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Evaluating the Effects of a Remote ACT-Based Intervention Designed for Children with Parent-Child Dyads

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**EVALUATING THE EFFECTS OF A REMOTE ACT-BASED INTERVENTION
DESIGNED FOR CHILDREN WITH PARENT-CHILD DYADS**

A Master's Thesis

Presented to

The Graduate College of
Missouri State University

In Partial Fulfillment

Of the Requirements for the Degree

Master of Science, Clinical Psychology

By

Crystal Kaylan Tracy

May 2021

EVALUATING THE EFFECTS OF A REMOTE ACT-BASED INTERVENTION DESIGNED FOR CHILDREN WITH PARENT-CHILD DYADS

Clinical Psychology

Missouri State University, May 2021

Master of Science

Crystal Kaylan Tracy

ABSTRACT

The current study evaluated a remote Acceptance and Commitment Therapy (ACT)-based intervention designed for children implemented with parent involvement. Each parent-child dyad completed a total of nine sessions, which included an introductory session, one baseline session, six ACT-based intervention sessions, and one follow-up session. The study was conducted using a multiple-baseline across participants design. The effects of the intervention on both the parent and child well-being were evaluated using between sessions measures that measured values-based behavior and challenging behaviors. Pre- and post-test measures were taken on psychological flexibility, parent stress, and child behavior. Although the present intervention is designed for the child, it was suspected that the parents would have consequential benefits from participating and interaction with their children during intervention sessions. The intervention was designed to improve psychological flexibility for both children and parents, increase values-directed behavior, and decrease parental stress and challenging behaviors. The results suggested a decrease in challenging behaviors and a minimal increase in parent psychological flexibility. The data surrounding values-based behaviors and values-directed parent-child interaction was inconsistent; therefore, conclusions were not drawn from this data. Further, the results of this study may demonstrate the benefits of a child-focused intervention on challenging behaviors and parent psychological flexibility.

KEYWORDS: acceptance and commitment therapy, parent-child interaction, challenging behaviors, parent stress, psychological flexibility, values-directed behavior, values-directed parent-child interaction

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In the interest of academic freedom and the principle of free speech, approval of this thesis indicates the format is acceptable and meets the academic criteria for the discipline as determined by the faculty that constitute the thesis committee. The content and views expressed in this thesis are those of the student-scholar and are not endorsed by Missouri State University, its Graduate College, or its employees.

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INTRODUCTION

The prevalence of mental, behavioral, and developmental disorders have been on the rise, and in 2016 it was reported that one in six U.S. children aged two to eight years (17.4%) were diagnosed with a disorder, while the prevalence of many these disorders increased with age (Centers for Disease Control, 2016). The demand for evidence-based treatment and intervention services for children and their families become increasingly apparent due to the challenging behaviors and parent psychological stress resulting from childhood disorders. There is wide-spread research on interventions for both children and parents of children experiencing these disorders; however, there is limited empirical support for interventions designed for parent-child interaction. Treatments and interventions designed solely for children vary from Play Therapy to Cognitive Behavioral Therapy (CBT). Treatments and interventions designed for parents typically include parent training for behavior management. While there is limited research on parent-child interventions, mindfulness training and Acceptance and Commitment Therapy (ACT) protocols have shown to be effective in increasing positive parent-child interactions, and parent and child well-being (Gould, Tarbox, & Coyne, 2018).

LITERATURE REVIEW

Challenging Behaviors & Parental Psychological Stress

Challenging behaviors are a typical component of child development and is experienced by every parent-child dyad. The correction of misbehavior serves several essential functions for the child, such as teaching the child what is safe and what is not, how to communicate to get their needs met, what thoughts, feelings, and behaviors are appropriate to have towards others, responsibility, and self-awareness (Bailey, 2009). Misbehavior appears differently depending on the developmental stage and age range of the child. It ranges from temper tantrums to disregarding a parent's instructions, to even more severe behaviors. Normative misbehaviors, as described above, can be distinguished from disruptive or challenging behaviors displayed by clinical or sub-clinical populations of children. Previous research has suggested that normative misbehaviors and disruptive or challenging behaviors can be distinguished by quality of behavior and pervasiveness across contexts (Wakschlag et al., 2007). Although normative misbehaviors in typically developing children are difficult to control, challenging behaviors may be particularly prominent and difficult to control in children with disorders.

Clinically concerning behaviors associated with childhood disorders include: persistent and active defiant behavior after multiple prompts from an adult, difficulty recovering to a positive mood after requiring substantial adult support, and intense aggression; whereas normative misbehavior in typically developing children includes low-levels of defiance and compliance with prompts, mild difficulty recovering a positive mood, and mild aggression or low intensity aggression that seems impulsive (Wakschlag et al., 2007). Children with disorders associated with challenging behaviors, such as Autism Spectrum Disorder (ASD), show

significantly higher rates of behavioral and emotional problems, such as internalizing and externalizing problems, emotional reactivity, anxious and depressed mood, being withdrawn, attention problems, and aggressive behavior, as compared to their typically developing peers (Giovagnoli et al., 2015). Furthermore, these psychological and emotional challenges that children with disorders face have transferable effects to parents and the family function as a whole.

Parenting can be associated with high levels of psychological distress regardless of the frequency of misbehavior, type of misbehavior, or developmental stage of the child. The psychological and emotional distress experienced by the majority of parents can negatively affect how a parent reacts to or manages their child. Negative reactions or negative behavior management have lasting effects on the parent-child relationship. Further, parents of children with disorders are at increased risk of psychological and emotional stress due to the dynamic nature of the parent-child relationship. Elevated levels of parental psychological distress can lead to increased risk of familial dysfunction, marital disruption, and comorbid mental and physical conditions (Emerson, 2003). Parents of children with ASD display significantly higher clinical scores in distress, parent-child dysfunctional interaction, and reports of having a difficult to manage child as compared to parents of children who are typically developing (Giovagnoli et al., 2015). Researchers have found challenging behaviors in children with disorders can occur as soon as 3 years of age—often immediately having negative impacts on the parents (Eisenhower, Baker, & Blacher, 2005). Additionally, mothers of children with Intellectual Disabilities report their child's difficulties have greater psychological and social impact as compared to mothers of children who are typically developing (Emerson, 2003). Recurrent challenging behaviors can lead to lower parental tolerance, more psychological distress, and fewer positive parent-child

interactions, further provoking parental distress (Brestan, Eyberg, Algina, Johnson, & Boggs, 2003).

Treatment & Intervention Services

Evidence-based treatment options, such as Cognitive Behavioral Therapy (CBT), are commonly used in meeting the psychological needs of children with disorders. Cognitive Behavioral Therapy focuses on thoughts and emotions that affect the child's behavior negatively. The therapist typically helps the child become aware of their thoughts and feelings, then works with the child to change the thoughts or emotional reactions that may be distorted or illogical (Centers for Disease Control, 2020). Additionally, CBT is an intervention that can be used with the child and parent simultaneously. Furthermore, Cognitive Behavioral Therapy produces highly significant reductions in clinical severity ratings and a reduction in children meeting diagnostic criteria when previously diagnosed with an anxiety disorder (Hancock et al., 2018). However, despite the wide usage and evidence base of CBT, it focuses more on neutralizing problematic behaviors in children rather than focusing on childhood cognitions or a more useful, positive perspective—the prosocial behaviors of children (Halder & Mahato, 2019).

In addition to direct interventions for children, there are parent and family interventions such as, parent training in behavior management, that can also benefit the child. During parent training in behavior management, parents learn strategies on how to implement behavior modification programs, how to improve the quality of the parent-child relationship, and how to be consistent and predictable in parenting (Enebrink, Högström, Forster, & Ghaderi, 2012). Parent training teaches the skills needed to manage challenging behaviors that are often exhibited by children diagnosed with disorders. A multifaceted intervention, which included both

structured groups that taught children cognitive-behavioral self-control and problem-solving techniques and a parenting group that taught parents child management strategies, was effective in significantly lowering delinquent behaviors posttreatment (Augimeri, Farrington, Koegl, Day, 2007). Additionally, research suggests that children show a greater reduction in conduct problems as compared to waitlist children, and parents report using more positive praise and less of harsh punishment after parents participated in an internet-based parent-training program (Enebrink et al., 2012).

