THESIS

PARENTAL EXPRESSED EMOTION AND TREATMENT OUTCOMES IN ADOLESCENTS WITH AUTISM SPECTRUM DISORDER

Submitted by

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ABSTRACT

PARENTAL EXPRESSED EMOTION AND TREATMENT OUTCOMES IN ADOLESCENTS WITH AUTISM SPECTRUM DISORDER

This study uses a case series design to explore the effects parental expressed emotion has on the parent-child relationship and the effects of the outward affect on the treatment outcomes of interventions focused on improving youth coping skills. This paper explores the relationship between the frequency of negative expressed emotions of parents raising children with Autism Spectrum Disorder and the youth's treatment outcomes achieved within a parent-child intervention delivered via telehealth. Characteristics of ASD have far-reaching effects on behavior, particularly in social interactions, such as the ongoing interactions of parents and children within a family. The parents' stress often influences these behaviors. During adolescence, parents often experience high stress due to adolescents' needs for independence and the behaviors associated with puberty. This parenting stress is thought to be heightened if the adolescent is diagnosed with Autism Spectrum Disorder. When parents are stressed, it can increase their negative perceptions of their son or daughter, which likely alters how parents behave towards their children and may be associated with increases in the youth's negative behaviors towards their parent (C. Smith et al., 2018).

Keywords: Adolescent social development, socio-emotional development, parenting stress, treatment outcomes, Autism Spectrum Disorder

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Introduction

Adolescence is a period of significant and rapid change in a youth's cognitive abilities, autonomy, identity, and sexual maturity (C. Smith et al., 2018). Whether teenagers like to admit it or not, parents are a significant factor in the way teenagers express themselves emotionally and socially, as family environments help youth to express and experience emotions appropriately (Moreno-Manso et al., 2015). Navigating these changes can be very stressful for parents, particularly given the role changes that typically occur during the teenage years (Levine & Munsch, 2017). Parents experiencing high stress often have difficulty responding to youth in a developmentally sensitive manner, which can further exacerbate problems in the youth-parent relationship (Weiss, Cappadocia, Tint, & Pepler, 2015). Thus, adolescent behaviors and parental stress mutually influence each other, meaning that youth behaviors influence parental stress, and the stress of the parents can affect their parenting behaviors and thus adversely impact the youth's overall functioning (Crnic & Low, 2002).

Research on typically developing teens has shown that with all these changes during the adolescent years, behavioral problems directed towards parents often escalate, which in turn, escalates parental stress (C. Smith et al., 2018). This increased parental stress has been shown to impact how a parent thinks about the behaviors of the youth (i.e., appraisals), such that parents under stress tend to appraise youth problem behaviors as constitutional, intentional and worthy of punishment, instead of viewing those problem behaviors as situationally influenced and reflective of a skill deficit, and thus worthy of instruction (Dix, Ruble, Zambarano, & Mottiers, 1989). Fortunately, these behavioral problems can be viewed as learning opportunities, and several researchers have shown that changing parental appraisals of youth behavior can lead to more

effective parenting responses, resulting in meaningful improvements in the prosocial behaviors of teens with a history of problem behaviors (Lansford, Laird, Pettit, Bates, & Dodge, 2014).

Although the bidirectional influences of youth problem behavior, parental stress, and parental appraisals are well-understood in typically developing youth (Crnic & Low, 2002), little is known about how this dynamic operates in families of youth with a developmental disability, such as Autism Spectrum Disorder (ASD). In this literature review, we will begin with an overview of the characteristics of ASD, followed by a synthesis of what is known about parental stress in families of teens with this complex developmental disorder. Then, we will review what is known about parental expressed emotion and the effects in youth with ASD and explore whether the links between heightened parental stress, expressed emotion, and punitive parenting responses observed in the literature on typical adolescent development are in evidence in this population of youth. Through reviewing the literature, this report aims to identify the gaps in knowledge concerning the bidirectional influences of parental stress, parental appraisals and youth behavior in families of teens with ASD and address the question, "How does parental expressed emotion relate to the treatment outcomes focused on improving coping skills of adolescents, especially those with Autism Spectrum Disorder?"

Autism Spectrum Disorder: An Overview

Autism Spectrum Disorder (ASD) is a lifelong neurodevelopmental disability that is characterized by qualitative impairments in social interaction, communication, and behavioral flexibility (APA, 2010; Fontes-Dutra et al., 2019). Approximately 1 in 68 children in the United States is diagnosed with ASD and the known prevalence has grown substantially since 2000 (Sheldrick & Carter, 2018). When it comes to interacting with others, people with ASD struggle with coordinating eye contact, understanding non-verbal behaviors, developing appropriate

relationships with peers, sharing enjoyment with other people spontaneously, reciprocating others' social and emotional responses, processing facial expressions, and imitating others' behaviors, which are all important in developing healthy social relationships and adequate social development (Solomon et al., 2011). Often, those diagnosed with ASD present restrictive and repetitive behaviors and show discomfort with unpredictability (Karst & Van Hecke, 2012; Solomon et al., 2011).

Approximately 20% of people wth ASD do not use verbal speech and those who do present with qualitative impairments in language (American Psychiatric Association, 2013). People with ASD often present with impairments in language evidenced by abrupt topic changes, struggles following other's context of a conversation, speaking in tangents, repetitive language and talking in monologues about topics of personal interest (Solomon et al., 2011). Compared to other neurological and psychological disorders, people with ASD demonstrate even greater language deficits, lower levels of social reciprocity, and lower levels of understanding irony (Solomon et al., 2011). Research shows that children with ASD struggle with pretend play. They demonstrate reduced skills in conversation and delayed development in theory of mind and have a reduced emotional understanding of other's feelings compared to typically developing children (Leaf et al., 2005). These social and communicative impairments in ASD make it difficult to understand other's perspectives, resulting in impoverished social skills (Jameel, Vyas, Bellesi, Roberts, & Channon, 2014). Perspective-taking is the cognitive element of empathy (Blair, 2008), and empathy can be an underlying motivation for behaving pro-socially towards others (Jameel et al., 2014).

Since people with ASD have impaired perspective-taking and diminished empathy, they may be at risk for developing fewer prosocial behaviors. Prosocial behavior is defined as deliberate acts to help others, which include sharing, volunteering, donating, co-operating with

others, and aiding others when needed to benefit society, impact social adjustment and contribute to the collective psychological well-being (Jameel et al., 2014). Key influences on the individual's use of prosocial behavior are perspective-taking and empathy towards others, as mentioned earlier. Studies have shown that the perspective-taking scores are strongly associated with appropriate communication skills, the ability to understand language that is not literal, the ability to contribute original information, and the ability to identify embarrassment in others, which are all impaired in those diagnosed with ASD (Hale & Tager-Flusberg, 2005; Hillier & Allinson, 2002; Jameel et al., 2014). Using the Autism-Spectrum Quotient that measures personality traits of adults with ASD (Baron-Cohen, Wheelwright, Skinner, Martin, & Clubley, 2001), one study found that those with more severe ASD symptoms showed lower rates of prosocial behaviors compared to those with less severe ASD symptoms (Jameel et al., 2014).

The association in severity between ASD symptoms and prosocial behaviors demonstrates that the impairments in social behaviors of this population could be impacting the person's ability to behave positively towards others, including parents. The inability to react positively towards others may negatively impact the ways others perceive the individual, which may result in higher levels of criticism, hostility and over-involvement expressed by the parent, as shown in studies on relapse in patients with schizophrenia, mood disorders, eating disorders, posttraumatic stress disorder, and substance use disorder. Interactions between patients with their relatives scoring high levels of criticism, hostility and emotional overnvolvement demonstrate more occurancces of negative behaviors compared to positive behaviors, with these same patients expressing more stress when interacting with relatives (Hooley, 2007). However, there are no known studies that have examined criticism, hostility, and overinvolvement in families with a child with ASD. Thus, it is important to examine the characteristics of ASD, and its far-reaching effects on the behavior,

particularly in social interactions, such as the ongoing interactions of parents and children within a family. In the following sections, we will review what is known about the impact of parent factors (such as stress, criticism, hostility, over-involvement, and parenting behaviors) on the behaviors of youth with ASD.

