP	Introduction to PBS	00:04:34	
	RTP	Values, expectations, and routines	00:04:01	Avg length
	RTP	Bringing PBS home	00:06:06	00:04:28
Session 3	RTP	Reasons for routines	00:02:27	
	RTP	How habits work	00:02:42	Avg length
	RTP	Routines at RTP	00:01:57	00:02:22
Session 4	CPS developer	“Kids do well if they can”	00:06:08	
	CPS developer	Why some rewards and consequences don’t work	00:06:13	
	CPS developer	The trouble with motivation	00:05:07	
	CPS developer	Teachable moments vs. savable moments	00:04:54	
	CPS developer	Challenging behavior is like a learning disability	00:05:21	Avg length
	CPS developer	This approach just makes sense	00:03:09	00:05:09
Session 5	CPS developer	Getting started with this approach	00:03:09	
	CPS developer	Prioritizing what to work on	00:05:28	
	CPS developer	Identifying skills kids that struggle with	00:04:33	
	CPS developer	Examples of lagging skills	00:05:58	
	CPS developer	Focusing on skills	00:06:06	Avg length
	CPS developer	But don’t some kids just ‘not want to’?	00:02:23	00:04:36
Session 6	CPS developer	Goals of this approach	00:05:05	
	CPS developer	Why Plan A can cause challenging behavior	00:05:36	
	CPS developer	The benefits of Plan B	00:06:27	Avg length
	CPS developer	When to use Plan A vs. Plan B	00:04:57	00:05:31
Session 7	CPS developer	Preparing for intervention	00:03:26	

	CPS developer	Why empathy is so important	00:03:59	
	CPS developer	Here is one of the most important tips	00:05:35	
	CPS developer	What does this actually look like?	00:06:58	
	CPS developer	Sharing the adult concern	00:06:59	
Session 7	CPS developer	Skills learned using Plan B	00:06:47	
	CPS developer	The benefits of Plan B for all kids	00:05:57	Avg length
	CPS developer	Questions	00:06:59	00:05:50
Session 8	RTP	The most important transition is coming home	00:03:37	Avg length
	RTP	Preparing for Departure day	00:02:53	00:03:15
				Avg overall length
			Total time	
			3:11:04	00:04:33

Appendix 4: Figure 19. Overall starts by session, across time



REFERENCES

- Abidin, R. R. (1990). Introduction to the special issue: The stresses of parenting. *Journal of Clinical Child Psychology*, 19(4), 298-301.
- Abidin, R. R. (1992). The determinants of parenting behavior. *Journal of Clinical Child Psychology*, 21(4), 407-412.
- Abidin, R. R. (1995). Parenting Stress Index (3rd ed).
- Adner, R. (2012). *The wide lens: A new strategy for innovation*: Penguin UK.
- Albert, W., & Tullis, T. (2013). *Measuring the user experience: collecting, analyzing, and presenting usability metrics*: Newnes.
- Albin, R., Lucyshyn, J., Horner, R., & Flannery, K. (1996). Contextual fit for behavioral support plans: A model for “goodness of fit.” *Positive Behavioral Support: Including people with difficult behavior in the community*, 8, 98.
- Antonini, T. N., Raj, S. P., Oberjohn, K. S., Cassedy, A., Makoroff, K. L., Fouladi, M., & Wade, S. L. (2014). A pilot randomized trial of an online parenting skills program for pediatric traumatic brain injury: improvements in parenting and child behavior. *Behavior Therapy*, 45(4), 455-468.
- Bagby, M. S., Dickie, V. A., & Baranek, G. T. (2012). How sensory experiences of children with and without autism affect family occupations. *American Journal of Occupational Therapy*, 66(1), 78-86.
- Baggett, K., Davis, B., Feil, E., Sheeber, L., Landry, S., Leve, C., & Johnson, U. (2017). A randomized controlled trial examination of a remote parenting intervention:

- engagement and effects on parenting behavior and child abuse potential. *Child Maltreatment*, 22(4), 315-323.
- Bai, Z., & Blackwell, A. F. (2012). Analytic review of usability evaluation in ISMAR. *Interacting with Computers*, 24(6), 450-460.
- Baker, B. L., & Blacher, J. (2002). For better or worse? Impact of residential placement on families. *Mental Retardation*, 40(1), 1-13.
- Baker, C. N., Arnold, D. H., & Meagher, S. (2011). Enrollment and attendance in a parent training prevention program for conduct problems. *Prevention Science*, 12(2), 126-138.
- Baker, S. (2017). Broadening the reach of evidence-based parenting interventions: Evaluation of a brief online version of the Triple P–Positive Parenting Program.
- Baker, S., & Sanders, M. R. (2017). Predictors of Program Use and Child and Parent Outcomes of A Brief Online Parenting Intervention. *Child Psychiatry & Human Development*, 48(5), 807-817.
- Baker, S., Sanders, M. R., Turner, K. M., & Morawska, A. (2017). A randomized controlled trial evaluating a low-intensity interactive online parenting intervention, Triple P Online Brief, with parents of children with early onset conduct problems. *Behaviour Research And Therapy*, 91, 78-90.
- Bandura, A. (1969). *Principles of behavior modification*. Oxford: Holt, Rinehart, & Winston
- Bandura, A. (1977). Self-efficacy: toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191.

- Barrera, M., Prelow, H. M., Dumka, L. E., Gonzales, N. A., Knight, G. P., Michaels, M. L., . . . Tein, J. (2002). Pathways from family economic conditions to adolescents' distress: Supportive parenting, stressors outside the family, and deviant peers. *Journal of Community Psychology, 30*(2), 135-152.
- Bates, B. C., English, D. J., & Kouidou-Giles, S. (1997). *Residential treatment and its alternatives: A review of the literature*. Paper presented at the Child and Youth Care Forum.
- Baumel, A., Pawar, A., Kane, J. M., & Correll, C. U. (2016). Digital parent training for children with disruptive behaviors: Systematic review and meta-analysis of randomized trials. *Journal of Child and Adolescent Psychopharmacology, 26*(8), 740-749.
- Berge, J. M., Law, D. D., Johnson, J., & Wells, M. G. (2010). Effectiveness of a psychoeducational parenting group on child, parent, and family behavior: a pilot study in a family practice clinic with an underserved population. *Families, Systems, & Health, 28*(3), 224.
- Berzin, S. C., Singer, J., & Chan, C. (2015). Practice innovation through technology in the digital age: A grand challenge for social work. *Grand Challenges for Social Work Initiative Working Paper*(12).
- Binnendyk, L., & Lucyshyn, J. M. (2009). A family-centered positive behavior support approach to the amelioration of food refusal behavior an empirical case study. *Journal of Positive Behavior Interventions, 11*(1), 47-62.