In addition to child treatment and parent intervention services, it is imperative to consider appropriate interventions that serve the parent and child simultaneously. Leeming and Hayes (2016) stated that a parent's needs must not be merely defined by their ability to fulfill a role as a parent. A parent's needs must be met in order for them to foster a positive working relationship with their child. Relationships and attachments formed in childhood are essential to a child's development. Further, Parent-Child Interaction Therapy (PCIT) is the only evidence-based practice in which the parent and child are treated together throughout the course of all treatment sessions (PCIT International). Parent-Child Interaction Therapy includes two phases, the relationship enhancement phase and the discipline and compliance phase, where the therapist coaches the parents while they interact with their children to teach strategies that promote positive behaviors in children (Eyberg et al., 2001). During the first phase of treatment the parent and child practice child-directed interaction where the child takes the lead of the sessions, whereas the parent takes the lead using parent-directed interaction during the second phase of treatment. A review of 17 studies that included 628 preschool-aged children identified as exhibiting a disruptive behavior disorder concluded that involvement in PCIT resulted in clinically significant improvements in child behavior functioning (Gallagher, 2003).

Additionally, Parent-Child Interaction Therapy has demonstrated long-term effects by reducing child behavior problems and parenting stress to posttreatment levels up to two years after completion of the intervention (Eyberg et al., 2001). Parent-Child Interaction Therapy offers remarkable outcomes for both the parent and child and has the benefits of treating the parent and child simultaneously while utilizing live coaching. Further, PCIT techniques may be used in conjunction with other evidence-based approaches, such as ACT, to enhance psychological outcomes.

Acceptance and Commitment Therapy

Acceptance and Commitment Therapy is a mindfulness-based behavior therapy that has recently demonstrated effectiveness with a diverse clinical population in alleviating psychological and emotional distress (Harris, 2006). The goal of ACT is to learn how to lead a rich and meaningful life while accepting what is out of your personal control or in other words, to increase psychological flexibility. Psychological flexibility is the ability to contact the present moment consciously with openness to our experiences, regardless of unpleasant thoughts, feelings, or sensations, while behaving in a way that is consistent with one's values (Biglan, Hayes, Pistorello, 2008). Being psychologically flexible allows one to deal with stress, improve well-being, and to build a meaningful life. Further, ACT allows people to "clarify values, set meaningful goals, and do things that expand and enrich life in the long run," leading to greater psychological flexibility (Harris, 2009). There are six core therapeutic processes that make up the "hexaflex" of ACT which include: present moment awareness, defusion, acceptance, self-as-context, values, and committed action (Harris, 2009). Present moment awareness is nonevaluative awareness of physical or emotional experiences as they occur in any given

moment instead of focusing on the past or future. Defusion refers to creating space between one's thoughts and themselves to minimize the influence of the thoughts. Acceptance is the awareness and compassion for unpleasant thoughts, feelings, or sensations without any attempt to alter or avoid them. The self-as-context concept refers to the idea that the self is distinct from thoughts and experiences; alternatively, a person is the context for which their thoughts and experiences happen. Values refer to the domains of importance in a person's life and what gives a person's life meaning. Committed action is an action or behavior that moves a person towards their values and a meaningful life. Acceptance and Commitment Therapy does not focus on symptom reduction like most Western psychotherapies, rather it focuses on reducing the impact or influence of difficult thoughts and feelings through mindfulness (Harris, 2006). Acceptance and Commitment Therapy interventions focus on "developing acceptance of unwanted private experiences which are out of personal control, and commitment and action towards living a valued life" (Harris, 2006).

A common misconception is that ACT is too complex to be used with children, but research suggests that children can understand ACT concepts as soon as seven years old as a result of thinking metaphorically and in terms of abstract concepts through experience (Coyne, McHugh, & Martinez, 2011). O'Brien, Larson, and Murrell (2008) argue that ACT is suitable for children because of its use of experiential exercises and metaphors, which is regularly used in today's educational settings. In a study conducted using ACT with children diagnosed with one or more anxiety disorders, researchers found ACT produced highly significant reductions in clinical severity ratings that were maintained at a 3-month-follow-up, a reduction in the average number of anxiety diagnoses from three to one, and post scores on the Avoidance and Fusion Questionnaire for Youth (AFQ-Y) that showed significantly less avoidance and fusion than

pretreatment scores (Hancock et al., 2018). Acceptance and Commitment Therapy interventions have been applied to and received empirical support with a variety of child populations, such as those struggling academically, adolescent girls engaging in risky sexual behavior, and adolescent girls struggling with eating disorders (O'Brien et al., 2008). Much like ACT with adults, ACT with children focuses on inflexibility that results from language processes and how it hinders valued living (O'Brien et al., 2008). Additionally, influential ACT components, such as experiential acceptance, engaging fully in one's current activity with undivided attention, and emotional awareness, have been linked to prosocial tendencies and predicted increases in well-being in children (Ciarrochi, Kashdan, Leeson, Heaven, & Jordan, 2011). Further, the more complex components of ACT, such as self-as-context, can be taught to children using developmentally appropriate methods and interactive exercises (O'Brien et al., 2008). Although ACT for children is in its beginning stages of research, it has demonstrated just as good, if not better results than other interventions.

Acceptance and Commitment Therapy is particularly suitable for parents of children with disorders because of the difficult thoughts and feelings related to their child's challenging behaviors. O'Brien et al. (2008) noted that it is particularly important for attention to be given to parents and the role that they play for their child's problematic behavior, such as reinforcing negative behavior. This functional analysis part of ACT presents the discrepancies between child and parent views of the problem. Mothers who report higher levels of depression also reported reliance on experiential avoidance as an emotion regulatory strategy, intense feelings of being out of control in their parenting role, and internalizing symptoms in their preschoolers (Coyne & Thompson, 2011). Parents who respond to negative emotional arousal with experiential avoidance are likely to also respond in the same avoidant ways when recognizing negative

emotional experiences in their child's life (Cheron, Ehrenreich, & Pincus, 2009). Additionally, parents of children with ASD have shown significant improvements in follow-up reports on the Beck Depression Inventory-II (BDI-II), Brief Symptom Inventory (BSI), and the General Health Questionnaire-12 after receiving a 2-day (14 hour) group ACT workshop intervention (Blackledge & Hayes, 2006). Experiential avoidance and fusion were also reduced from the baseline to the 3-month follow-up. Further, small doses of ACT, such as a four-hour exposure to ACT-based training, have been effective in increasing psychological flexibility and mindfulness, as well as decreasing reports of psychological distress demonstrated by significant changes in self-report measures related to depression, mindfulness, thought suppression, shame, acceptance, and values (Hahs, Dixon, & Paliliunas, 2019). Parental mindfulness-based interventions also have direct effects on reductions of aggressive behavior in children with ASD, even when the mindfulness training does not focus on child maladaptive behaviors (Singh et al., 2007).

Psychological Flexibility

Psychological flexibility is rooted in the values-guided behavioral therapy, ACT, and is considered the outcome of the six ACT processes working together (Harris, 2009). A person who is psychologically flexible has the ability to be in the present moment with full awareness and openness to their experiences, while taking action that is guided by their values (Harris, 2009). Someone who is psychologically flexible has a broad repertoire of responses to any given situation (Hayes & Smith, 2005). Psychological inflexibility, the inverse of psychological flexibility, includes experiential avoidance, cognitive fusion, attachment to the conceptualized self, unworkable action, lack of values clarity/context, and dominance of the conceptualized past and future (Harris, 2009). Most disorders and psychological distress originate from rumination of

difficult thoughts or memories, struggling with painful feelings or sensations, and living in the past or future (Harris, 2009).

Although the research is well-developed on psychological flexibility in adulthood, little is known about the role of it in childhood. This may be due to the lack of self-report measures and the inability for children to explain their internal experiences sufficiently (Greco, Lambert, & Baer, 2008). Additionally, experiential avoidance is an internal experience that cannot be easily understood by observers; therefore, the Avoidance and Fusion Questionnaire for Youth (AFQ-Y) was developed to explore the role of psychological flexibility in children (Greco et al., 2008).