Parental Stress and ASD

Before diving deeper into the contributions to parental stress, it is essential to define stress. Stress is defined as the relationship between an indivdual and an environment recognized as important to an individual's well-being that can toll or surpass the individual's resources (Folkman & Lazarus, 1985). In general, stress is influenced by the appraisal and coping methods used by people exposed to certain demands for their environment linked to the various roles participated in by the person (Koeske & Koeske, 1990). Stress is common in the parental experience. The responsibilities of caring for a child are stressful in themselves, especially when the child is not developing atypically (Tahmassian, Jahad Daneshgahi, Fathabadi, & Student, 2011). Unfortunately, though common, heightened stress can reduce parental self-efficacy and negatively impact parents' response towards their children's behavior. Multiple factors contribute to stress parents of youth with ASD experience, particularly in parents of adolescents (McStay, Dissanayake, Scheeren, Koot & egeer, 2014), which will be discussed in the next section.

Contributions to Parental Stress When Raising Children with Autism Spectrum Disorder. Studies have suggested that raising a child with ASD is inherently stressful, due to the pervasiveness of the social, communicative and behavioral manifestations of this biologically-based neurodevelopmental disorder, where much of the child's behavior can seem outside of the parent's control (Deater-Deckard & Scarr, 1996; Ornstein, Ae, & Carter, 2008). Examples of child characteristics that are associated with increased parental stress in families of youth with ASD

include the child's age, overall developmental functioning, sociability, communicative competence, sleeping difficulties, and food allergies (Valicenti-McDermott et al., 2015). Child factors such as the severity of the autism, dysregulation of emotions, and problematic behaviors also contribute to the heightened parental stress (Schiltz et al., 2018). Having a child with ASD is associated with added stress on parents, due to adjusting the family routines to accommodate the child's needs, financial costs for addressing these needs, and time spent away from families when attending necessary appointments to support the child's needs (A. L. Smith, Romski, Sevcik, Adamson, & Bakeman, 2011). Each one of these is a stressor that causes adjustments to the family system.

Parental Stress & Parental Effects of Behavior When the Child has ASD. Parents with higher stress typically report more problem behaviors in their children, which, in turn, likely further increases the stresses for parents (Valicenti-McDermott et al., 2015). This added parental stress likely impacts the psychological well-being of the parents, influences their interactions with their child, and shapes their responses towards their child's problem behaviors (C. Smith et al., 2018), which in turn, impacts how parents interact and communicate with their children. The problematic behaviors displayed by these children, include aggression towards othes, hyperactivity, self-harm, and conduct issue can be deemed socially unacceptable (Matson, Fodstad, & Rivet, 2009). Parents often take responsibility for their child's behaviors leading to higher stress, but when others view the parent's skills positively, it can decrease the parent's stress (McStay, Dissanayake, Scheeren, Koot, & Begeer, 2014). This positive view of the parent's skills is hypothesized to contribute to an increase in optimism for the parents, which may decrease parental stress and promote positive feelings towards the child with ASD (Kurtz-Nelson & McIntyre, 2017).

Rising rates of parental stress may result in increasing negative affect and diminishing positive affect for parents, particularly in the context of parental demands (Weiss et al., 2015).

This increase in parental stress can lead to increased negative self-perceptions of one's parenting skills, which are associated with increased isolation and escalating depressive symptoms in parents (Shapiro & Stewart, 2011; A. L. Smith et al., 2011). Compared to parents of typically developing children, parents raising children with ASD have been shown to be at increased risk for internalizing disorders, such as depression and anxiety (Hamlyn-Wright, Draghi-Lorenz, & Ellis, 2007), which are associated with a tendency to formulate negative responses for problem behaviors (Machado Junior et al., 2016). The authors posit that parental mental health problems are influenced, in part, by increased rates of problem behaviors in their children with ASD (Hamlyn-Wright et al., 2007). Thus it seems as though the mental health of parents likely impacts how they think about and interpret the behaviors of their children, which, in turn, influences how they respond to their children, which will be covered in the next section.

Parental Respones and Parenting Behaviors in Families of Youth with ASD. In families with children with no known developmental disability, parents who are experiencing high anxiety tend to interpret child problem behaviors as intentional, criticize their children more often, and encourage less autonomy (Machado Junior et al., 2016). Parents of children with ASD commonly show increased levels of mental health issues, especially anxiety and depression, compared to parents raising typically developing children (Benson & Karlof, 2009). Depressed parents often exhibit more negative facial expressions, more withdrawal behaviors and ignore the social bids of their child more frequently than parents who are not depressed (Lovejoy, Graczyk, O'Hare, & Neuman, 2000). Thus, the affective state of the parent can influence their parenting behaviors..

Parental responses of child behaviors have been shown to influence parenting behaviors in studies of families of typically-developing youth (Dieleman et al., 2018; Minnes, Perry, & Weiss, 2015); however, little is known about the associations between parental responses and parenting

behaviors in families of youth with ASD. Studies have shown that parents of children with developmental disabilities, such as ASD, demonstrate more negative parenting behaviors, such as disapproval, hostility, and detachment, which are strongly related to a child's behavior problems (Blacher, Baker, & Kaladjian, 2013). The increase of behavior problems in these children with ASD is associated with decreased closeness and attachment to the child (Karst & Van Hecke, 2012). These studies were not conducted with youth with ASD, and more research is needed to understand these associations in this population.

Expressed Emotion. Expressed Emotion (EE), measures the amount of criticism, hostility, or emotional involvement a family member expresses about another member of the family with psychopathology, and those with anxiety or depression often show greater rates of EE, meaning they have higher scores in criticism, hostility or emotional involvement, leading to hostility or emotional involvemen. In families receiving reatment, higher EE is associated with relapse in treatment (Hooley, 2007). In order to measure EE, interviews are conducted individually with families involved in the patient's life. Much research involving EE focuses on disorders, such as mood disorders, anxiety disorders, substance abuse, eating disorders, personality disorders and schizophrenia in older adults. However, there is limited research conducted in predicting treatment outcomes for adolescents with ASD in relation to their parent's direct interactions with the youth, which will be explored in the following study.

Implications

Raising children is stressful for all families but may be particularly challenging when raising a child with a developmental disability. Increased parental stress that is related to child behavior problems is associated with increased negative affect in parents of typically-developing children, correlating in more punitive and less instructive parenting behaviors (Dieleman et al.,

2018). Although understudied in families of children with ASD, it is reasonable to hypothesize that this association impacts parent-child relationships when the child has this complex neurodevelopmental condition. Parental factors (such as stress, responses, and parenting behaviors) and child behaviors interact in bidirectional ways, meaning that one influences the other and vice versa (Crnic & Low, 2002). For example, as the child's problem behaviors increase, so does the parent's stress; and as the parent's stress increases, so do the child's problem behaviors. This bidirectional relationship is important to consider when planning interventions that help parents cope and manage their child's behaviors (McStay et al., 2014). Some programs and interventions have research measuring the effects these parenting behaviors have on the potential outcomes of treatment.

In many instances, failed treatment approaches can further increase stress on a parent Research involving EE levels in children with various psychopathology shows that inappropriate treatment of the child can lead to more instances of high-EE responses by the youth's relative, which increases the chance of relapse for the youth (Hooley, 2007). Even though families raising a child with ASD is not a focus of that study, identifying the factors that can contribute to poor treatment oucomes for this population is essential.

The Current Study

This study aims to explore the effect parenting behaviors and verbalizations have on the treatment outcomes of adolescents with Autism Spectrum Disorder using the measures of expressed emotion. This study aims to explore associations between EE scores in criticism, hostility, and overinvolvement of the parent with the overall outcomes of the youth's treatment in the "Facing Your Fears" curriculum (Hepburn, Blakeley-Smith, Wolff, & Reaven, 2016). In this family-focused intervention, treatment response is dependent upon positive collaboration between

youth and parent. The study also aims to explore EE over time with the four parent-child dyads to generate hypotheses for future studies.