- Blacher, J., Baker, B. L., & Feinfield, K. A. (1999). Leaving or launching? Continuing family involvement with children and adolescents in placement. *American Journal of Mental Retardation*, 104(5), 452-465.
- Boyce, W. T., Jensen, E. W., James, S. A., & Peacock, J. L. (1983). The family routines inventory: Theoretical origins. *Social Science & Medicine*, 17(4), 193-200.
- Boyd, B. A., McCarty, C. H., & Sethi, C. (2014). Families of children with autism: A synthesis of family routines literature. *Journal of Occupational Science*, 21(3), 322-333.
- Bradley, S. J., Jadaa, D.-A., Brody, J., Landy, S., Tallett, S. E., Watson, W., . . . Stephens, D. (2003). Brief psychoeducational parenting program: An evaluation and 1-year follow-up. *Journal of the American Academy of Child & Adolescent Psychiatry*, 42(10), 1171-1178.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Breitenstein, S. M., Brager, J., Ocampo, E. V., & Fogg, L. (2017). Engagement and Adherence With ez PARENT, an mHealth Parent-Training Program Promoting Child Well-Being. *Child Maltreatment*, 22(4), 295-304.
- Breitenstein, S. M., & Gross, D. (2013). Web-Based Delivery of a Preventive Parent Training Intervention: A Feasibility Study. *Journal of Child and Adolescent Psychiatric Nursing*, 26(2), 149-157.

- Breitenstein, S. M., Gross, D., & Christophersen, R. (2014). Digital delivery methods of parenting training interventions: a systematic review. *Worldviews on Evidence-Based Nursing, 11*(3), 168-176.
- Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist, 32*(7), 513.
- Bronfenbrenner, U. (2005). *Making human beings human: Bioecological perspectives on human development*: Sage.
- Buchbinder, E., & Bareqet-Moshe, O. (2011). Hope and siege: The experiences of parents whose children were placed in residential care. *Residential Treatment For Children & Youth, 28*(2), 120-139.
- Burns, B. J., Hoagwood, K., & Mrazek, P. J. (1999). Effective treatment for mental disorders in children and adolescents. *Clinical Child And Family Psychology Review, 2*(4), 199-254.
- Buschbacher, P., Fox, L., & Clarke, S. (2004). Recapturing desired family routines: A parent-professional behavioral collaboration. *Research and Practice for Persons with Severe Disabilities, 29*(1), 25-39.
- Byrne, T., Fargo, J. D., Montgomery, A. E., Munley, E., & Culhane, D. P. (2014). The relationship between community investment in permanent supportive housing and chronic homelessness. *Social Service Review, 88*(2), 234-263.
- Cairney, J., Boyle, M., Offord, D. R., & Racine, Y. (2003). Stress, social support and depression in single and married mothers. *Social Psychiatry and Psychiatric Epidemiology, 38*(8), 442-449.

- Campbell, J. L., Quincy, C., Osserman, J., & Pedersen, O. K. (2013). Coding in-depth semistructured interviews: Problems of unitization and intercoder reliability and agreement. *Sociological Methods & Research*, 42(3), 294-320.
- Carr, E., Horner, R., Turnbull, A., Marquis, J., Magito McLaughlin, D., McAtee, M., . . . Doolabh, A. (1999). Positive behavior support as an approach for dealing with problem behavior in people with developmental disabilities. *AAMR Monograph*.
- Case-Smith, J., & O'Brien, J. C. (2013). *Occupational therapy for children*: Elsevier Health Sciences.
- Cefai, J., Smith, D., & Pushak, R. E. (2005). *The Parenting Wisely parent training program: An evaluation with an Australian sample*. RMIT University, Victoria.
- Chamberlain, P. (1999). Residential care for children and adolescents with oppositional defiant disorder and conduct disorder *Handbook of disruptive behavior disorders* (pp. 495-506): Springer.
- Chi, N.-C., & Demiris, G. (2015). A systematic review of telehealth tools and interventions to support family caregivers. *Journal of Telemedicine and Telecare*, 21(1), 37-44.
- Cialdini, R. B. (2016). *Pre-suasion*. New York: Simon & Schuster.
- Clarke, S., Dunlap, G., & Vaughn, B. (1999). Family-centered, assessment-based intervention to improve behavior during an early morning routine. *Journal of Positive Behavior Interventions*, 1(4), 235-241.
- Coleman, P. K., & Karraker, K. H. (1998). Self-efficacy and parenting quality: Findings and future applications. *Developmental Review*, 18(1), 47-85.

- Coleman, P. K., & Karraker, K. H. (2003). Maternal self-efficacy beliefs, competence in parenting, and toddlers' behavior and developmental status. *Infant Mental Health Journal*, 24(2), 126-148.
- Connor, D. F., Doerfler, L. A., Toscano Jr, P. F., Volungis, A. M., & Steingard, R. J. (2004). Characteristics of children and adolescents admitted to a residential treatment center. *Journal of Child and Family Studies*, 13(4), 497-510.
- Cooke, L. (2010). Assessing concurrent think-aloud protocol as a usability test method: A technical communication approach. *IEEE Transactions on Professional Communication*, 53(3), 202-215.
- Cotter, K. L., Bacallao, M., Smokowski, P. R., & Robertson, C. I. (2013). Parenting interventions implementation science: How delivery format impacts the parenting wisely program. *Research on Social Work Practice*, 23(6), 639-650.
- Crnic, K., & Ross, E. (2017). Parenting stress and parental efficacy *Parental Stress and Early Child Development* (pp. 263-284): Springer.
- Crowe, T. K. (2002). Consistency of family routines over time in families with children with disabilities. *OTJR: Occupation, Participation and Health*, 22(1 suppl), 92S-93S.
- Cunningham, C. E., Bremner, R., & Boyle, M. (1995). Large group community-based parenting programs for families of preschoolers at risk for disruptive behaviour disorders: utilization, cost effectiveness, and outcome. *Journal of Child Psychology and Psychiatry*, 36(7), 1141-1159.

- Curry, J. F. (1991). Outcome research on residential treatment: Implications and suggested directions. *American Journal of Orthopsychiatry*, 61(3), 348.
- Cutrona, C. E., & Troutman, B. R. (1986). Social support, infant temperament, and parenting self-efficacy: A mediational model of postpartum depression. *Child Development*, 1507-1518.
- Czaja, S. J., & Sharit, J. (1998). Age differences in attitudes toward computers. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 53(5), P329-P340.
- Davis, L. E. (2016). *Staff Perspectives of Family Involvement in Adolescent Residential Treatment*. Doctoral Project, William James College.
- Day, D. M., Pal, A., & Goldberg, K. (1994). Assessing the post-residential functioning of latency-aged conduct disordered children. *Residential Treatment For Children & Youth*, 11(3), 45-61.
- Day, J. J., & Sanders, M. R. (2018). Do parents benefit from help when completing a self-guided parenting program online? A randomized controlled trial comparing Triple P Online with and without telephone support. *Behavior Therapy*.
- De Charms, R. (2013). *Personal causation: The internal affective determinants of behavior*. Routledge.
- Deitz, D. K., Cook, R. F., Billings, D. W., & Hendrickson, A. (2008). Brief report: a web-based mental health program: reaching parents at work. *Journal of Pediatric Psychology*, 34(5), 488-494.