Psychological flexibility in children can be associated to psychological flexibility experienced by parents just as other aspects of a child's development, such as self-regulatory behaviors, are influenced by parents. Parental psychological inflexibility can lead to faulty parenting practices, elevated levels of distress, and child psychological inflexibility (Williams, Ciarrochi, & Heaven, 2012). Consequently, child psychological inflexibility can lead to greater chances of psychopathology and less prosocial behaviors. Parents who are able to practice psychological flexibility and mindfulness are more likely to cultivate a nurturing family environment and be physically and psychologically healthier (Leeming & Hayes, 2016). Authoritarian parenting, which is described as a disciplinarian style with high expectations and limited flexibility, is associated with lower psychological flexibility; whereas authoritative parenting, which is described as a reasonable and nurturing style, is associated with higher psychological flexibility among adolescents (Williams et al., 2012). Recent research has suggested that parent psychological inflexibility moderates the relationship between parent anxiety and adolescent depression, and the relationship between parent depression and adolescent anxiety (Moyer & Sandoz, 2015). Parents who struggle to connect with their negative

thoughts and emotion also have been found to struggle with controlling behaviors to regulate their child's negative emotions (Moyer & Sandoz, 2015). This is an example where parents may be modeling and supporting psychological inflexibility in their children. When parents are able to establish psychological flexibility, they can both alleviate distress and have more positive parenting practices (Leeming & Hayes, 2016).

Values-Directed Parent-Child Interaction

The parent-child relationship goes through developmental changes just as children do. Throughout the development of the relationship, parents and children may spend less time together, experience increased conflict, and struggle between autonomy and dependency. As previously mentioned, parenting can be associated with high levels of psychological distress regardless of the frequency or type of misbehaviors. This distress can affect how a parent reacts to or manages their children and impacts their ability to engage in values-directed behaviors. Values-directed behaviors are any behaviors or actions that result in a tangible outcome related to an identified value (Gould et al., 2018). Furthermore, negative reactions or negative behavior management can have lasting effects on parent-child interactions and the parent-child relationship as a whole.

Parents typically have principles or standards for encounters with their children, or in other words, things they value from an interaction with their child. The parent can identify overt behaviors (e.g., the child politely asking the parent for what they want, the parent not getting frustrated when a child makes a mistake, or the parent spending 30 minutes a day of free play with their child) that are consistent with their own parenting values and what they value in a parent-child interaction (Gould et al., 2018). Researchers have found that mothers' satisfaction

with social interactions with their children showed increases after participating in mindfulness training and using it in their daily lives (Singh et al., 2007). Additionally, a six-week ACT protocol has demonstrated increases in values-directed overt behaviors in parents of children with ASD, which were maintained and elevated at follow-up (Gould et al., 2018). Values-directed parent-child interaction is defined as any parent-child interaction resulting in a tangible outcome directly related to an identified value (Gould et al., 2018). The values stemming from the interactions can include several components and are typically identified during the values identification segment of ACT interventions.

Present Study

The prevalence of mental, behavioral, and developmental disorders has been on the rise, with many of them increasing with age (Centers for Disease Control, 2016). Child psychological disorders paired with challenging behaviors increase the risk of parent emotional and psychological stress. Although there have been treatment advancements for children and parents individually, there has not been many treatments focused solely on the parent-child dyad. In recent years, Acceptance and Commitment Therapy (ACT) used with parents have shown direct effects on child behavior (Singh et al., 2007). One notable study used a six-week ACT protocol that demonstrated increases in values-directed overt behaviors in parents of children with ASD (Gould et al., 2018). Acceptance and Commitment Therapy interventions have shown reductions in clinical severity ratings and a reduction in avoidance and fusion scores with children (Hancock et al., 2018). Psychological and emotional stressors related to challenging child behaviors can affect how a parent reacts to their child and impacts their ability to engage in values-directed behaviors; therefore, it would be beneficial to explore the direct effects that ACT used with

children would have on parents (Gould et al., 2018). The development of a remote ACT intervention that serves both a child and their parent would have the utility to improve the behavioral and psychological well-being of both parties. The purpose of the present study is to examine the effect of a remote ACT intervention designed for a child, completed with the researcher and the parent, on the parents' reports of child behavior and values-directed interactions with the child. Supplemental measures, such as psychological flexibility and parent stress will be investigated.

Hypotheses

1. Challenging behaviors will decrease, and values-directed behaviors will increase with exposure to a remote ACT-based intervention.
2. Frequency of challenging behaviors and the impact of the challenging behaviors will decrease, as well as the frequency of values-directed behaviors and values-directed parent-child interactions will increase with exposure to a remote ACT-based intervention.
3. Parent stress and challenging behaviors will decrease, as well as psychological flexibility for parents and children will increase from pre- to post-test with exposure to a remote ACT-based intervention.

METHODS

Participants

The present study included three parent-child dyads who were recruited through participating school districts. Personnel from cooperating school districts were provided recruitment information and distributed this information to families in their schools. Families then contacted the researchers when deciding whether they wanted to participate. Child participants were school-aged (10 years old, 10 years old, and 12 years old) and either typically developing or clinically diagnosed. One child participant was diagnosed with Autism Spectrum Disorder and the other two child participants were typically developing. All parent-child dyads were female, except for the third parent-child triad, which included the father as well. Participants engaged in live sessions through a video conferencing platform from a remote location.

Research Design

The present study was conducted using a multiple-baseline design across three participants dyads (parent-child), which consisted of three phases: baseline, intervention, and follow-up. In addition, pre and post training self-report measures were collected.

Measures

Avoidance and Fusion Questionnaire for Youth. The Avoidance and Fusion Questionnaire for Youth (AFQ-Y; Greco et al., 2008) is a 17-item self-report measure used to assess psychological inflexibility in children and adolescents. Participants rate how true each

item is for them from 0 (Not at All True) to 4 (Very True). The AFQ-Y was used to assess child and adolescent psychological inflexibility in the baseline session and following the intervention.

Eyberg Child Behavior Inventory. The Eyberg Child Behavior Inventory (ECBI; Eyberg & Pincus, 1999) is a 36-item parenting-rating scale used to assess common child behavior problems that occur with high frequency among children with disruptive behaviors between 2 and 16 years of age and the extent to which parents find the behavior troublesome. Participants rate how often the behavior currently occurs with their child from 1 (Never) to 7 (Always) and indicate whether the behavior is a problem for the parent. The ECBI was used to assess child behavior in the baseline session and following the intervention.

Parental Acceptance and Action Questionnaire. The Parental Acceptance and Action Questionnaire (PAAQ; Cheron et al., 2009) is a 15-item self-report two-factor measure used to assess the degree of experiential avoidance in the parenting context. The measure requires parents to reflect on their emotional and behavioral experiences with their child. The PAAQ is composed of modified items from the Acceptance and Action Questionnaire (AAQ); however, items were changed to reflect parent's reactions to their experiences with their child. Participants rate how true each item is for them on a seven-point Likert scale. The PAAQ was used to assess parental experiential avoidance in the baseline session and following the intervention.

Parental Stress Scale. The Parental Stress Scale (PSS; Berry & Jones, 1995) is an 18-item self-report measure of stress for parents of children with and without clinical problems. Items represent positive (emotional benefits, self-enrichment, personal development) and negative (demands on resources, opportunity costs and restrictions) components of parenthood. Participants rate their experiences of being a parent in terms of their relationship with their child

from 1 (Strongly Disagree) to 5 (Strongly Agree). The PSS was used to assess parental stress in the baseline session and following the intervention.

Daily Parent Monitoring Data. The frequency of challenging behavior and frequency of values-based behaviors were noted daily by the parent using a parent data tracking sheet. The frequency counts were accompanied by narrative notes and were uploaded twice weekly to the mobile application. Challenging behaviors were operationally defined as any behavior or activity that was noncompliant with the parent's requests. Examples include tantrums, aggression, shouting or swearing, self-injurious behavior, refusal to follow instructions, arguing, or not completing a task. Values-based behaviors were identified by the parent and the researcher in the introductory session.