Hypothesis

It is hypothesized that there will be a negative association between negative parental expressed emotions (indicated by higher scores in criticism, hostility, and emotional overinvolvement) and positive family-focused treatment outcomes. Negative behaviors expressed by the parent are often related to level of stress, and stress levels are related to EE. Therefore, EE is expected to relate to poorer outcomes by the end of treatment.

Method

Participants

A secondary data set was used for the analysis of this study. In the original study, participants were recruited through community workshops, webinars, focus groups, and regional conference presentations within rural parts of Colorado using an electronic newsletter, and the participants contacted the program staff by email or phone (Hepburn et al., 2016). Participants were between the ages of 7 and 19 years old with a clinical diagnosis of Autism Spectrum Disorder, were verbally fluent, and also had significant anxiety symptoms based on parent report using the Screening of Childhood Anxiety and Related Emotional Disorders (Birmaher et al., 1997; Hepburn et al., 2016). A total of 17 families (i.e., one youth, one parent) participated in the study. The current study used data from 4 participants (2 females and 2 males) aged 14 and 16, due to the focus on this developmental period. All four youth participated in a multi-family intervention with their mothers.

Demographics. Of the participants in the study, 3 of the youth identified as Caucasian while 1 identified as African American. All 4 parents identified as Caucasian, while 1 parent identified as Hispanic. Three of the 4 children were biological, while one child was adopted. All the families lived in rural Colorado mountain towns, and none of the families were receiving any method of psychotherapy at time of intervention. Two of the 4 youth were home-schooled due to behavioral problems at school.

Procedures

Intervention. In the pilot study, the parents and the youth participated in "Facing Your Fears," a manualized, CBT focused teletherapy intervention aimed to reduce anxiety in youth with ASD. The purpose of the "Facing Your Fears" curriculum is to promote a positive parent-youth alliance to help children with Autism Spectrum Disorder cope with anxious behaviors. Based on previous trials, the Facing Your Fears program resulted in 50% of the youth participating obtaining a significantly positive response to treatment compared to 8.7% participating in other manualized, CBT treatment programs (Reaven et al., 2018). The intervention targets parental overinvolvement as a way to decrease youth anxiety, but does not focus on hostility or criticism. The program was intended to include 10 sessions that were ranged from 45 to 60 minutes per session. The overall structure of the treatment was intended to be divided in half with the first five weeks focused on psychoeducation about common symptoms and stressors of anxiety, and the second five weeks focused on individualize goal-setting and exposure or response prevention for each dyad (Hepburn et al., 2016). The parents were encouraged to support and coach the youth in the practice of these strategies during the teletherapy sessions. Each of these sessions was conducted with two families simultaneously with each dyad matched based on age and gender of the youth. Both of the two parent-youth dyads and one randomly assigned therapist worked together throughout the course of

treatment the sessions were conducted over the video conferencing software Oovoo. Each session consisted of a brief review of the previous week, introduction of new ideas or concepts, and either practice and implementing individualized anxiety reduction strategies or debriefing with the parent about examples and intensity of the youth's recent anxiety symptoms. Each session was recorded. Two therapists were involved in providing treatment to these dyads. One therapist (T1) was a licensed clinical psychologist in practice with specialization in CBT with ASD, and had been practicing with the modality and population for 7 years at the time of filming (2001). This therapist was one of the developers and study clinican of the "Facing Your Fears" telehealth program. The other therapist (T2) was a licensed clinical psychologist in practice in ASD for 10 years at the time of the study but was not specialized in CBT, and she led research on "Facing Your Fears" clinical procedures but was not a study clinician.

Assessment. The parents and the youth completed an anxiety questionnaire pre and post-treatment using the Screening of Childhood Anxiety and Related Emotional Disorders (SCARED) scale (Birmaher et al., 1997). A higher score indicates higher anxiety levels.

For the purpose of the study, the prerecorded therapy sessions were coded live during the review section at the beginning 15 minutes of the session and at the end of the session where the parents are most involved. The review section consists of a brief discussion about the previous therapy session and the skills they learned. The two families in each intervention group provide examples of times they implemented the skills and provide an analysis of the effectiveness of the skills and strategies. The debrief section at the end consists of parent conversations about the child's overall performance in multiple environments (i.e., school, community, home) discussing any improvements or concerns the caregivers have in regards to the child's behaviors without the

children present. The discussion sections throughout treatment consists of the dyads and therapist discussing interventions helpful for the parent and youth in reducing their anxiety symptoms.

In the secondary analysis, the parent's responses and interactions during the review section at the first 15 minutes of the session and the end of the session were coded by the author and a team of undergraduate students using the EE coding system to measure each parent's level of criticism, overinvolvement, and hostility. To measure reliability, each coder studied the coding procedures, which describes the criteria for each measurement and methods of scoring the interactions and coded an independent set of 3 videotapes with 3 dyads per video in the reliability calibration process at a random, 10 minute time point within the session before coding the videos associated with the actual study. Consensus coding rules were developed by the team during the discussions of these three initial coding samples. Inter-rater reliability was determined using percent agreement to ensure reliability across the different coders. The minimum percent of agreement amongst coders was 80% between all raters measured using the independent sample video tapes. Consensus coding continued until coders reache reliability standards before coding the four cases associated with the current study. The EE scores derived from each of the ten intervention sessions are presented in graphic form, consistent with the standards of single-subject research design. Characteristics of each individual are provided (e.g., age, ethnicity, gender, parental SES). A summary of the parent's and youth's reports of anxiety symptoms before and after treatment was provided for each dyad in graphic form. Although the sample is too small for inferential statistics, we used visual analysis and single case methods to objectively describe each of the 4 cases in-depth, as described in single-subject methodology (Byiers, Reichle, & Symons, 2012; Kazdin, 1983).

Measures

Expressed Emotion. EE is typically used to code family member interviews to evaluate the level of criticism, hostility, and overinvolvement present in the person's ideas of the individual with psychopathology (Hooley, 2007). Criticism, hostility, and emotional overinvolvement are the key elements of EE. Criticism and hostility are similar since they include dislike or disapproval of the individual's behaviors; however, hostility includes more generalized remarks and indications of rejection or overall annoyance towards the individual and their character (Hooley, 2007). An example of a critical remark is, "He/she is always cranky," while an example of hostility is "I guess he/she is just wired that way." Emotional overinvolvement includes any behavior that is intrusive and overprotective by the caregiver towards the individual that can lead to extreme emotional distress (Hooley, 2007). The frequency of each factor (criticism, hostility, and overinvolvement) is provided with a greater EE score indicating higher occurance of negative verbal and nonverbal behaviors towards the youth by the caregiver.

A frequency count of observed statements was given to the parent based on how often critical, hostile, and overinvolvement behaviors were present, with a higher score indicating more prevalence of each behavior. A total overall frequency is also provided. The scores were coded by the author and two undergraduate research assistants, with inter-rater reliability continually calculated on 30% of observed samples after all of the coders have achieved 80% reliability based on the sample videos.

Treatment Outcomes. The youth's score of anxiety behaviors was measured pre and post-treatment using the Screening of Childhood Anxiety and Related Emotional Disorders (SCARED) scale (Birmaher et al., 1997). The SCARED measures the presence of anxiety symptoms in

children (Birmaher et al., 1997). The difference in scores between the pre and post-treatment SCARED measure reflected the overall treatment outcomes for the child-parent dyad.

Statistical Analysis

Data were approached as a case series sample to analyze four cases in depth hoping to inspire new studies and evidence-based treatments. Because the proposed study is a single-subject research design, causation cannot be determined due to the low external validity of case series studies (Kazdin, 1983), but the in-depth analysis of this sample using an EE lens can help future studies explore EE in parents with adolescents with ASD, as case series are often starting points for future research (Kazdin, 1983). The in-depth single-subject design is important in providing foundations for developing and implementing future evidence-based practices (Byiers et al., 2012). The following study may help develop new practices in improving the parent-child relationship for adolescents with ASD.

The results are presented in two different graphs per each parent-child dyad (one graph recording the frequency of EE by the parent and one graph with the pre- and post-test scores as reported by the parent and the child). The graphs show the frequency of each EE variable (i.e. criticism, hostility, overinvolvement) throughout the sessions as well as the total overall frequency of all EE variables. For each session, EE frequency will be recorded during two different time pointsThese will both be recorded on the same graph to determine whether the expression of EE is based on context, presence of the child, and one-on-one interaction.