- Demmitt, A. D., & Joanning, H. (1998). A parent-based description of residential treatment. *Journal of Family Psychotherapy*, 9(1), 47-66.
- Dennison, L., Morrison, L., Conway, G., & Yardley, L. (2013). Opportunities and challenges for smartphone applications in supporting health behavior change: qualitative study. *Journal of Medical Internet Research*, 15(4).
- Dodge, K. A., & Pettit, G. S. (2003). A biopsychosocial model of the development of chronic conduct problems in adolescence. *Developmental Psychology*, 39(2), 349.
- Donovan, W. L., Leavitt, L. A., & Walsh, R. O. (1990). Maternal self-efficacy: illusory control and its effect on susceptibility to learned helplessness. *Child Development*, 61(5), 1638-1647.
- Duhigg, C. (2012). *The power of habit: Why we do what we do in life and business* (Vol. 34): Random House.
- Dumas, J. E. (2005). Mindfulness-based parent training: Strategies to lessen the grip of automaticity in families with disruptive children. *Journal of Clinical Child and Adolescent Psychology*, 34(4), 779-791.
- Duncan, G. J., Magnuson, K., & Votruba-Drzal, E. (2014). Boosting family income to promote child development. *The Future of Children*, 24(1), 99-120.
- Duncan, K. M., MacGillivray, S., & Renfrew, M. J. (2017). Costs and savings of parenting interventions: results of a systematic review. *Child: Care, Health And Development*.
- Dweck, C. S. (2006). *Mindset: The new psychology of success*: Random House Incorporated.

- edX. (2016). Overview of Creating an edX Course. Retrieved from <https://www.edx.org/course/overview-creating-edx-course-edx-edx101>
- Elder, G. H. (1995). Life trajectories in changing societies. *Self-efficacy in Changing Societies*, 46-68.
- Enebrink, P., Högstöm, J., Forster, M., & Ghaderi, A. (2012). Internet-based parent management training: A randomized controlled study. *Behaviour Research And Therapy*, 50(4), 240-249.
- Epstein, R. A., Fonnesebeck, C., Potter, S., Rizzone, K. H., & McPheeters, M. (2015). Psychosocial interventions for child disruptive behaviors: a meta-analysis. *Pediatrics*, 136(5), 947-960.
- Evans, J., & Rodger, S. (2008). Mealtimes and bedtimes: Windows to family routines and rituals. *Journal of Occupational Science*, 15(2), 98-104.
- Evans, W. D., Wallace, J. L., & Snider, J. (2012). Pilot evaluation of the text4baby mobile health program. *BMC Public Health*, 12(1), 1031.
- Feil, E., Gordon, D., Waldron, H., Jones, L., & Widdop, C. (2011). Development and pilot testing of an internet-based parenting education program for teens and pre-teens: Parenting wisely. *The Family Psychologist*, 27(22), 22-26.
- Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybrid approach of inductive and deductive coding and theme development. *International Journal of Qualitative Methods*, 5(1), 80-92.
- Fiese, B. H. (2007). Routines and rituals: Opportunities for participation in family health. *OTJR: Occupation, Participation and Health*, 27(1 suppl), 41S-49S.

- Fiese, B. H., & Parke, R. D. (2002). Introduction to the special section on family routines and rituals. *Journal of Family Psychology*, 16(4), 379.
- Firestone, P., & Witt, J. E. (1982). Characteristics of families completing and prematurely discontinuing a behavioral parent-training program. *Journal of Pediatric Psychology*, 7(2), 209-222.
- Fogg, B. (2002). Persuasive Technology: Using Computers to Change What We Think and Do (Interactive Technologies).
- Fogg, B. (2008). What Causes Behavior Change? Retrieved from <http://behaviormodel.org>
- Fogg, B. (2009). *A behavior model for persuasive design*. Paper presented at the Proceedings of the 4th international Conference on Persuasive Technology.
- Fogg, B. (2012). Forget big change, start with a tiny habit: BJ Fogg at TEDxFremont. Retrieved from <https://www.youtube.com/watch?v=AdKUJxn-R8>
- Fogg, B. (2013). Fogg Method: 3 steps to changing behavior. Retrieved from <http://www.foggmethod.com>
- Fogg, B. (2016a). [Behavior Design Bootcamp].
- Fogg, B. (2016b). BJ Fogg's Behavior Model: 3 core motivators, each with two sides. Retrieved from <http://behaviormodel.org/motivation.html>
- Fogg, B. (2016c). Fogg Motivation Wave. Retrieved from <https://www.youtube.com/watch?v=Vw8P6Ht9xwY>

- Fogg, B., Cuellar, G., & Danielson, D. (2009). Motivating, influencing, and persuading users: An introduction to captology. *Human Computer Interaction Fundamentals*, 109-122.
- Foster, E. M., Johnson-Shelton, D., & Taylor, T. K. (2007). Measuring time costs in interventions designed to reduce behavior problems among children and youth. *American Journal of Community Psychology*, 40(1-2), 64-81.
- Frey, M. R., & Snow, J. N. (2005). The Personality Construct of Entitlement: An Intervention for Decreasing Attrition in Parent Education Groups. *Journal of Individual Psychology*, 61(2).
- Friars, P. M., & Mellor, D. J. (2007). Drop out from behavioral management training programs for ADHD: A prospective study. *Journal of Child and Family Studies*, 16(3), 427-441.
- Froman, R. D. (1986). Infant care self-efficacy. Retrieved from <https://eric.ed.gov/?id=ED277721>
- Gall, F. J. (1835). *On the Organ of the Moral Qualities and Intellectual Faculties: And the Plurality of the Cerebral Organs*: Marsh, Capen & Lyon.
- Gecas, V. (1989). The social psychology of self-efficacy. *Annual Review of Sociology*, 15, 291-316.
- Gerson, S., & Bassuk, E. (1980). Psychiatric emergencies: an overview. *The American Journal of Psychiatry*, 137(1), 1-11.

- Gibaud-Wallston, J., & Wandersmann, L. P. (1978). *Development and utility of the Parenting Sense of Competence Scale*: John F. Kennedy center for research on education and human development.
- Gion, C., McIntosh, K., & Horner, R. (2014). Patterns of Minor Office Discipline Referrals in Schools using SWIS. Retrieved from https://www.pbis.org/Common/Cms/files/pbisresources/EvalBrief_May2014.pdf.
- Gist, M. E., & Mitchell, T. R. (1992). Self-efficacy: A theoretical analysis of its determinants and malleability. *Academy of Management Review*, 17(2), 183-211.
- Glatz, T., & Buchanan, C. M. (2015). Over-time associations among parental self-efficacy, promotive parenting practices, and adolescents' externalizing behaviors. *Journal of Family Psychology*, 29(3), 427.
- Glatz, T., Crowe, E., & Buchanan, C. M. (2018). Internet-specific parental self-efficacy: Developmental differences and links to Internet-specific mediation. *Computers in Human Behavior*.
- Gordon, D. A. (2000). Parent training via CD-ROM: Using technology to disseminate effective prevention practices. *Journal of Primary Prevention*, 21(2), 227-251.
- Gottlieb, A. (1987). Interfaces Between Residential School, Family and Community: an Analysis of Relevant Issues. In Kashti, Y. Sc Arieli, M.(eds.) *Residential Settings and The Community: Congruence and Conflict*. London: Freund, pp. 122-139.
- Greene, R. W., Ablon, J. S., & Goring, J. C. (2003). A transactional model of oppositional behavior: Underpinnings of the Collaborative Problem Solving approach. *Journal of Psychosomatic Research*, 55(1), 67-75.