Parent Twice Weekly Report. The researcher gathered weekly between session reports on the child's behavior, as well as data on values-directed parent-child interaction accompanied by narrative notes from the parents through a remote mobile application. Narrative notes included the nature of interaction, when the interaction occurred, where the interaction occurred, and for how long the interaction occurred. Data included ratings on the frequency and impact of the child's behavior, as well as the frequency of the child's values-directed behavior and values-directed parent-child interaction. Participants answered the following items on a Likert scale of 0 to 10; however, the mobile application exported the data out of 100: Rate the frequency of your child's challenging behavior since the last session; To what degree did your child's challenging behavior impact your day?; Rate the frequency of your child's values-directed behavior since the last session (e.g., How often did your child engage in committed actions, used mindfulness techniques, etc.); Rate the frequency of your values-directed parent-child interactions since the last session (e.g., How often did your child politely ask for what they want, How often did the

parent respond appropriately when a child makes a mistake, or How often did the parent spend 30 minutes a day of free play with their child). Values-directed parent-child interaction was defined as any parent-child interaction resulting in a tangible outcome directly related to an identified value. The valued interaction was defined in the introductory session with the parent prior to collecting baseline data. In addition, participants uploaded the parent data sheet to the twice weekly report. Participants were prompted at the end of each session to complete the weekly measures.

Procedures

Before beginning the study, the researcher received approval from the university's Institutional Review Board (IRB-FY2021-399, Approval Date: February 24, 2021; See Appendix A). Parent-child dyads were recruited through participating school districts. The intervention included nine, approximately 45-minute, video chat meetings with the participants that occurred twice a week at times that were convenient for the dyad. The sessions included an introductory session, a baseline session, six ACT-based intervention sessions, and a follow-up session, using a video conferencing platform (See Appendix B). The introductory session included a review of the ACT protocol designed for the child and the consent document, an explanation of the study, an introduction to the ACT Matrix, an opportunity for participants to ask questions, review of the technology required for completion of the weekly report measures, and values and behavior identification (See Appendix C). After receiving information and asking questions about the study, participants had the opportunity to electronically provide consent for participation. The baseline session included a two-minute follow up with the dyad from the previous week, a three-minute ice breaker activity, a 15–20-minute game, and ended with a 5–10-minute reinforcing

activity for the child. Participants completed the pre-test self-report measures in a digital format during the baseline session and responded to the parent twice weekly measures during the baseline phase. The time from the completion of the baseline session to the first intervention session was manipulated for each participant. Multiple parent reports were collected during this period.

Each intervention session was centered around a different component of the ACT hexaflex and was designed to facilitate the development of psychological flexibility. The sessions followed an electronic presentation developed using PowerPoint and the researcher screen shared with the participants to allow for visual aids during exercise completion. The topics for the intervention sessions were as follows: values, committed action, self-as-context, present moment awareness, acceptance, and defusion. Information regarding the activities covered in each session is outlined in Appendix B. The intervention sessions were adapted from a protocol designed for children, the AIM Curriculum for Social-Emotional Development, and a series of three children's books that introduce ideas from the ACT-approach (Dixon & Paliliunas, 2017; Murrell, 2018, 2019a, b). The ACT interventions sessions included the following format: an approximately two-minute follow up with the dyad from the previous week, a three-minute mindfulness exercise (Dixon & Paliliunas, 2017), 10–15-minute review of an ACT-based children's book (Murrell, 2018, 2019a, b), a 15-20 minute ACT exercise (Dixon & Paliliunas, 2017), and end with a five-minute reinforcing activity for the child. Participants received a copy of the children's books included and were given a “tip sheet” at the end of each intervention session over the techniques covered during the session to utilize between sessions. The follow-up session followed the same format as the baseline session.

Dependent measures evaluated in this study included the parent twice weekly report provided by the participants using a mobile application platform for collecting ecological momentary assessment data. The measures, which were completed twice each week, included a rating of the frequency of the child's challenging behavior since the last session, a rating of the impact of the challenging behavior on the parent's day, a rating of the frequency of the child's values-directed behavior since the last session, a rating of the frequency of the values-directed parent-child interaction, and a picture of the daily parent data sheet that the parents utilized to record instances of child challenging behavior and values-directed interactions with their child. Participants completed these ratings twice a week during the baseline phase of the study, which varied for each participant, and during the intervention phase, which occurred for an additional three weeks. At the onset of the study, participants received instruction of how to download the mobile app. For the entirety of the study, participants were prompted each time they needed to complete the measures, which took fewer than five minutes to complete. In addition, at the beginning and conclusion of the study, participants completed four additional self-report measures: a measure of child psychological inflexibility (AFQ-Y), a measure of child behavior (ECBI), a measure of parent psychological inflexibility (PAAQ), and a measure of parent stress (PSS).

RESULTS

Challenging Behaviors

During the baseline phase, Participant 1 engaged in a mean of 2.9 challenging behaviors per day and a cumulative sum of 26 challenging behaviors. Participant 2 engaged in a mean of 1.3 challenging behaviors per day and a cumulative sum of eight challenging behaviors. Participant 3 engaged in a mean of 3.3 challenging behaviors per day and a cumulative sum of 10 challenging behaviors. During the intervention phase, Participant 1 engaged in a mean of 1.2 challenging behaviors per day and a cumulative sum of 22 challenging behaviors. Participant 2 engaged in a mean of 0.5 challenging behaviors per day and a cumulative sum of 11 challenging behaviors. Participant 3 engaged in a mean of 1.2 challenging behaviors per day and a cumulative sum of 24 challenging behaviors.

Appendix D illustrates the cumulative frequency of challenging behaviors across successive calendar days during baseline and intervention phases. Linear regressions were fit to both baseline and intervention data for each parent-child dyad (See Appendix D). Nineteen data points were collected during Participant 1's intervention condition; 100% of these data points were below the number of challenging behaviors predicted by the baseline regression ($y = 3.1x + 0.2778$). The rate coefficient produced by this linear regression suggests a predicted daily response of 3.10 challenging behaviors. For Participant 1, daily totals were below this predicted amount 100% of days that data were reported.

Twenty-one data points were collected during Participant 2's intervention condition; 67% of these data points were below the number of challenging behaviors predicted by the baseline regression ($y = 0.6071x + 4.4286$). The rate coefficient produced by this linear regression

suggests a predicted daily response of 0.61 challenging behaviors. For Participant 2, daily totals were below this predicted amount 76% of days that data were reported.

Twenty data points were collected during Participant 3's intervention condition; 100% of these data points were below the number of challenging behaviors predicted by the baseline regression ($y = 3x + 1.3333$). The rate coefficient produced by this linear regression suggests a predicted daily response of 3 challenging behaviors. For Participant 3, daily totals were below this predicted amount 80% of days that data were reported.

Missing data points reflect days that data was not recorded by the participants. Participants reported higher levels of challenging behavior in their child during the baseline phase. The data suggest a reduction in challenging behaviors for Participants 1 and 3 during the intervention phase; however, Participant 2's data changed minimally. Visual and quantitative analyses for each participant suggest an overall decrease in challenging behaviors for each participant from the baseline to the intervention phase.

Values-Based Behaviors

During the baseline phase, Participant 1 engaged in a mean of 0.7 values-based behaviors per day and a cumulative sum of 6 values-based behavior. Participant 2 engaged in a mean of 3.2 values-based behavior per day and a cumulative sum of 19 values-based behaviors. Participant 3 engaged in a mean of zero values-based behavior per day and a cumulative sum of zero values-based behaviors. During the intervention phase, Participant 1 engaged in a mean of 0.6 values-based behavior per day and a cumulative sum of 12 values-based behaviors. Participant 2 engaged in a mean of 1.5 values-based behavior per day and a cumulative sum of 32 values-

based behaviors. Participant 3 engaged in a mean of one values-based behavior per day and a cumulative sum of 21 values-based behaviors.