Results

The following section details the demographic information and specific results of each child-parent dyad in response to the parent's level of expressed emotions per each time period during the intervention along with the length of each section and the corresponding therapist. Each

dyad is also accompanied by the change in anxiety SCARED score as reported by both youth and parent before and after treatment.

Dyad A

Family information. At the start of the initial study, youth was a 15 year, 8 month Caucasian male who was the youngest biological child of the mother who was 46 years old with some graduate work in education. She was employed as a teacher and homeschooled the youth at the time of the study. The father was 49 years old with some graduate work working as a policeman. The parents were married for 17 years and had two children**.**

Analysis. Table 1 describes the specific length, context and whom was present for each session coded. Figure 1.A describes the recorded number of each expressed emotion variable (criticism, hostility, overinvolvment) evident during each section of the treatment, while Figure 1.B shows the total overall EE scores per time point. Figure 1.C shows the pre-test anxiety SCARED scores and the post-treatment anxiety SCARED scores for both youth and parent.

Table 1. Video information per section for Dyad A

Video	Length (mins)	Context	Attended	Therapist
A-1	15	Review	Dyad x2	T2
A-2	23	Debrief	Parents	T2
B-1	15	Review	Dyad x2	T2
B-2	23	Debrief	Parents	T2
C-1	15	Review	Dyad	T2
C-2	15	Discussion	Dyad	T2
D-1	15	Review	Dyad x2	T2
D-2	18	Discusion	Dyad x2	T2
E-1	4	Review	Dyad x2	T2
E-2	10	Discussion	Dyad x2	T2
F-1	15	Review	Dyad	T2
F-2	15	Discussion	Dyad x2	T2

Source: Secondary data analysis (Hepburn et al., 2016)