- Greene, R. W., Ablon, J. S., Goring, J. C., Raezer-Blakely, L., Markey, J., Monuteaux, M. C., . . . Rabbitt, S. (2004). Effectiveness of collaborative problem solving in affectively dysregulated children with oppositional-defiant disorder: Initial findings. *Journal of Consulting and Clinical Psychology*, 72(6), 1157.
- Greene, R. W., Ablon, J. S., & Martin, A. (2006). Use of collaborative problem solving to reduce seclusion and restraint in child and adolescent inpatient units. *Psychiatric Services*, 57(5), 610-612.
- Guest, G., & MacQueen, K. M. (2008). *Handbook for team-based qualitative research*. Rowman Altamira.
- Guo, P. J., Kim, J., & Rubin, R. (2014). *How video production affects student engagement: An empirical study of MOOC videos*. DOI: 10.1145/2556325.2566239
- Guterman, N. B., Hodges, V. G., Blythe, B. J., & Bronson, D. E. (1989). Aftercare service development for children in residential treatment. *Child and Youth Care Quarterly*, 18(2), 119-130.
- Haagenstad, J. (1992). Family members perceptions of separation and placement when a child in residential care. Doctoral dissertation, University of Alabama.
- Hagen, J. V. (1983). Aftercare as a distinct and necessary treatment phase: Results of the St. Vincent's aftercare study. *Residential Group Care & Treatment*, 1(2), 19-29.
- Hair, H. J. (2005). Outcomes for children and adolescents after residential treatment: A review of research from 1993 to 2003. *Journal of Child and Family Studies*, 14(4), 551-575.

- Harty, M. (2009). *The validation of a task-specific measure of parenting self-efficacy for use with mothers of young children*. Doctoral dissertation, University of Pretoria. Retrieved from <https://repository.up.ac.za/handle/2263/28789?show=full>.
- Hassall, R., Rose, J., & McDonald, J. (2005). Parenting stress in mothers of children with an intellectual disability: The effects of parental cognitions in relation to child characteristics and family support. *Journal of Intellectual Disability Research*, 49(6), 405-418.
- Hawkins-Rodgers, Y. (2007). Adolescents adjusting to a group home environment: A residential care model of re-organizing attachment behavior and building resiliency. *Children and Youth Services Review*, 29(9), 1131-1141.
- Heinrichs, N., Bertram, H., Kuschel, A., & Hahlweg, K. (2005). Parent recruitment and retention in a universal prevention program for child behavior and emotional problems: Barriers to research and program participation. *Prevention Science*, 6(4), 275-286.
- Herbert, M. (1995). A collaborative model of training for parents of children with disruptive behaviour disorders. *British Journal of Clinical Psychology*, 34(3), 325-342.
- Hess, A. (1990). Residential treatment: Beyond time and space. *Residential Treatment For Children & Youth*, 7(4), 41-55.
- Hess, J., Bjorklund, E., Preece, N., & Mulitalo, J. (2012). "Okay, What Do We Do Now?!" A Qualitative Study of Transition Home Following Youth Residential Treatment. *Residential Treatment For Children & Youth*, 29(3), 155-201.

- Hieneman, M., Childs, K., & Sergay, J. (2006). *Parenting with Positive Behavior Support: A Practical Guide to Resolving Your Child's Difficult Behavior*. ERIC.
- Hox, J. J., Moerbeek, M., & van de Schoot, R. (2010). *Multilevel analysis: Techniques and applications*: Routledge.
- Hudson, D. B., Campbell-Grossman, C., Ofc Fleck, M., Elek, S. M., & Shipman, A. (2003). Effects Of The New Fathers Network On First-Time Fathers' parenting Self-Efficacy And Parenting Satisfaction During The Transition To Parenthood. *Issues in Comprehensive Pediatric Nursing*, 26(4), 217-229.
- Johnson, M., Östlund, S., Fransson, G., Landgren, M., Nasic, S., Kadesjö, B., . . . Fernell, E. (2012). Attention-deficit/hyperactivity disorder with oppositional defiant disorder in Swedish children—an open study of collaborative problem solving. *Acta Paediatrica*, 101(6), 624-630.
- Johnston, C., & Mash, E. J. (1989). A measure of parenting satisfaction and efficacy. *Journal of Clinical Child Psychology*, 18(2), 167-175.
- Johnston, C., & Mash, E. J. (2001). Families of children with attention-deficit/hyperactivity disorder: review and recommendations for future research. *Clinical Child And Family Psychology Review*, 4(3), 183-207.
- Jones, H. A., Putt, G. E., Rabinovitch, A. E., Hubbard, R., & Snipes, D. (2017). Parenting stress, readiness to change, and child externalizing behaviors in families of clinically referred children. *Journal of Child and Family Studies*, 26(1), 225-233.
- Jones, T., & Prinz, R. (2005). Potential roles of parental self-efficacy in parent and child adjustment: A review. *Clinical Psychology Review*, 25(3), 341-363.

- Juffer, F., Bakermans-Kranenburg, M. J., & van IJzendoorn, M. H. (2017). Pairing attachment theory and social learning theory in video-feedback intervention to promote positive parenting. *Current Opinion in Psychology, 15*, 189-194.
- Jurkovic, G. J., Jessee, E. H., & Goglia, L. R. (1991). Treatment of parental children and their families: Conceptual and technical issues. *American Journal of Family Therapy, 19*(4), 302-314.
- Kaminski, J. W., Valle, L. A., Filene, J. H., & Boyle, C. L. (2008). A meta-analytic review of components associated with parent training program effectiveness. *Journal of Abnormal Child Psychology, 36*(4), 567-589.
- Kazdin, A. E. (1996). Dropping out of child psychotherapy: Issues for research and implications for practice. *Clinical Child Psychology and Psychiatry, 1*(1), 133-156.
- Kazdin, A. E., Holland, L., & Crowley, M. (1997). Family experience of barriers to treatment and premature termination from child therapy. *Journal of Consulting and Clinical Psychology, 65*(3), 453.
- Kelley, T., & Kelley, D. (2013). *Creative confidence: Unleashing the creative potential within us all*. Crown Business.
- Kelly, R. B., Zyzanski, S. J., & Alemagno, S. A. (1991). Prediction of motivation and behavior change following health promotion: Role of health beliefs, social support, and self-efficacy. *Social Science & Medicine, 32*(3), 311-320.
- Koerting, J., Smith, E., Knowles, M., Latter, S., Elsey, H., McCann, D., . . . Sonuga-Barke, E. (2013). Barriers to, and facilitators of, parenting programmes for

childhood behaviour problems: a qualitative synthesis of studies of parents' and professionals' perceptions. *European Child & Adolescent Psychiatry*, 22(11), 653-670.