Appendix E illustrates the cumulative frequency of values-directed behavior across successive calendar days during baseline and intervention phases. Linear regressions were fit to both baseline and intervention data for each parent-child dyad (See Appendix E). Nineteen data points were collected during Participant 1's intervention condition; 68% of these data points exceeded the number of values-based behaviors predicted by the baseline regression ($y = 0.5167x + 1.1944$). The rate coefficient produced by this linear regression suggests a predicted daily response of 0.52 values-based behaviors. For Participant 1, daily totals exceeded this predicted amount 60% of days that data were reported.

Twenty-one data points were collected during Participant 2's intervention condition; 0% of these data points exceeded the number of values-based behaviors predicted by the baseline regression ($y = 2.2143x + 4.4286$). The rate coefficient produced by this linear regression suggests a predicted daily response of 2.21 values-based behaviors. For Participant 2, daily totals exceeded this predicted amount 0% of days that data were reported.

Twenty data points were collected during Participant 3's intervention condition; 100% of these data points exceeded the number of values-based behaviors predicted by the baseline regression ($y = 0$). The rate coefficient produced by this linear regression suggests a predicted daily response of 0 values-based behaviors. For Participant 3, daily totals exceeded this predicted amount of 85% of days that data were reported.

Missing data points reflect days that data was not recorded by the participants. The data regarding values-based behaviors suggests these behaviors were overall not affected by the intervention. The data suggest that Participant 1 and 2 experienced a slight decrease in values-

based behaviors from baseline to intervention, and Participant 3 experienced a slight increase in values-based behaviors. Visual and quantitative analyses for each participant suggests that there were minimal changes in values-based behaviors from the baseline phase to the intervention phase. This may be partly due to the values and behavior identification portion of the introductory session. The self-monitoring aspect may have served as a minimal intervention prior to the true intervention phase of the study.

Twice Weekly Measures

The baseline and intervention means for each item on the twice weekly measure are reported in Appendix F. During the baseline phase, on a scale from 0 to 100, Participant 1 reported a mean score of 46 for the frequency of challenging behaviors since the previous session and the parent reported that the degree to which this impacted their day was a mean of 47. Participant 2 reported a mean score of 37 for the frequency of challenging behaviors since the previous session and the parent reported that the degree to which this impacted their day was a mean of 23.5. Participant 3 reported a mean score of 84 for the frequency of challenging behaviors since the previous session and the parents reported that the degree to which this impacted their day was a mean of 82. During the intervention phase, Participant 1 reported a mean score of 14.2 for frequency of challenging behaviors since the previous session and the parent reported that the degree to which this impacted their day was a mean of 14.2. Participant 2 reported a mean score of 28.4 challenging behaviors since the previous session and the parent reported that the degree to which this impacted their day was a mean of 24. Participant 3 reported a mean score of 22.4 challenging behaviors since the previous session and the parents reported that the degree to which this impacted their day was a mean of 55.4.

During the baseline phase, on a scale from 0 to 100, Participant 1 reported a mean score of 37.5 for the frequency values-directed behaviors and a mean score of 48 for frequency of values-directed parent-child interactions since the previous session. Participant 2 reported a mean score of 75 for frequency of values-based behaviors and a mean of 72.5 for values-directed parent-child interactions since the previous session. Participant 3 reported a mean score of 92 for the frequency of values-based behaviors and a mean score of 26 for values-based parent-child interactions since the previous session. During the intervention phase, Participant 1 reported a mean score of 24 for frequency of values-based behaviors and 28.3 for values-directed parent-child interactions since the previous session. Participant 2 reported a mean score of 66.9 for frequency of values-based behaviors and a mean of 75.6 for values-directed parent-child interactions since the previous session. Participant 3 reported a mean score of 71.7 for frequency of values-based behaviors and a mean of 70.7 for values-directed parent-child interaction since the previous session.

Visual and quantitative analyses for each participant suggest that the twice weekly data did not demonstrate experimental control across the participants. Participants' reports during the baseline and intervention phases did not demonstrate differentiated responding during the two conditions and variability in the participant responses did not allow conclusions to be drawn from the data.

Self-Report Measures

The results and change scores for pre and posttest measures are summarized in Appendix G. Scores were collected at the beginning and end of the intervention to assess changes in psychological flexibility, child behavior, and parent stress using the AFQ-Y, PAAQ, ECBI, and

PSS. Participants did not report a change in the desired direction on the AFQ-Y or on the PSS from pre- to post-intervention.

Participant 1 reported a 10% reduction on the ECBI intensity scale and a 33% reduction on the problem scale from pre- to post-intervention. Participant 2 reported a 22% reduction on the ECBI intensity scale and a 67% reduction on the problem scale from pre- to post-intervention. Participant 3 reported a minimal change on the ECBI from pre- to post-intervention. The raw scores cutoff for clinical significance for the intensity scale is greater than or equal to 131. The raw scores cutoff for clinical significance for the problem scale is greater than or equal to 15. Participant 1 and 2's intensity scores were near the cutoff for clinical significance during the baseline phase; however, at post-intervention, there was a substantial decrease in the intensity scores. Additionally, Participant 2's problem score met clinical significance criteria during the baseline phase; however, at post-intervention the problem score no longer met the criteria for clinical significance. Although Participant 3's data suggests a reduction in problem and intensity scores, the post-intervention scores exceed the cutoff for clinical significance.

Participant 1 reported a 12% reduction on the PAAQ from pre- to post-intervention. Participant 2 did not report a change on the PAAQ from pre- to post-intervention. Participant 3 reported a 12% reduction on the PAAQ from pre- to post-intervention. The data suggests an overall increase in psychological flexibility for parents.

Ecological Momentary Assessment Data

The ecological momentary assessment (EMA) data collection procedure allowed for an on-going analysis of challenging behaviors and values-based behaviors, where parents tallied and

noted the number of each behavior. Participants compliance with the data collection system as well as the intervention was considerable. All participants completed the nine video sessions, as well as most of the EMA collection daily. There were two instances in which participants did not collect daily data.

Treatment Fidelity

The treatment fidelity was assessed for 27% of the intervention sessions; sessions were recorded, and four trained graduate and undergraduate observers viewed the recordings and completed a 10-item treatment fidelity checklist regarding each element of the intervention sessions (e.g., “The researcher led an approximately two-minute follow-up with the dyad.”). A scored of 100% was reported for each session observed. Interobserver agreement was collected for 40% of the recorded videos; total count IOA was calculated by summing the number of treatment fidelity scores agreed upon by the observers, dividing this by the total number of videos, and multiplying by 100. There was 100% agreement between observers.

DISCUSSION

The current study investigated the effects of a remote ACT-based intervention on the parents' reports of child behavior and values-directed interactions with the child. Supplemental measures, such as psychological flexibility and parent stress were investigated. The multiple-baseline data support the potential efficacy of the intervention used in the current study for some of the dependent measures. The results suggest that a brief remote ACT-based intervention used with parent-child dyads may improve parent psychological flexibility and child behavior; however, the results did not suggest an improvement in values-based behavior or child psychological flexibility, nor a decrease in parent stress. The preliminary findings support the previous literature suggesting ACT used with parents and children can produce positive effects for challenging behaviors and parent psychological flexibility (Hahs et al., 2019; Hancock et al., 2018; O'Brien et al., 2008).

The remote intervention had the largest impact on child challenging behaviors and parent psychological flexibility. Data, including daily reports and a parent-report measure of child behavior, suggested a decrease in challenging behaviors for all participants. In addition, a self-report measure of parent psychological flexibility indicated a minimal increase in parent psychological flexibility for two of three participants. The nature of the protocol designed for the intervention may be the reason the children experienced the most promising results. The intervention sessions were adapted from a protocol designed specifically for children, the AIM Curriculum for Social-Emotional Development, and a series of three children's books that introduce ideas from the ACT-approach (Dixon & Paliliunas, 2017; Murrell, 2018, 2019a, b). Additionally, the values-based behaviors identified in the introductory sessions largely targeted

the children for areas of improvement (See Appendix C); therefore, the focus of behavior change was placed on the children.