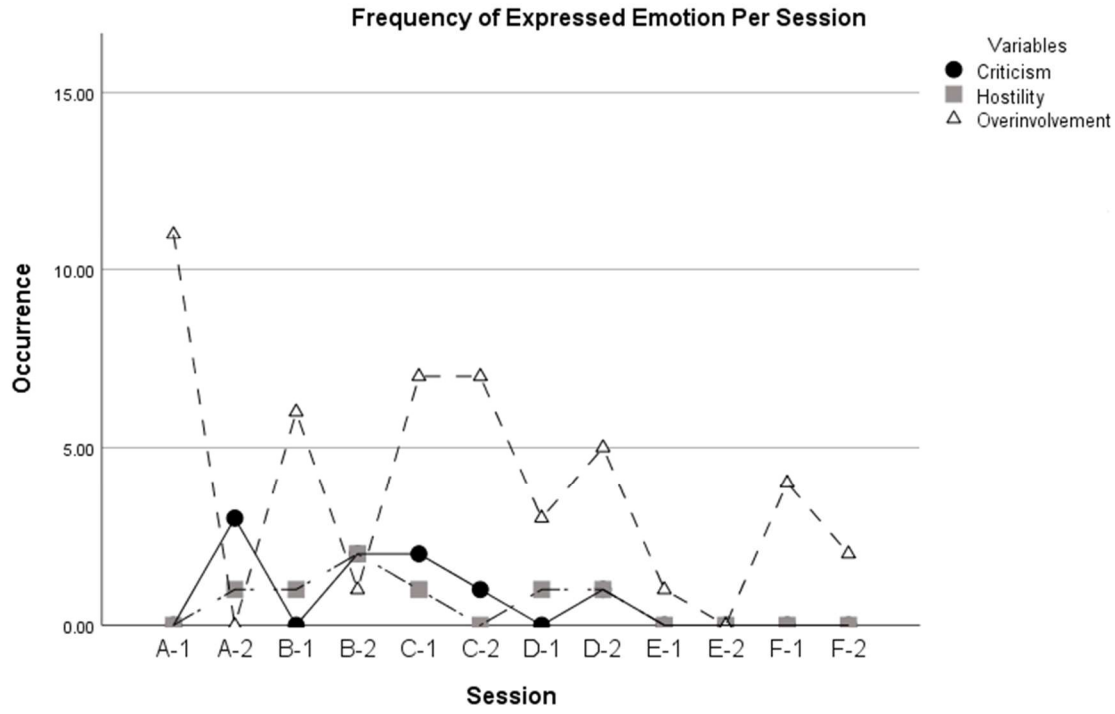

Figure 1.A. Frequency of expressed emotion from Dyad A

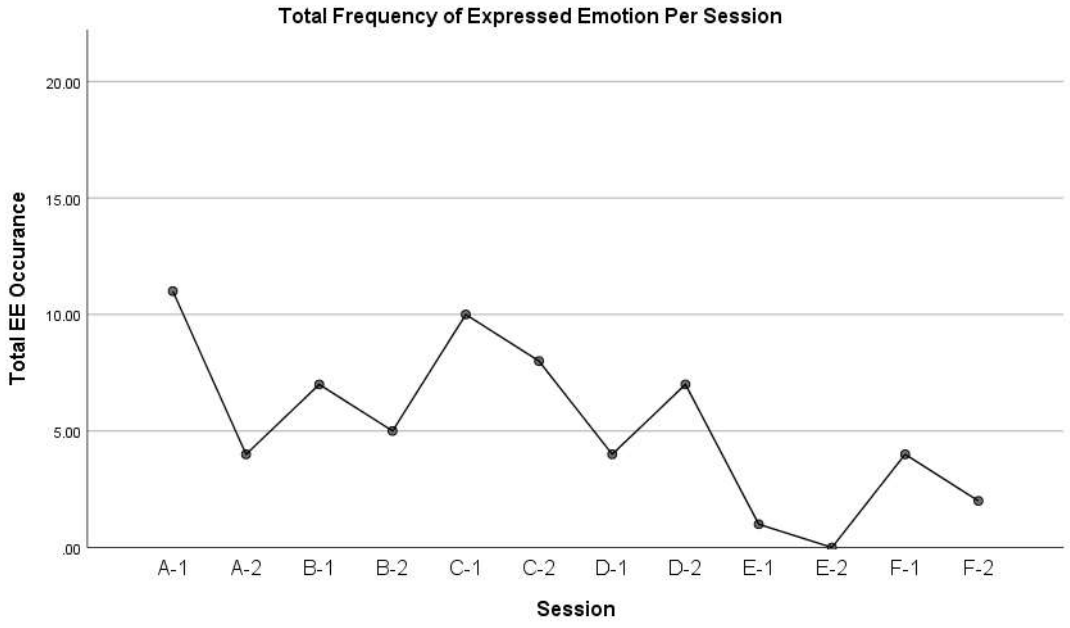

Figure 1.B. Total Frequency of Expressed Emotion Per Session for Dyad A

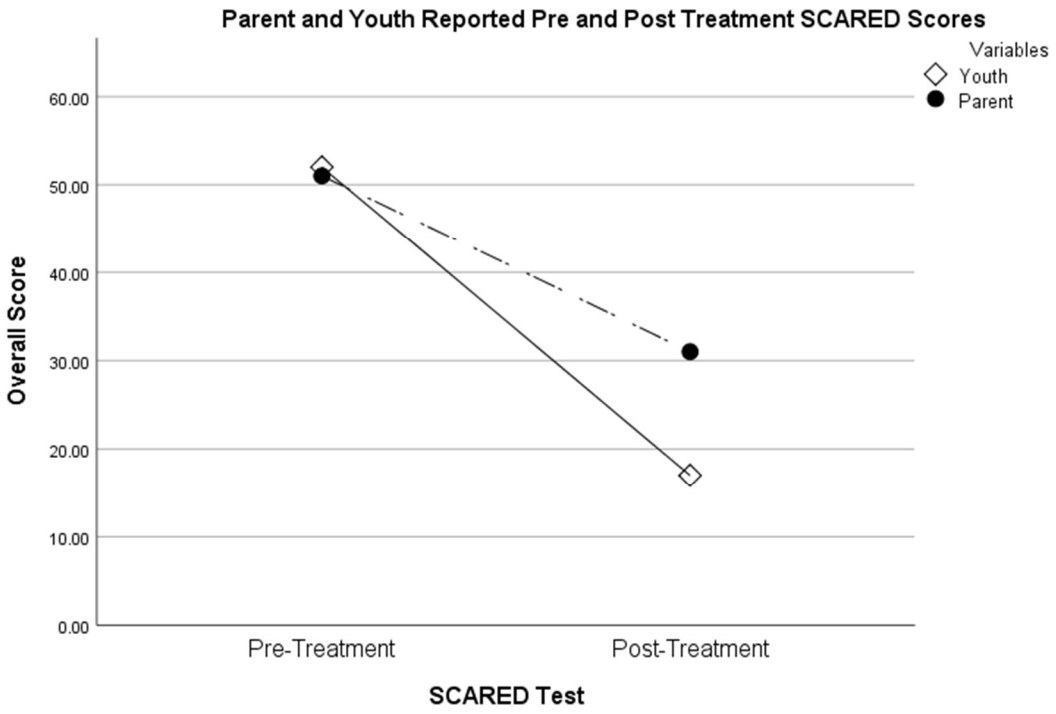

Figure 1.C. Pre and post treatment SCARED scores for Dyad A

Summary. As demonstrated by Figure 1.A., the level of criticism and hostility for Dyad A decreased throughout treatment, while overinvolvement fluctuated until ultimately decreasing overall by the end of treatment. As demonstrated by Figure 1.B., the total frequency of EE gradually decreased, with some slight increases throughout treatment. As demonstrated by Figure 1.C., Both youth and parent reported lower anxiety scores by the end of treatment with the largest decrease reported by the youth.

Dyad B

Family information. At the start of the initial study, youth was a 16 years, 5 month Caucasian male who was the oldest biological child of the mother and attended public school. The mother was 48 years old with a professional degree working as a physician. The father was 55 years old with a college degree working as a designer/business man.. The parents were married for 18 years and had two children.

Analysis. Table 2 describes the specific length, context and whom was currently present for each time frame. Figure 2.A describes the recorded number of each expressed emotion variable (criticism, hostility, overinvolvment) evident during each section of the treatment, while Figure 2.B shows the total overall EE scores per time point. Figure 2.C shows the pre-test anxiety SCARED scores and the post-treatment anxiety SCARED scores for both youth and parent.

Table 2. Video information per section for Dyad B

Video	Length (mins)	Context	Attended	Therapist
A-1	15	Review	Dyad x2	T2
A-2	23	Debrief	Parents	T2
B-1	15	Introduction	Dyad x2	T2
B-2	4	Discussion	Dyad x2	T2
C-1	15	Review	Dyad x2	T2
C-2	18	Debrieg	Parents	T2
D-1	15	Review	Dyad x2	T2
D-2	18	Discusion	Dyad x2	T2
E-1	4	Review	Dyad x2	T2
E-2	10	Discussion	Dyad x2	T2
F-2	15	Discussion	Dyad x2	T2

Source: Secondary data analysis (Hepburn et al., 2016)