Koome, F., Hocking, C., & Sutton, D. (2012). Why routines matter: The nature and meaning of family routines in the context of adolescent mental illness. *Journal of Occupational Science*, 19(4), 312-325.

Krahmer, E., & Ummelen, N. (2004). Thinking about thinking aloud: A comparison of two verbal protocols for usability testing. *IEEE Transactions on Professional Communication*, 47(2), 105-117.

Kruzich, J. M., Jivanjee, P., Robinson, A., & Friesen, B. J. (2003). Family caregivers' perceptions of barriers to and supports of participation in their children's out-of-home treatment. *Psychiatric Services*, 54(11), 1513-1518.

Kugler, L. (2016). Smartphone apps for social good. *Communications of the ACM*, 59(8), 18-20.

LaMendola, W., & Krysik, J. (2008). Design imperatives to enhance evidence-based interventions with persuasive technology: A case scenario in preventing child maltreatment. *Journal of Technology in Human Services*, 26(2-4), 397-422.

Lanza, H. I., & Drabick, D. A. (2011). Family routine moderates the relation between child impulsivity and oppositional defiant disorder symptoms. *Journal of Abnormal Child Psychology*, 39(1), 83-94.

- Larson, E. (2006). Caregiving and autism: How does children's propensity for routinization influence participation in family activities? *OTJR: Occupation, Participation and Health*, 26(2), 69-79.
- Lecavalier, L., Pan, X., Smith, T., Handen, B. L., Arnold, L. E., Silverman, L., . . . Aman, M. G. (2018). Parent Stress in a Randomized Clinical Trial of Atomoxetine and Parent Training for Children with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 48(4), 980-987.
- Lei, J., Sala, J., & Jasra, S. K. (2017). Identifying correlation between facial expression and heart rate and skin conductance with iMotions biometric platform. *Journal of Emerging Forensic Sciences Research*, 2(2), 53-83.
- Leichtman, M. (2008). The essence of residential treatment: III. Change and adaptation. *Residential Treatment For Children & Youth*, 25(3), 189-207.
- Leichtman, M., & Leichtman, M. L. (2001). Facilitating the transition from residential treatment into the community: I. The problem. *Residential Treatment For Children & Youth*, 19(1), 21-27.
- Lengua, L. J., Roosa, M. W., Schupak-Neuberg, E., Michaels, M. L., Berg, C. N., & Weschler, L. F. (1992). Using focus groups to guide the development of a parenting program for difficult-to-reach, high-risk families. *Family Relations*, 41(2), 163-168.
- Letarte, M.-J., Normandeau, S., & Allard, J. (2010). Effectiveness of a parent training program “Incredible Years” in a child protection service. *Child Abuse & Neglect*, 34(4), 253-261.

- Levin, M. (2014). *Designing Multi-device Experiences: An Ecosystem Approach to User Experiences Across Devices*. O'Reilly Media, Inc.
- Lewis, J. R. (1994). Sample sizes for usability studies: Additional considerations. *Human Factors*, 36(2), 368-378.
- Li, A. C., Kannry, J. L., Kushniruk, A., Chrimes, D., McGinn, T. G., Edonyabo, D., & Mann, D. M. (2012). Integrating usability testing and think-aloud protocol analysis with “near-live” clinical simulations in evaluating clinical decision support. *International Journal of Medical Informatics*, 81(11), 761-772.
- Lieberman, D. (1992). The computer's potential role in health education. *Health Communication*, 4(3), 211-225.
- Lindsay, S., Smith, S., Bellaby, P., & Baker, R. (2009). The health impact of an online heart disease support group: a comparison of moderated versus unmoderated support. *Health Education Research*, 24(4), 646-654.
- Liu, L., Chen, R., Wolf, L., & Cohen-Or, D. (2010). *Optimizing photo composition*. Paper presented at the Computer Graphics Forum.
- López, C. M., Qanungo, S., Jenkins, C. M., & Acierno, R. (2018). Technology as a means to address disparities in mental health research: A guide to “tele-tailoring” your research methods. *Professional Psychology: Research and Practice*, 49(1), 57.
- Lovejoy, M. C., Verda, M. R., & Hays, C. E. (1997). Convergent and discriminant validity of measures of parenting efficacy and control. *Journal of Clinical Child Psychology*, 26(4), 366-376.

- Lucyshyn, J. M., Albin, R. W., & Nixon, C. D. (1997). Embedding comprehensive behavioral support in family ecology: An experimental, single case analysis. *Journal of Consulting and Clinical Psychology, 65*(2), 241.
- Lucyshyn, J. M., Irvin, L. K., Blumberg, E. R., Lavery, R., Horner, R. H., & Sprague, J. R. (2004). Validating the construct of coercion in family routines: Expanding the unit of analysis in behavioral assessment with families of children with developmental disabilities. *Research and Practice for Persons with Severe Disabilities, 29*(2), 104.
- Ludmer, J. A., Sanches, M., Propp, L., & Andrade, B. F. (2018). Comparing the Multicomponent Coping Power Program to Individualized Parent–Child Treatment for Improving the Parenting Efficacy and Satisfaction of Parents of Children with Conduct Problems. *Child Psychiatry & Human Development, 49*(1), 100-108.
- Lukens, E. P. (2015). Psychoeducation. *Oxford Bibliographies*. Retrieved from <http://www.oxfordbibliographies.com/view/document/obo-9780195389678/obo-9780195389678-0224.xml>
- Lukens, E. P., & McFarlane, W. R. (2006). Psychoeducation as Evidence-Based Practice. *Foundations of Evidence-Based Social Work Practice, 291*.
- Lundahl, B., Risser, H. J., & Lovejoy, M. C. (2006). A meta-analysis of parent training: Moderators and follow-up effects. *Clinical Psychology Review, 26*(1), 86-104.
- Luu, T. M., Xie, L. F., Peckre, P., Cote, S., Karsenti, T., Walker, C.-D., & Gosselin, J. (2017). Web-Based Intervention to Teach Developmentally Supportive Care to

- Parents of Preterm Infants: Feasibility and Acceptability Study. *JMIR Research Protocols*, 6(11).
- MacDonell, K. W., & Prinz, R. J. (2017). A review of technology-based youth and family-focused interventions. *Clinical Child and Family Psychology Review*, 20(2), 185-200.
- Maluccio, A. N., & Marlow, W. D. (1972). Residential treatment of emotionally disturbed children: A review of the literature. *The Social Service Review*, 46(2), 230-250.
- Marryat, L., Thompson, L., & Wilson, P. (2017). No evidence of whole population mental health impact of the Triple P parenting programme: findings from a routine dataset. *BMC Pediatrics*, 17(1), 40.
- Martin, A., Krieg, H., Esposito, F., Stubbe, D., & Cardona, L. (2008). Reduction of restraint and seclusion through collaborative problem solving: a five-year prospective inpatient study. *Psychiatric Services*, 59(12), 1406-1412.
- Martone, W. P., Kemp, G. F., & Pearson, S. J. (1989). The continuum of parental involvement in residential treatment: Engagement-participation-empowerment-discharge. *Residential Treatment For Children & Youth*, 6(3), 11-37.
- Mash, J., & Dozois, D. (1997). Child psychopathology: A developmental-systems perspective. In E. J. Mash & R. A. Barkley (Eds.), *Child psychopathology* (pp. 3–60). New York: Guilford.