The results regarding values-based behaviors and values-directed parent-child interaction were inconsistent. This may be due to the parents reporting general values-based behaviors, such as “had a good day at school,” rather than specific behaviors; future investigations should establish more specific operational definitions of values-based behaviors with participants and provide additional training for the participants prior to the self-monitoring data collection. It is possible that values-directed behaviors and values-directed parent-child interactions were underreported as a result. Additionally, two of the parent-child dyads reported having busy schedules including extracurricular activities each night after school; therefore, parents may not have had optimal time to observe values-based behavior or participate in values-directed parent-child interactions in their preferred manner.

It is interesting to note that challenging behaviors decreased in the intervention phase in addition to a decrease in the self-report measure of psychological flexibility from pre- to post-intervention for children. It was hypothesized that psychological flexibility would increase, and challenging behaviors would decrease; however, it is possible that the children did experience greater inflexibility at post-test or that the children may have experienced greater psychological inflexibility at baseline but did not report an accurate representation of their experience due to unfamiliarity with concepts or unwillingness to disclose the degree to which they experienced certain items on the assessment. The post-intervention scores for child psychological flexibility may be a more accurate representation because at this time the children had been exposed to the ACT processes of acceptance and defusion and engaged in multiple instances of disclosing thoughts or feelings to the parent(s) and researcher. Higher levels of psychological flexibility

may have been reported at baseline due to rigidity and experiential avoidance of reporting their true experience; however, at post-intervention, children may have been more willing to share and be accepting of their experiences, which explains the lower levels of psychological flexibility at baseline. It is also interesting to note that the data reflected an increase in parent psychological flexibility as well as an increase in parent stress in the intervention phase. Like the children's experience with psychological flexibility, the increase in parent stress could possibly be explained by the parents' increase in flexibility and willingness to share about difficult emotions or experiences. Parent stress may have been inaccurately reported during the baseline phase due to experiential avoidance, as explained by the ACT model.

In addition to the decrease in challenging behaviors and increase in parent psychological flexibility measured by the dependent variables, participants reported other effects of the intervention that were not targeted. For example, Participant 2 reported a better understanding of the role that language plays in experiential avoidance and parent-child interactions. Participant 1 reported that the intervention has helped her daughter become more expressive with her experiences and emotions, as well as helped decrease challenging thinking patterns and emotions. The third parent-child dyad expressed a better understanding of the implications of each other's experiences and emotions on their parent-child relationship.

Implications

Preliminary results suggest that the remote ACT-based intervention has the utility to reduce challenging behaviors and the impact that they have on parents; however, more information is needed on the effects of the remote intervention on values-based behaviors and values-directed parent-child interaction. The intervention used in the current study was both brief

and conducted remotely which made it more accessible to a population that has historically had limited access to treatment and intervention services. This is especially important to consider amid the COVID-19 pandemic. Two participants in the current study noted their busy schedules and appreciation for the remote nature of the study. The current intervention has the potential to be efficacious and implemented with ease to a large number of parent-child dyads.

The data suggests that targeting child challenging behaviors and values-based behaviors may have a consequential effect on parent well-being. Further, the increase in parent psychological flexibility in the current study suggests that it may be beneficial for parents' well-being to be present during the child's treatment process. Additionally, the preliminary results suggest the practicality of using the remote ACT-based intervention for both the parent and child simultaneously; however, the data suggests that parents may need an additional form of an ACT-based intervention to produce more beneficial results. Further, the original protocol that the current intervention was derived from was modified with ease for the purpose of this study; therefore, further modifications for diverse parent-child populations are feasible.

The lack of values-based behaviors and values-directed parent-child interactions reported suggests the importance of considering values-based behaviors of children while at school. Children spend a large amount of their day at school, so there are many opportunities for values-based behaviors to occur in the school setting. Further, when the school day is not included in data collection, the number of values-based behaviors for the child is limited. Additionally, a large amount of data collection occurred on school days after school hours or at the end of the day. The inconsistency of the values-based behavior data provides insight on the limited number of opportunities to engage in values-based behaviors or values-directed parent-child interaction on school days verses weekends. Parents may need to be more intentional with values-directed

parent-child interactions on school days due to the limited opportunity to engage in these interactions throughout the school week.

It is also important to note that the two participants in the current study that did not have diagnosable disorders reported behavior changes in the desired direction; therefore, it is not crucial to have a clinical diagnosis to be positively impacted by the current intervention. This suggests that there is utility in using the remote ACT-intervention both as a source of early intervention or prevention for challenging behaviors, and to improve quality of life for parent-child dyads who experience low levels of challenging behaviors. Parent-child dyads may benefit from working to increase values-based behaviors and values-directed parent-child interactions that they already engage in. Additionally, there were indirect effects of the intervention that were not targeted in the current study. Participants' reports of indirect effects indicate the potential utility of targeting several aspects of well-being when implementing the remote ACT-based intervention.

Limitations

Though the study did result in useful findings, there are several limitations to consider. Results suggest that the baseline condition was not staggered enough. It would be beneficial to create longer baseline phases without a predetermined schedule. The data suggests a decreasing trend in Participant 1 and 2's baseline for challenging behaviors, which limits the interpretation of the data. The baseline schedule was predetermined due to the availability of the participants; therefore, there was not optimal time to allow the baseline to stabilize before implementing the intervention. The preliminary results of the current study can be used to adjust future multiple-baseline research designs that aim to use similar brief ACT-based interventions. As well, the intervention was brief in nature; it is possible that a longer intervention with more opportunities

to obtain feedback on progress would be useful to obtain more conclusive and/or significant findings across measures.

Additionally, because of the chosen measures in the study, most of the data was reliant upon participants accurately monitoring and reporting challenging behaviors and values-based behaviors. The parent reports of values-based parent-child interactions were found to be limited and participants were not always descriptive when noting values-based behaviors; however, self-reported parent data was the only way to obtain ecological momentary assessment data on parent and child behavior. There were instances during the ACT sessions that parent-child dyads reported values-directed behaviors that were not recorded on the parent data sheet; therefore, values-directed behaviors and values-directed parent-child interactions may be underreported. In addition, there were instances where Participants 2 and 3 did not record daily data. The data surrounding values-based behaviors in the current study can be used to adjust future data collection procedures as well as the procedures utilized to teach participants how to collect this information.

Generalizability of the preliminary results may also be an area of concern. The current study included two parent-child dyads and a parent-child triad who were referred to the study by participating schools, one of which was a private school. The results of the study may not be generalizable to all parents and children with clinical diagnoses or who are typically developing. There are several additional factors that may impact effectiveness of the intervention and other parent-child dyads, or triads may benefit differently.

Future Research

Despite the limitations of the current study, there are many opportunities for future research in relation to the findings. Future research should investigate the utility of the intervention with a larger and more diverse sample of parent-child dyads. The current study included two typically developing children and one diagnosed with Autism Spectrum Disorder; therefore, more information is needed on the effects of the remote intervention with different disorders and challenging behaviors. Future research may also seek to compare the intervention used in the current study to parenting training alone, and ACT for children alone. The intervention used in the current study had the greatest impact on the children, and results surrounding the parent-child interactions were inconsistent; therefore, more information is needed on the benefits of the intervention with parents and the parent-child interaction. Additionally, it would be beneficial to investigate the current study in a non-remote setting in order to eliminate the barriers of the online video conferencing platform. In session participation may increase for interventions implemented in non-remote settings. Lastly, research should investigate the utility of ACT with parent-child triads. In the current study, the second parent-child group included a mother, father, and the child, compared to the other two dyads that included only a mother and child. Both parents in the triad completed all aspects of the intervention and out of all participants shared the most about the indirect effects they experienced; therefore, the benefits of having two parents participate with their child in the ACT-based intervention should be investigated. Though there are some limitations to the research and areas for future research, the preliminary results of the present study support future investigations regarding the use of ACT interventions with parent-child dyads.

Conclusion

The current study sought to investigate whether a remote ACT-based intervention designed for a child would increase the psychological flexibility and values-based behaviors in parent-child dyads, as well as decrease parent stress and challenging behaviors. The findings suggest that the remote intervention may have produced a decrease in challenging behaviors and a minimal increase in parent psychological flexibility for multiple participant dyads; however, the data were inconclusive in evaluating the effects of the intervention on child psychological flexibility, parent stress, and values-based behaviors. Although future research is necessary, findings suggest that the current remote ACT-based intervention designed for children may be effective in reducing challenging behaviors in children and the impact that they have on parents. The results add to the growing body of research suggesting the benefits of ACT used remotely with parent-child dyads. Furthermore, results indicate the potential utility of remote ACT interventions to improve the behavioral and psychological well-being of both parents and children.