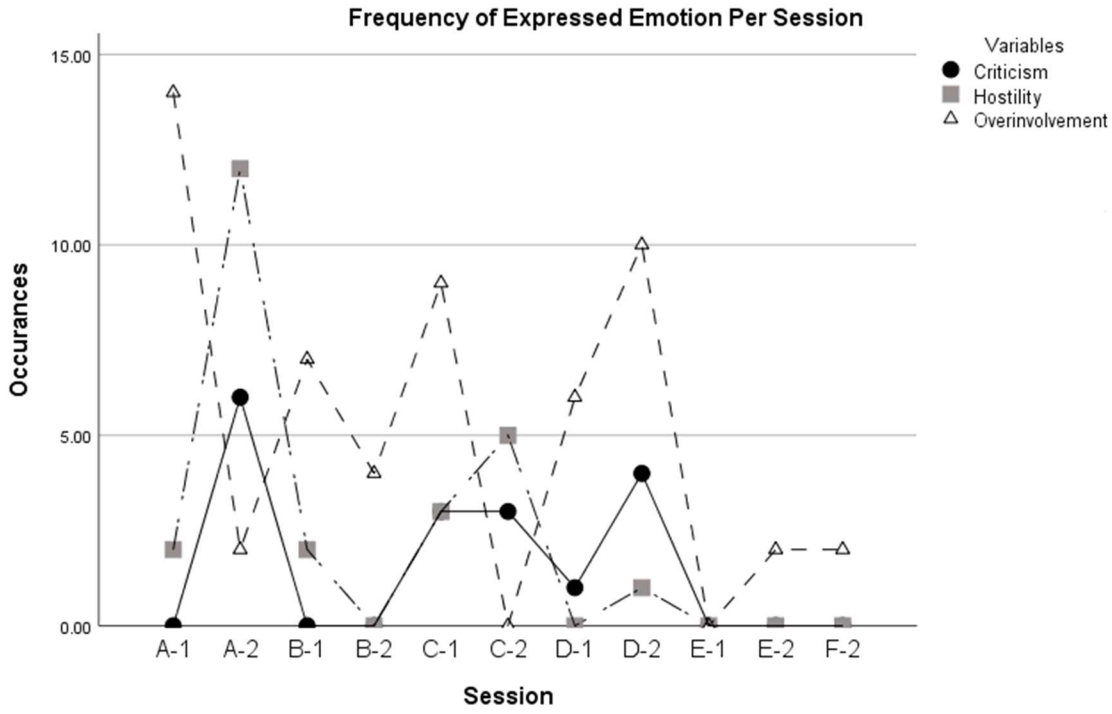

Figure 2.A. Frequency of expressed emotion for Dyad B

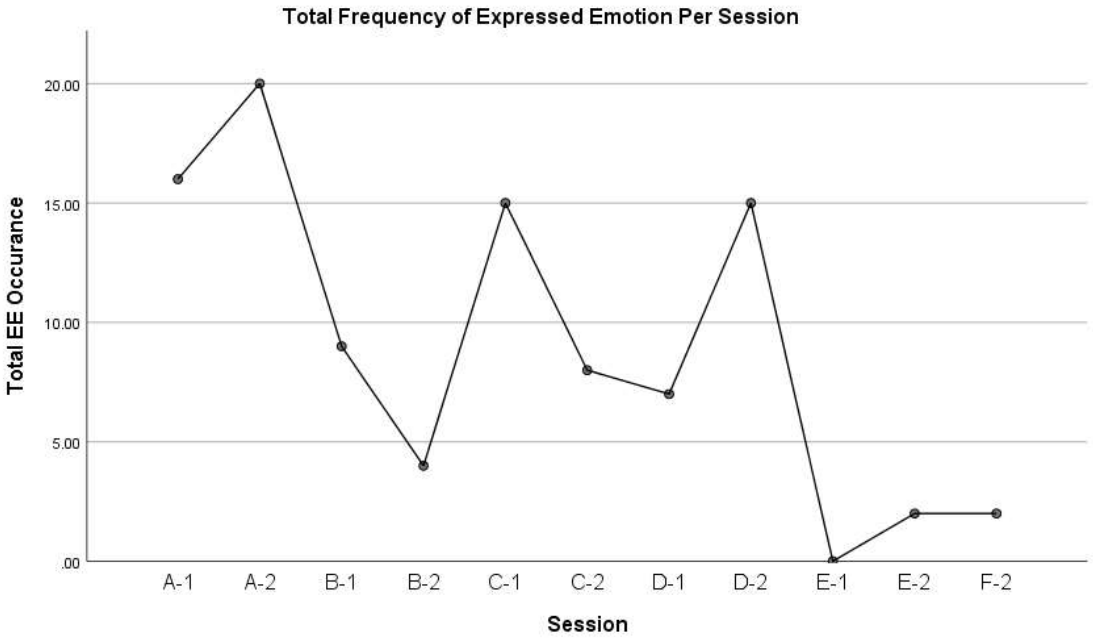

Figure 2.B. Total Frequency of Expressed Emotion Per Session for Dyad B

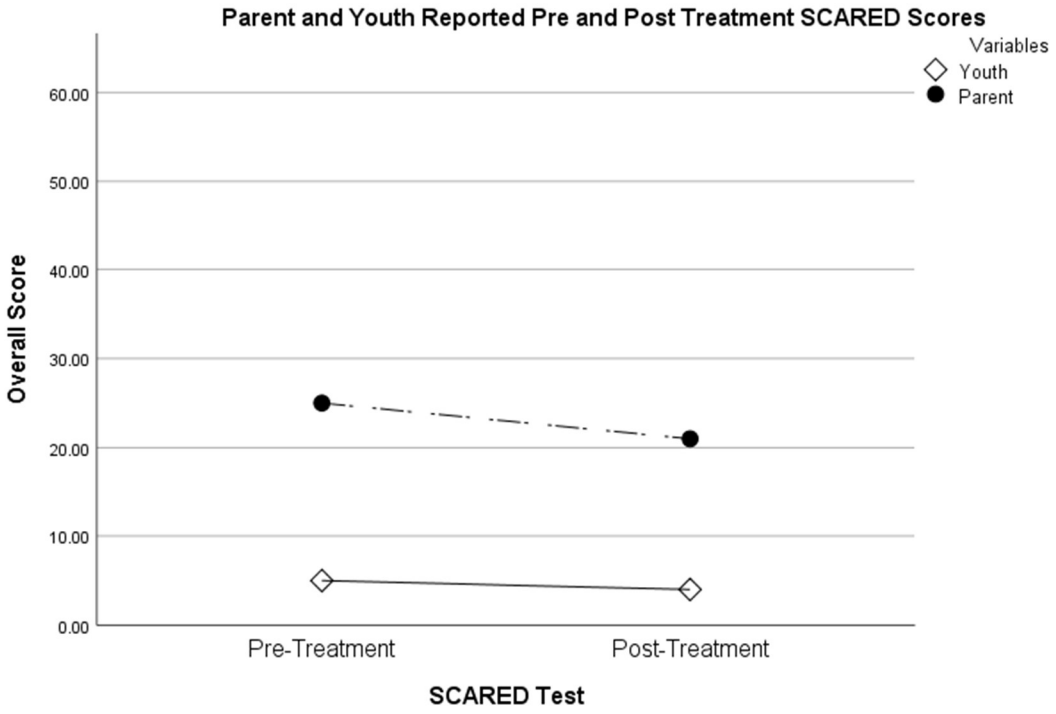

Figure 2.C. Pre and post treatment SCARED scores for Dyad B

Summary. As demonstrated by Figure 2.A., the level of criticism and hostility for Dyad B decreased throughout treatment, while overinvolvement fluctuated until ultimately decreasing overall by the end of treatment. As demonstrated by Figure 2.B., total EE frequency decreased towards the beginning of treatment, increased in the middle of treatment, and decreased by a large margin by the end of treatment. As demonstrated by Figure 2.C., Both youth and parent reported lower anxiety scores by the end of treatment with the largest decrease reported by the parent.

Dyad C

Family information. At the start of the initial study, youth was a 14 years, 11 months African American female who was the 2nd to youngest adopted child and home-schooled. The adoptive mother was 53 years old with a college degree working in the hospitality industry. The adoptive father was 52 years old with a college degree working as an IT professional. The adopted parents were married for 32 years and have 7 children in the family.

Analysis. Table 3 describes the specific length, context and whom was currently present for each time frame. Figure 3.A describes the recorded number of each expressed emotion variable (criticism, hostility, overinvolvement) evident during each section of the treatment, while Figure 3.B shows the total overall EE scores per time point. Figure 3.C shows the pre-test anxiety SCARED scores and the post-treatment anxiety SCARED scores for both youth and parent.

Table 3. Video information per section for Dyad C

Video	Length (mins)	Context	Attended	Therapist
A-1	15	Introduction	Dyad x2	T2
A-2	4	Discussion	Dyad x2	T2
B-1	15	Introduction	Dyad x2	T1
B-2	34	Debrief	Parents	T1
C-1	21	Review	Dyad	T2
C-2	36	Discussion	Dyad	T2
D-1	15	Review	Dyad	T2
D-2	23	Discussion	Dyad	T2
E-1	15	Review	Dyad x2	T1
E-2	23	Discussion	Dyad x2	T1
F-1	15	Review	Dyad x2	T1
F-2	15	Debrief	Parents	T1
G-1	15	Review	Dyad x2	T1
G-2	12	Debrief	Parents	T1
H-1	15	Review	Dyad x2	T1
H-2	23	Debrief	Parents	T1
J-1	15	Review	Dyad x2	T1
J-2	15	Debrief	Parents	T1

Source: Secondary data analysis (Hepburn et al., 2016)