- McLaughlin, T. W., Denney, M. K., Snyder, P. A., & Welsh, J. L. (2011). Behavior support interventions implemented by families of young children: Examination of contextual fit. *Journal of Positive Behavior Interventions*, 14, 87-97.
- Mendlowitz, S. L., Manassis, K., Bradley, S., Scapillato, D., Mieziitis, S., & Shaw, B. E. (1999). Cognitive-behavioral group treatments in childhood anxiety disorders: the role of parental involvement. *Journal of the American Academy of Child & Adolescent Psychiatry*, 38(10), 1223-1229.
- Mercier, C. A. (1899). *Sanity and insanity*: Walter Scott.
- Merikangas, K. R., He, J.-p., Burstein, M., Swanson, S. A., Avenevoli, S., Cui, L., . . . Swendsen, J. (2010). Lifetime prevalence of mental disorders in US adolescents: results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, 49(10), 980-989.
- Miller, G. E., & Prinz, R. J. (1990). Enhancement of social learning family interventions for childhood conduct disorder. *Psychological Bulletin*, 108(2), 291.
- Miller, N., & Dollard, J. (1941). *Social Learning and Imitation*: Praeger.
- Mintz, J., & Aagaard, M. (2012). The application of persuasive technology to educational settings. *Educational Technology Research and Development*, 60(3), 483-499.
- Morrissey, E. R. (1974). Sources of error in the coding of questionnaire data. *Sociological Methods & Research*, 3(2), 209-232.
- Mouton, P. Y., & Tuma, J. M. (1988). Stress, locus of control, and role satisfaction in clinic and control mothers. *Journal of Clinical Child Psychology*, 17(3), 217-224.

- Mummah, S. A., Robinson, T. N., King, A. C., Gardner, C. D., & Sutton, S. (2016). IDEAS (Integrate, Design, Assess, and Share): a framework and toolkit of strategies for the development of more effective digital interventions to change health behavior. *Journal of Medical Internet Research*, 18(12).
- Muroff, J., Robinson, W., Chassler, D., López, L. M., Gaitan, E., Lundgren, L., . . . Dejesus, D. (2017). Use of a Smartphone Recovery Tool for Latinos with Co-Occurring Alcohol and Other Drug Disorders and Mental Disorders. *Journal of Dual Diagnosis*, 13(4), 280-290.
- Muroff, J. R. (2004). *Clinical decision-making in psychiatric emergency services (PES)*. Doctoral dissertation, University of Michigan. Retrieved from <https://deepblue.lib.umich.edu/handle/2027.42/124519>.
- Newman, M. G. (2004). Technology in psychotherapy: An introduction. *Journal of Clinical Psychology*, 60(2), 141-145.
- Nielsen, J. (1994). *Enhancing the explanatory power of usability heuristics*. Paper presented at the Proceedings of the SIGCHI conference on Human Factors in Computing Systems.
- Nielsen, J., Clemmensen, T., & Yssing, C. (2002). *Getting access to what goes on in people's heads? Reflections on the think-aloud technique*. Paper presented at the Proceedings of the second Nordic conference on Human-computer interaction.
- NIMH. (2017). *Opportunities and Challenges of Developing Information Technologies on Behavioral and Social Science Clinical Research*. Retrieved from <https://www.nimh.nih.gov/about/advisory-boards-and->

groups/namhc/reports/opportunities-and-challenges-of-developing-information-technologies-on-behavioral-and-social-science-clinical-research.shtml

- Nock, M. K., & Photos, V. (2006). Parent motivation to participate in treatment: Assessment and prediction of subsequent participation. *Journal of Child and Family Studies, 15*(3), 333-346.
- Norman, Å., Bohman, B., Nyberg, G., & Schäfer Elinder, L. (2018). Psychometric Properties of a Scale to Assess Parental Self-Efficacy for Influencing Children's Dietary, Physical Activity, Sedentary, and Screen Time Behaviors in Disadvantaged Areas. *Health Education & Behavior, 45*(1), 132-140.
- Norman, D. (2013). *The design of everyday things: Revised and expanded edition*: Basic Books (AZ).
- O'brien, M., & Daley, D. (2011). Self-help parenting interventions for childhood behaviour disorders: a review of the evidence. *Child: Care, Health And Development, 37*(5), 623-637.
- O'Leary, A. (1985). Self-efficacy and health. *Behaviour Research And Therapy, 23*(4), 437-451.
- O'Neill, H., & Woodward, R. (2002). Evaluation of the Parenting Wisely CD-ROM parent-training programme: An Irish replication. *Irish Journal of Psychology, 23*(1-2), 62-72.
- Ohan, J. L., Leung, D. W., & Johnston, C. (2000). The Parenting Sense of Competence scale: Evidence of a stable factor structure and validity. *Canadian Journal of*

Behavioural Science/Revue canadienne des sciences du comportement, 32(4), 251.

Olds, D. L., Sadler, L., & Kitzman, H. (2007). Programs for parents of infants and toddlers: recent evidence from randomized trials. *Journal of Child Psychology and Psychiatry*, 48(3-4), 355-391.

Ollendick, T. H., Greene, R. W., Austin, K. E., Fraire, M. G., Halldorsdottir, T., Allen, K. B., . . . Cunningham, N. R. (2016). Parent management training and collaborative & proactive solutions: A randomized control trial for oppositional youth. *Journal of Clinical Child & Adolescent Psychology*, 45(5), 591-604.

Owens, P. L., Hoagwood, K., Horwitz, S. M., Leaf, P. J., Poduska, J. M., Kellam, S. G., & Ialongo, N. S. (2002). Barriers to children's mental health services. *Journal of the American Academy of Child & Adolescent Psychiatry*, 41(6), 731-738.

Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2015). Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 42(5), 533-544.