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APPENDICES

Appendix A. IRB Approval



To:

Dana Paliliunas
Psychology
Crystal Tracy

RE: Notice of IRB Approval

Submission Type: Initial

Study #: IRB-FY2021-399

Study Title: Evaluating the Effects of a Remote ACT-Based Intervention Designed for Children with Parent- Child Dyads

Decision: Approved

Approval Date: February 24, 2021

This submission has been approved by the Missouri State University Institutional Review Board (IRB). You are required to obtain IRB approval for any changes to any aspect of this study before they can be implemented. Should any adverse event or unanticipated problem involving risks to subjects or others occur it must be reported immediately to the IRB.

This study was reviewed in accordance with federal regulations governing human subjects research, including those found at 45 CFR 46 (Common Rule), 45 CFR 164 (HIPAA), 21 CFR 50 & 56 (FDA), and 40 CFR 26 (EPA), where applicable.

Researchers Associated with this Project:

PI: Dana Paliliunas

Co-PI: Crystal Tracy

Primary Contact: Dana Paliliunas

Other Investigators: Breanna Lee, Chynna Frizell, Baylor Miles, Crystal Tracy, Sara Johnson, Jessica Summers

Appendix B. ACT Sessions

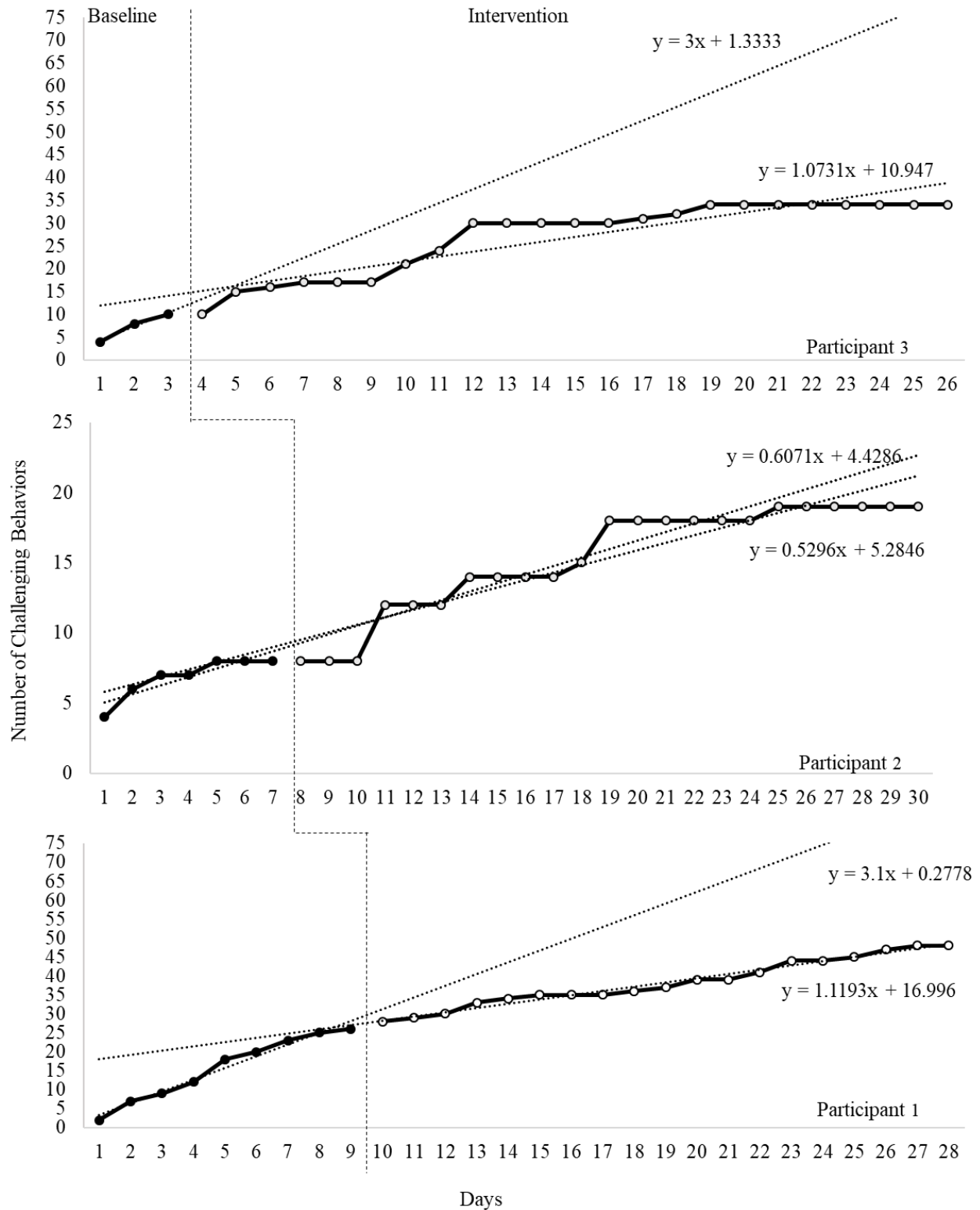
| | |
|-----------|---|
| Session 1 | Introduction <ul style="list-style-type: none">• Participant and researcher introductions• Overview and explanation of the study• Consent & assent documents explained• Explanation of the ACT Hexaflex and Matrix• Review of the protocol• Values and behavior identification• Review of technology• Questions |
| Session 2 | Baseline <ul style="list-style-type: none">• Check-in/Questions• Ice breaker activity<ul style="list-style-type: none">○ Random question generator• Game<ul style="list-style-type: none">○ Choice of scattergories, madlibs, would you rather, or other game• Reinforcing activity<ul style="list-style-type: none">○ Choice of scattergories, madlibs, would you rather, or other game |
| Session 3 | Values <ul style="list-style-type: none">• Check-in/Questions• Mindfulness exercise: Mind 24<ul style="list-style-type: none">○ Think of five people close to you. Put into words what you believe each person thinks of you.• ACT Exercise: What's Inside?<ul style="list-style-type: none">○ Identify values and how you can move closer to them when interacting with people you love.• Reinforcing activity<ul style="list-style-type: none">○ Choice of scattergories, madlibs, would you rather, or other game |
| Session 4 | Committed Action <ul style="list-style-type: none">• Follow-up on values• Mindfulness exercise: Body 23<ul style="list-style-type: none">○ Sit straight up and notice your spine. Hunch and notice the change in your body.• ACT Exercise: Life Ladder<ul style="list-style-type: none">○ Revisit value, create small committed actions, and discuss obstacles along the way.• Reinforcing activity<ul style="list-style-type: none">○ Choice of scattergories, madlibs, would you rather, or other game |
| Session 5 | Self-as-context <ul style="list-style-type: none">• Follow-up on committed action• Mindfulness exercise: Mind 4<ul style="list-style-type: none">○ Write name on paper and notice thoughts and feelings.• ACT Book: See Me: More Than One Tree• ACT Exercise: Opposites |