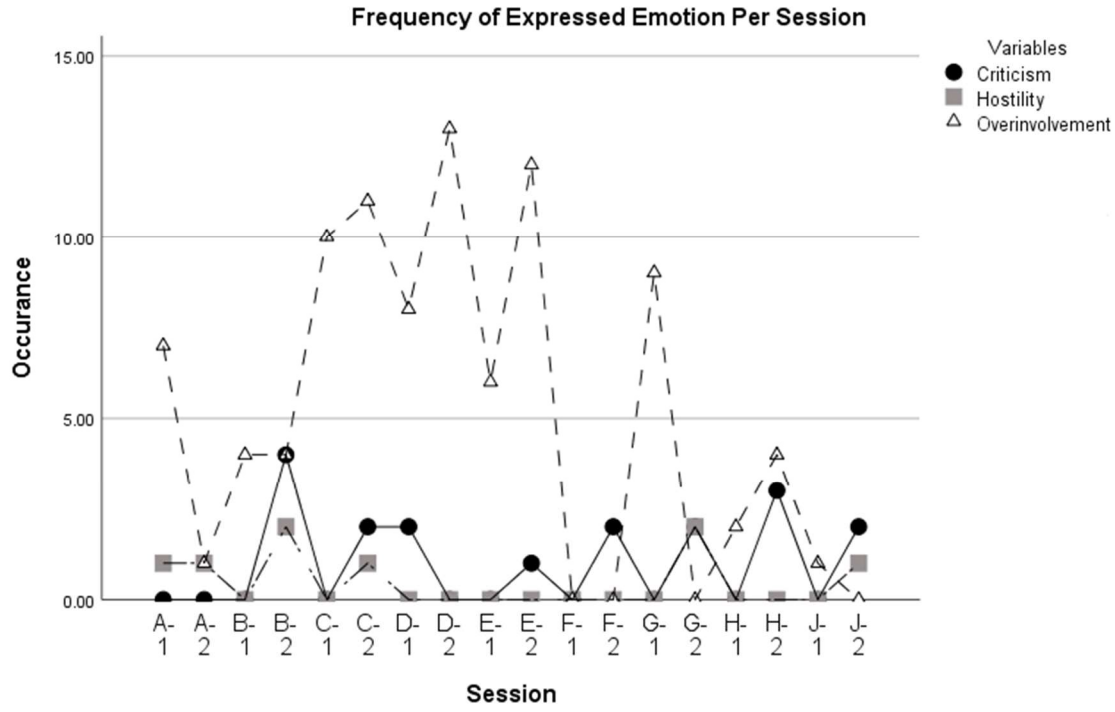

Figure 3.A. Frequency of expressed emotion for Dyad C

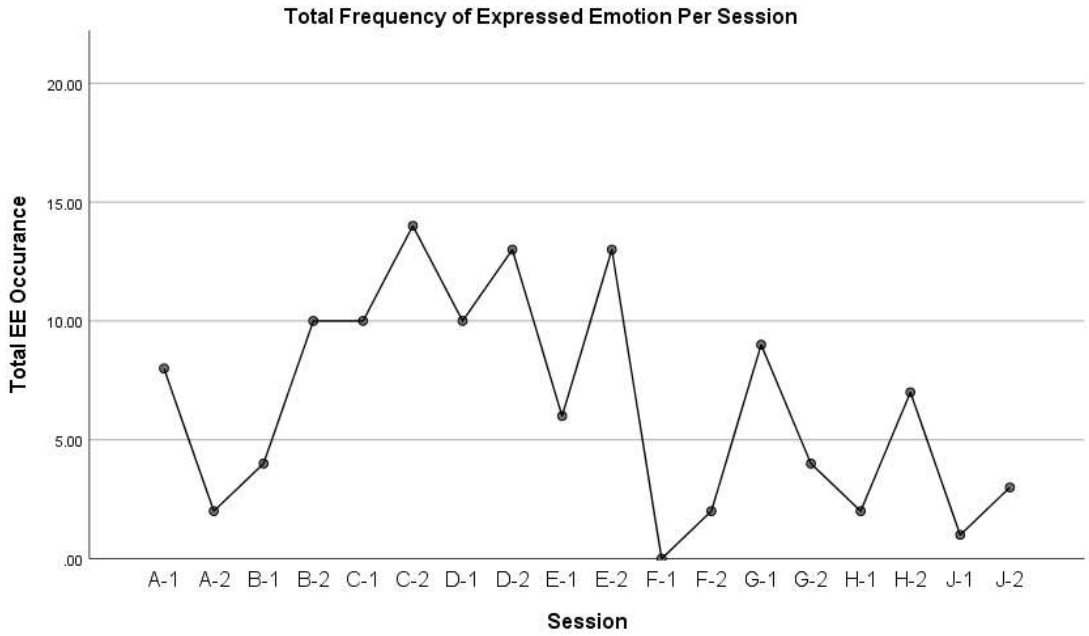

Figure 3.B. Total Frequency of Expressed Emotion Per Session for Dyad C

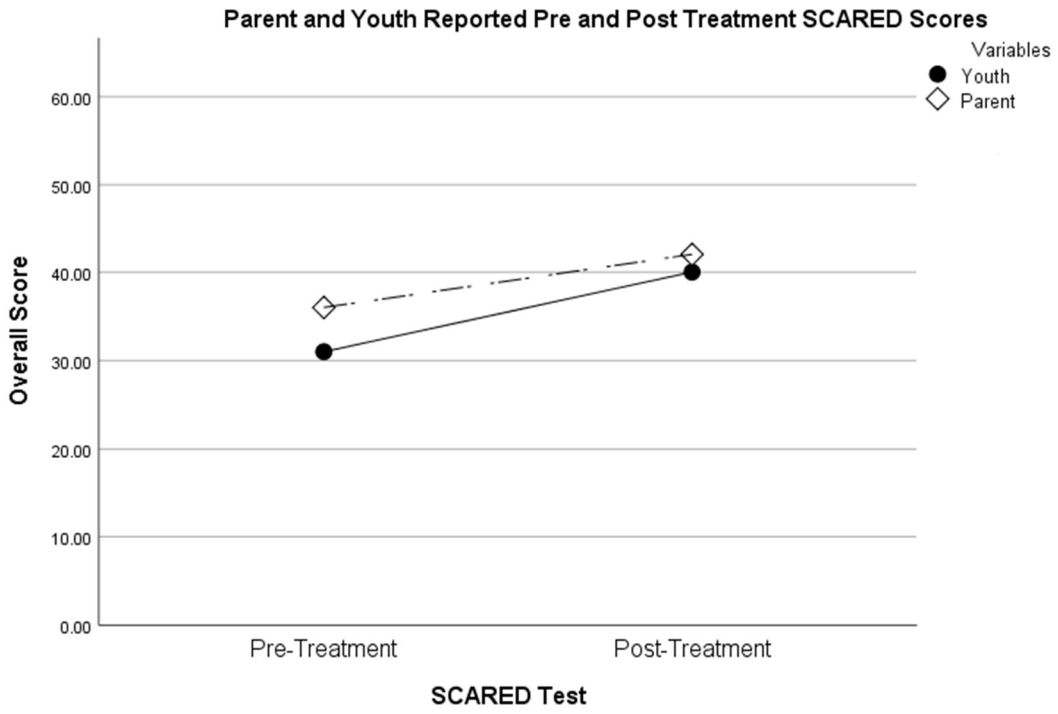

Figure 3.C. Pre and post treatment SCARED scores for Dyad C

Summary. As demonstrated by Figure 3.A., the level of criticism and hostility for Dyad C fluctuated throughout treatment and staying the same by the end of treatment. Overinvolvement increased between sessions C-1 and G-2 but ultimately decreased overall by the end of treatment. As demonstrated by Figure 3.B., total EE frequency increased in the middle of treatment and decreased in general after session E-2. As demonstrated by Figure 3.C., Both youth and parent reported increased anxiety scores by the end of treatment, with the largest increase reported by the youth. Note both the youth and parent report more anxiety symptoms at end of treatment (Graph 3.B).

Dyad D

Family information. At the start of the initial study, youth was a 14 years, 3 month Caucasian female who was the youngest biological child of the mother and attended public school. The mother was 39 years old with a college degree working in financial business. The father was

38 years old with a college degree working as a computer programmer. The parents were married for 16 years and had two children.

Analysis. Table 4 describes the specific length, context and whom was currently present for each time frame. Figure 4.A describes the recorded number of each expressed emotion variable (criticism, hostility, overinvolvment) evident during each section of the treatment, while Figure 4.B shows the total overall EE scores per time point. Figure 4.C shows the pre-test anxiety SCARED scores and the post-treatment anxiety SCARED scores for both youth and parent.

Table 4. Video information per section for Dyad D

Video	Length (mins)	Context	Attended	Therapist
A-1	15	Introduction	Dyad x2	T1
A-2	34	Debrief	Parents	T1
B-1	15	Review	Dyad	T1
B-2	15	Discussion	Dyad x2	T1
C-1	15	Review	Dyad x2	T1
C-2	23	Discussion	Dyad x2	T1
D-1	15	Review	Dyad x2	T1
D-2	15	Debrief	Parents	T1
E-1	15	Review	Dyad x2	T1
E-2	12	Debrief	Parents	T1
F-1	15	Review	Dyad x2	T1
F-2	23	Debrief	Parents	T1
G-1	15	Review	Dyad x2	T1
G-2	15	Debrief	Parents	T1

Source: Secondary data analysis (Hepburn et al., 2016)