Pancer, S. M., George, M., & Gebotys, R. J. (1992). Understanding and predicting attitudes towards computers. *Computers in Human Behavior*, 8(2-3), 211-222.

parentingwisely.com. (2018). Parenting Wisely, A Highly Interactive Parenting Program. Retrieved from <https://www.parentingwisely.com>

Parsons, D., Cordier, R., Vaz, S., & Lee, H. C. (2017). Parent-Mediated Intervention Training Delivered Remotely for Children With Autism Spectrum Disorder

- Living Outside of Urban Areas: Systematic Review. *Journal of Medical Internet Research*, 19(8).
- Pearlin, L. I. (1983). Role strains and personal stress. In Kaplan, H.B. (ed.) *Psychosocial Stress: Trends in theory and research*. New York: Academic Press, pp. 3-32.
- Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the Horizon*, 9(5), 1-6.
- Prinz, R. J., & Sanders, M. R. (2007). Adopting a population-level approach to parenting and family support interventions. *Clinical Psychology Review*, 27(6), 739-749.
- Rafalovich, A. (2001). The conceptual history of attention deficit hyperactivity disorder: idiocy, imbecility, encephalitis and the child deviant, 1877-1929. *Deviant Behavior*, 22(2), 93-115.
- Raikes, H. A., & Thompson, R. A. (2005). Efficacy and social support as predictors of parenting stress among families in poverty. *Infant Mental Health Journal*, 26(3), 177-190.
- Reitman, D., Currier, R. O., & Stickle, T. R. (2002). A critical evaluation of the Parenting Stress Index-Short Form (PSI-SF) in a head start population. *Journal of Clinical Child and Adolescent Psychology*, 31(3), 384-392.
- Renninger, K. A., Cai, M., Lewis, M. C., Adams, M. M., & Ernst, K. L. (2011). Motivation and learning in an online, unmoderated, mathematics workshop for teachers. *Educational Technology Research and Development*, 59(2), 229-247.
- Robst, J., Armstrong, M., Dollard, N., Rohrer, L., Sharrock, P., Batsche, C., & Reader, S. (2013). Characteristics related to family involvement in youth residential mental health treatment. *Children and Youth Services Review*, 35(1), 40-46.

- Rodger, S., & Umaibalan, V. (2011). The routines and rituals of families of typically developing children compared with families of children with autism spectrum disorder: An exploratory study. *The British Journal of Occupational Therapy*, 74(1), 20-26.
- Rodrigue, J. R., Geffken, G. R., Clark, J. E., Hunt, F., & Fishel, P. (1994). Parenting satisfaction and efficacy among caregivers of children with diabetes. *Children's Health Care*, 23(3), 181-191.
- Roskam, I., Brassart, E., Loop, L., Mouton, B., & Schelstraete, M.-A. (2015). Stimulating parents' self-efficacy beliefs or verbal responsiveness: which is the best way to decrease children's externalizing behaviors? *Behaviour Research And Therapy*, 72, 38-48.
- Ruskin, P. E., Silver-Aylaian, M., Kling, M. A., Reed, S. A., Bradham, D. D., Hebel, J. R., . . . Hauser, P. (2004). Treatment outcomes in depression: comparison of remote treatment through telepsychiatry to in-person treatment. *American Journal of Psychiatry*, 161(8), 1471-1476.
- Sanders, M. R. (2008). Triple P-Positive Parenting Program as a public health approach to strengthening parenting. *Journal of Family Psychology*, 22(4), 506.
- Sanders, M. R., Markie-Dadds, C., & Turner, K. M. T. (1999). *Practitioner's Manual for Enhanced Triple P*. Brisbane, Australia: Families International Publishing.
- Sanders, M. R., & Woolley, M. (2005). The relationship between maternal self-efficacy and parenting practices: Implications for parent training. *Child: Care, Health And Development*, 31(1), 65-73.

- Sauro, J., & Lewis, J. R. (2016). *Quantifying the user experience: Practical statistics for user research*. Morgan Kaufmann.
- Schaaf, R. C., Toth-Cohen, S., Johnson, S. L., Outten, G., & Benevides, T. W. (2011). The everyday routines of families of children with autism: Examining the impact of sensory processing difficulties on the family. *Autism, 15*(3), 373-389.
- Segal, D., Chen, P. Y., Gordon, D. A., Kacir, C. D., & Gylys, J. (2003). Development and evaluation of a parenting intervention program: Integration of scientific and practical approaches. *International Journal of Human-Computer Interaction, 15*(3), 453-467.
- Serketich, W. J., & Dumas, J. E. (1996). The effectiveness of behavioral parent training to modify antisocial behavior in children: A meta-analysis. *Behavior Therapy, 27*(2), 171-186.
- Shanks, D. R. (1995). *The psychology of associative learning* (Vol. 13): Cambridge University Press.
- Sharrock, P. J., Dollard, N., Armstrong, M. I., & Rohrer, L. (2013). Provider perspectives on involving families in children's residential psychiatric care. *Residential Treatment For Children & Youth, 30*(1), 40-54.
- Sherer, M., & Adams, C. H. (1983). Construct validation of the self-efficacy scale. *Psychological Reports, 53*(3), 899-902.
- Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. Oxford University Press.
- Small, R. (2003). Charting a new course. *Contribution to Residential Treatment, 72-76*.

- Sofronoff, K., & Farbotko, M. (2002). The effectiveness of parent management training to increase self-efficacy in parents of children with Asperger syndrome. *Autism*, 6(3), 271-286.
- Spool, J., & Schroeder, W. (2001). *Testing web sites: Five users is nowhere near enough*. Paper presented at the CHI'01 extended abstracts on Human factors in computing systems.
- Spoth, R., & Redmond, C. (1996). A theory-based parent competency model incorporating intervention attendance effects. *Family Relations*, 45(2), 139-147.
- Spoth, R., & Redmond, C. (2000). Research on family engagement in preventive interventions: Toward improved use of scientific findings in primary prevention practice. *Journal of Primary Prevention*, 21(2), 267-284.
- Spoth, R., Redmond, C., Hockaday, C., & Shin, C. Y. (1996). Barriers to participation in family skills preventive interventions and their evaluations: A replication and extension. *Family Relations*, 45(3), 247-254.
- Spoth, R. L., & Conroy, S. M. (1993). Survey of Prevention-Relevant Beliefs and Efforts to Enhance Parenting Skills Among Rural Parents. *The Journal of Rural Health*, 9(3), 227-239.
- Sternberg, N., Thompson, R. W., Smith, G., Klee, S., Cubellis, L., Davidowitz, J., . . . Mathew Smith, M. (2013). Outcomes in Children's Residential Treatment Centers: A National Survey 2010.
- Stewart, S. L., Rick, J., Currie, M., & Rielly, N. (2009). Collaborative problem solving approach in clinically referred children: a residential program evaluation.

Unpublished manuscript, Department of Applied Research and Education Child and Parent Resource Institute, London, Ontario, Canada.

- Stroul, B. A. (1996). *Children's mental health: Creating systems of care in a changing society*: Paul H Brookes Publishing Company.
- Summers, J., Larkin, D., & Dewey, D. (2008). Activities of daily living in children with developmental coordination disorder: dressing, personal hygiene, and eating skills. *Human Movement Science*, 27(2), 215-229.
- Tate, D. F., & Zabinski, M. F. (2004). Computer and Internet applications for psychological treatment: update for clinicians. *Journal of Clinical Psychology*, 60(2), 209-220.
- Taylor, D., & Alpert, S. (1973). *Continuity and support following residential treatment*: Child Welfare League of America.
- Taylor, T., Webster-Stratton, C., Feil, E. G., Broadbent, B., Widdop, C. S., & Severson, H. H. (2008). Computer-based intervention with coaching: An example using the incredible years program. *Cognitive Behaviour Therapy*, 37(4), 233-246.
- Teti, D. M., & Gelfand, D. M. (1991). Behavioral competence among mothers of infants in the first year: the mediational role of maternal self-efficacy. *Child Development*, 62(5), 918-929.
- Thaler, R., & Sunstein, C. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. Springer.
- Thompson, L. F., & Lynch, B. J. (2003). Web-based instruction: Who is inclined to resist it and why? *Journal of Educational Computing Research*, 29(3), 375-385.