| | | |
|-----------|--------------------------|--|
| | | <ul style="list-style-type: none"> ○ Identify ways you describe yourself in opposites and how you have acted in each way. |
| | | <ul style="list-style-type: none"> ● Reinforcing activity <ul style="list-style-type: none"> ○ Choice of scattergories, madlibs, would you rather, or other game |
| Session 6 | Present Moment Awareness | <ul style="list-style-type: none"> ● Follow-up on self-as-context ● Mindfulness exercise: Interaction 22 <ul style="list-style-type: none"> ○ Breathe at different rates and notice thoughts and body. ● ACT Book: Becca Epps Learns to Be ● ACT Exercise: Loving Kindness <ul style="list-style-type: none"> ○ Using guided meditation to send caring, loving thoughts to a loved one and yourself. ● Reinforcing activity <ul style="list-style-type: none"> ○ Choice of scattergories, madlibs, would you rather, or other game |
| Session 7 | Acceptance | <ul style="list-style-type: none"> ● Follow-up on present moment awareness ● Mindfulness exercise: Body 4 <ul style="list-style-type: none"> ○ Muscle relaxation and notice tension in the body. ● ACT Book: Hugging the Hard Stuff ● ACT Exercise: You've Got a Friend in You <ul style="list-style-type: none"> ○ Comparing how supportive you are to a friend to how supportive you can be for yourself. ● Reinforcing activity <ul style="list-style-type: none"> ○ Choice of scattergories, madlibs, would you rather, or other game |
| Session 8 | Defusion | <ul style="list-style-type: none"> ● Follow-up on acceptance ● Mindfulness exercise: Interaction 24 <ul style="list-style-type: none"> ○ Draw with your fingertip and partner guesses the drawing. ● ACT Exercise: Magic Eraser <ul style="list-style-type: none"> ○ Writing your thoughts in pen and pencil to identify the difference between permanent and temporary thoughts. ● Reinforcing activity <ul style="list-style-type: none"> ○ Choice of scattergories, madlibs, would you rather, or other game |
| Session 9 | Follow up | <ul style="list-style-type: none"> ● Follow-up on defusion ● Ice breaker activity <ul style="list-style-type: none"> ○ Random question generator ● Game <ul style="list-style-type: none"> ○ Choice of scattergories, madlibs, would you rather, or other game ● Reinforcing activity <ul style="list-style-type: none"> ○ Choice of scattergories, madlibs, would you rather, or other game |

Appendix C. Participant Values-directed Behavior

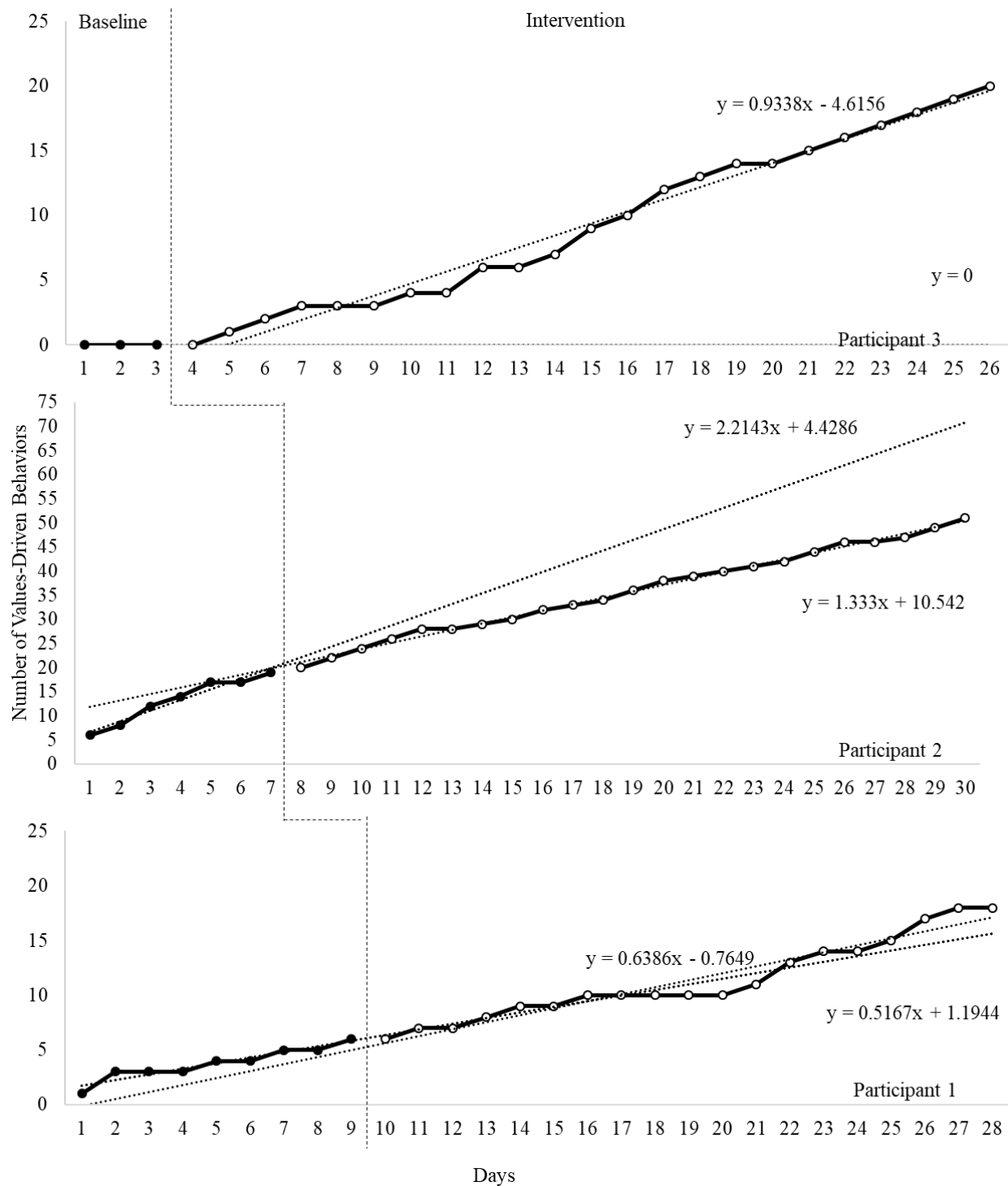
| Participant | Value | Values-Directed Behavior | Examples |
|-------------|------------------------------------|---|---|
| 1 | Gratitude and positive self-esteem | Any instance where the child was able to engage in positive self-reflection. | The child and parent practicing moments of gratitude or positive self-esteem through journaling together. |
| 2 | Self-control and independence | Any instance where the child was able to maintain self-control without prompts. | The child not reacting negatively to an undesired situation or response from parents. |
| 3 | Respect and kindness | Any instance where the parent and child were able to communicate in a healthy and respectful way. | The parent and child being able to spend time together or talk without raising voices or arguing. |

Appendix D. Cumulative Challenging Behaviors



Appendix D. Multiple-baseline across participants for cumulative challenging behaviors across successive calendar days. Trend lines represent a linear regression fit to the data.

Appendix E. Cumulative Values-directed Behaviors



Appendix E. Multiple-baseline across participants for cumulative values-based behaviors across successive calendar days. Trend lines represent a linear regression fit to the data.

Appendix F. Twice Weekly Measure Means

| Measure | Baseline Mean | Intervention Mean |
|---|---------------|-------------------|
| Frequency of Challenging Behaviors | | |
| P1 | 46 | 14.2 |
| P2 | 37 | 28.4 |
| P3 | 84 | 22.4 |
| Impact of Challenging Behaviors on Day | | |
| P1 | 47 | 14.2 |
| P2 | 23.5 | 24 |
| P3 | 82 | 55.4 |
| Frequency of Values-Based Behavior | | |
| P1 | 37.5 | 24 |
| P2 | 75 | 66.9 |
| P3 | 92 | 71.7 |
| Frequency of Values-directed Parent-Child Interaction | | |
| P1 | 48 | 28.3 |
| P2 | 72.5 | 75.6 |
| P3 | 26 | 70.7 |

Appendix G. Participant Self-Report Scores

| Measure | Baseline | Post-Intervention | Change |
|--------------------------|----------|-------------------|-----------|
| AFQ-Y | | | |
| P1 | 9 | 28 | 19 |
| P2 | 23 | 25 | 2 |
| P3 | 24 | 27 | 3 |
| ECBI (Intensity/Problem) | | | |
| P1 | 115/6 | 103/4 | -12*/-2* |
| P2 | 122/15 | 95/5 | -27*/-10* |
| P3 | 191/25 | 188/26 | -3*/1 |
| PAAQ | | | |
| P1 | 66 | 58 | -8* |
| P2 | 38 | 38 | 0 |
| P3 | 67 | 59 | -8* |
| PSS | | | |
| P1 | 50 | 50 | 0 |
| P2 | 37 | 39 | 2 |
| P3 | 32 | 49 | 17 |

*Indicates change in the desired direction.