- Tom, A., Bosker, T. A. S. R. J., & Bosker, R. J. (1999). *Multilevel analysis: an introduction to basic and advanced multilevel modeling*. Sage.
- Tseng, S., & Fogg, B. (1999). Credibility and computing technology. *Communications of the ACM*, 42(5), 39-44.
- Tucker, S., Gross, D., Fogg, L., Delaney, K., & Lapporte, R. (1998). The long-term efficacy of a behavioral parent training intervention for families with 2-year-olds. *Research in Nursing & Health*, 21(3), 199-210.
- Turner, K. M., & Sanders, M. R. (2006). Help when it's needed first: a controlled evaluation of brief, preventive behavioral family intervention in a primary care setting. *Behavior Therapy*, 37(2), 131-142.
- Uehara, E., Flynn, M., Fong, R., Brekke, J., Barth, R. P., Coulton, C., . . . Lubben, J. (2013). Grand challenges for social work. *Journal of the Society for Social Work and Research*, 4(3), 165-170.
- Vance, A. J., & Brandon, D. H. (2017). Delineating Among Parenting Confidence, Parenting Self-Efficacy, and Competence. *Advances in Nursing Science*, 40(4), E18-E37.
- Wagner, N., Hassanein, K., & Head, M. (2014). The impact of age on website usability. *Computers in Human Behavior*, 37, 270-282.
- Wagner, S. M. (2008). *Motivation to change parenting in mothers of children with and without ADHD: Associations with demographic and psychological characteristics*. Doctoral dissertation, West Virginia University. Retrieved from http://wvuscholar.wvu.edu:8881/R/?func=dbin-jump-full&object_id=13937

- Walsh, F. (2002). A family resilience framework: Innovative practice applications. *Family Relations*, 51(2), 130-137.
- Warner, L., & Pottick, K. (2003). Nearly 66,000 youth live in US mental health programs. Latest findings in children's mental health (Policy Report submitted to the Annie E. Casey Foundation). New Brunswick, NJ: Institute for Health. *Health Care Policy, and Aging Research, Rutgers University*, 2(1).
- Waters, L., & Sun, J. (2016). Can a Brief Strength-Based Parenting Intervention Boost Self-Efficacy and Positive Emotions in Parents? *International Journal of Applied Positive Psychology*, 1(1-3), 41-56.
- Weaver, C. M., Shaw, D. S., Dishion, T. J., & Wilson, M. N. (2008). Parenting self-efficacy and problem behavior in children at high risk for early conduct problems: The mediating role of maternal depression. *Infant Behavior and Development*, 31(4), 594-605.
- Webster-Stratton, C. (1981). Modification of mothers' behaviors and attitudes through a videotape modeling group discussion program. *Behavior Therapy*, 12(5), 634-642.
- Webster-Stratton, C. (1990a). Enhancing the effectiveness of self-administered videotape parent training for families with conduct-problem children. *Journal of Abnormal Child Psychology*, 18(5), 479-492.
- Webster-Stratton, C. (1990b). Long-term follow-up of families with young conduct problem children: From preschool to grade school. *Journal of Clinical Child Psychology*, 19(2), 144-149.

Webster-Stratton, C. (1992). Individually administered videotape parent training: “Who benefits?”. *Cognitive Therapy and Research*, 16(1), 31-52.

Webster-Stratton, C. (2016). The incredible years: Use of play interventions and coaching for children with externalizing difficulties. In L. A. Reddy, T. M. Files-Hall, & C. E. Schaefer (Eds.), *Empirically based play interventions for children* (pp. 137-158). Washington, DC, US: American Psychological Association.

Webster-Stratton, C., Kolpacoff, M., & Hollinsworth, T. (1988). Self-administered videotape therapy for families with conduct-problem children: Comparison with two cost-effective treatments and a control group. *Journal of Consulting and Clinical Psychology*, 56(4), 558.

Webster-Stratton, C., & Reid, M. (2010). Adapting the Incredible Years, an evidence-based parenting programme, for families involved in the child welfare system. *Journal of Children's Services*, 5(1), 25-42.

Webster-Stratton, C., & Herman, K. C. (2010). Disseminating Incredible Years Series early-intervention programs: integrating and sustaining services between school and home. *Psychology in the Schools*, 47(1), 36-54.

Webster-Stratton, C., Rinaldi, J., & Reid, J. M. (2011). Long-term outcomes of Incredible Years Parenting Program: Predictors of adolescent adjustment. *Child and Adolescent Mental Health*, 16(1), 38-46.

wediko.org. (2016).

- Wells-Parker, E., Miller, D. I., & Topping, J. S. (1990). Development of control-of-outcome scales and self-efficacy scales for women in four life roles. *Journal of Personality Assessment*, 54(3-4), 564-575.
- Whittaker, J., Ainsworth, F., & Fulcher, L. (1987). Group care for children. *Encyclopedia of Social Work*, 1, 672-682.
- Whittaker, J., Schinke, S., & Gilchrist, L. (1986). The ecological paradigm in child, youth, and family services: Implications for policy and practice. *The Social Service Review*, 60(4), 483-503.
- Whittaker, K., & Cowley, S. (2012). A survey of parental self-efficacy experiences: maximising potential through health visiting and universal parenting support. *Journal of Clinical Nursing*, 21(21-22), 3276-3286.
- WHO (World Health Organization). (2009). Preventing violence through the development of safe, stable and nurturing relationships between children and their parents and caregivers. Retrieved from http://apps.who.int/iris/bitstream/handle/10665/44088/9789241597821_eng.pdf;jsessionid=F43E4996192FEF391AC88240F464EF05?sequence=1
- Wollons, R. L. (1993). *Children at risk in America: History, concepts, and public policy*: SUNY Press.
- Woolrych, A., & Cockton, G. (2001). *Why and when five test users aren't enough*. Paper presented at the Proceedings of IHM-HCI 2001 conference.
- Zelechowski, A. D., Sharma, R., Beserra, K., Miguel, J. L., DeMarco, M., & Spinazzola, J. (2013). Traumatized youth in residential treatment settings: Prevalence, clinical

presentation, treatment, and policy implications. *Journal of Family Violence*, 28(7), 639-652.

Zimmerman, D. P., Nansel, T. R., Raines, S., Jackson, D. L., Teal, C. R., Force, R. C., . .

. Burdsal, C. A. (1998). A survey of residential treatment centers' outcome research practices. *Residential Treatment For Children & Youth*, 15(4), 45-59.

Zipple, A., & Spaniol, L. (1987). Current educational and supportive models of family intervention. *Families of the Mentally Ill: Coping and Adaptation*, 261-277.

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