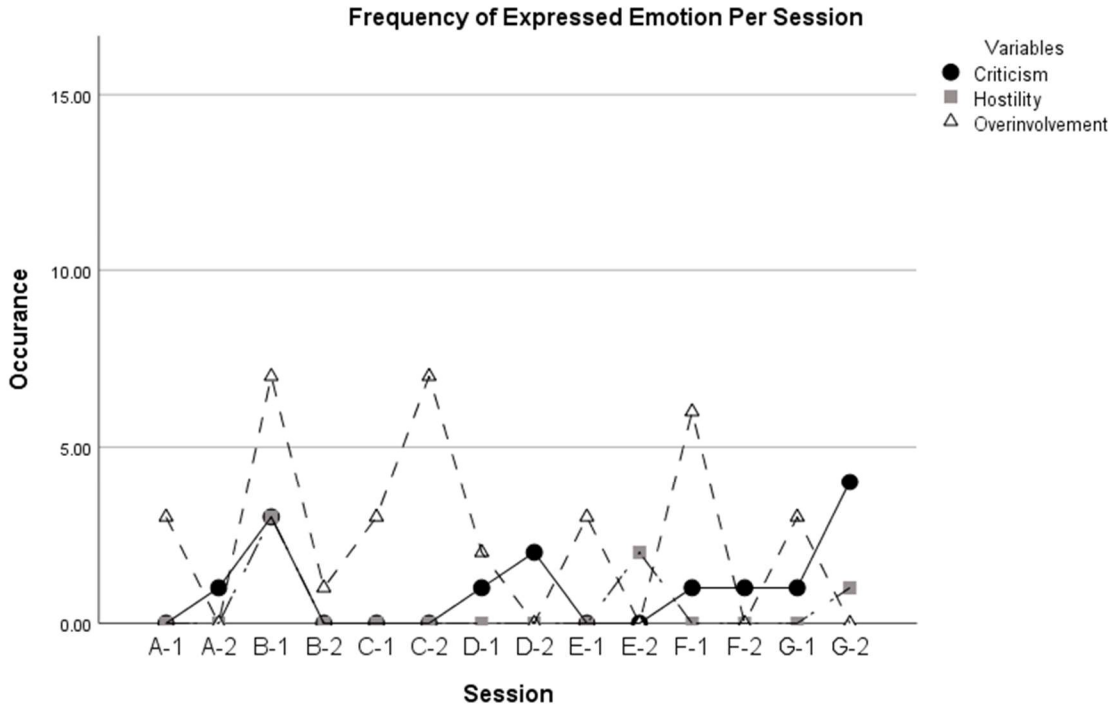

Figure 4.A. Frequency of expressed emotion for Dyad D

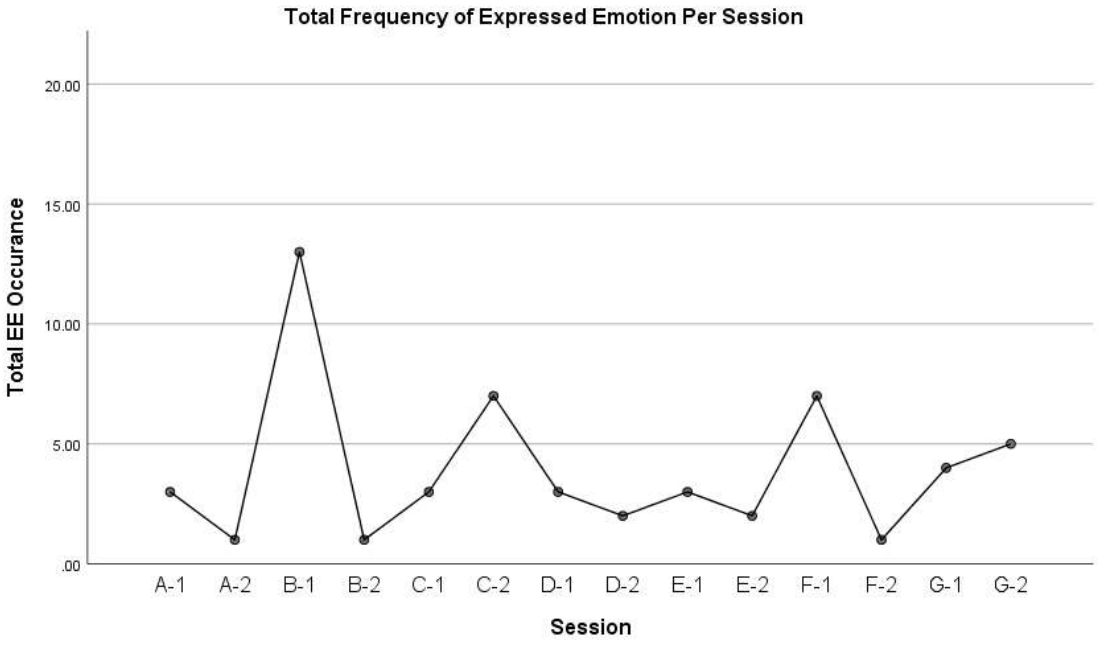

Figure 4.B. Total Frequency of Expressed Emotion Per Session for Dyad D

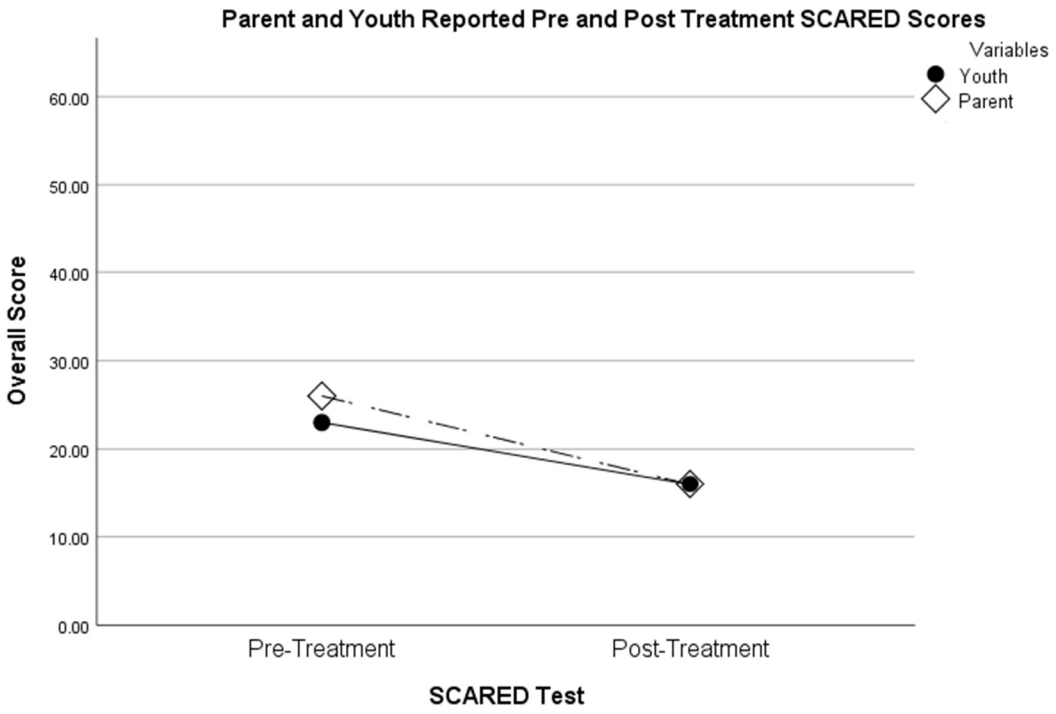

Figure 4.C. Pre and post treatment SCARED scores for Dyad D

Summary. As demonstrated by Figure 4.A., all three variables fluctuated throughout treatment, with criticism increasing at the end. Hostility seemed to stay the same. Overinvolvement spiked during session B-1, C-2, and F-1 with the spikes decreasing in height throughout treatment indicating a slight decrease overall by the end of treatment. As demonstrated by Figure 4.B., total overall EE increased in session B-1 but decreased afterwards. Throughout treatment, the total EE stayed consistent. As demonstrated by Figure 4.C., Both youth and parent reported lower anxiety scores by the end of treatment with the largest decrease reported by the parent.

Discussion

The results partially support the hypothesis that there is a negative association between negative parental expressed emotions (indicated by higher scores in criticism, hostility, and emotional overinvolvement) and positive family-focused treatment outcomes. As presented in the graphs, all four subjects decreased their level of parental overinvolvement throughout treatment,

and the majority of the dyads decreased their level of criticism and hostility. However, the level of overall expressed emotion fluctuated throughout treatment. In general, criticism and hostility was more evident during times when the child was not present and overinvolvement was more evident during times when the child was present. When it comes to reported SCARED scores, 3 of the 4 dyads reported lower anxiety symptoms after treatment, with one reporting an increase, which will be addressed in the observations section.

Observations

Dyad A demonstrated the expected outcome from the intervention with an overall decrease for all three variables by the end of treatment, reflected in a reduction in the anxiety levels of both the parent. By the end of treatment, Dyad A showed the most considerable, visible decrease in Expressed Emotion, which reflected the greatest, visual decreased in SCARED score post-treatment compared to pre-treatment SCARED scores. Although 75% of the dyads showed this trend, some examples showed various degrees of outcomes, indicating each parent-child dyad responded differently to the treatment, which could be associated with a variety of factors, which the limitations section explains further.

One dyad's frequency of overinvolvement peaked in the middle of the sessions (see Dyad C). This trend could be hypothesized as a typical trend in therapy based on personal observations in conducting therapy sessions. In the beginning, clients may be less willing to express themselves and minimize their problems as they are developing trust towards the therapist. As the treatment goes on, clients may form a stronger alliance towards their therapist and become more comfortable expressing their feelings and symptoms, hence the spike in the middle (Leibovich, Front, Mccarthy, & Zilcha-Mano, 2019). Once these symptoms are presented, the therapist and client can work on implementing interventions helping decrease the presence of these symptoms.

In some instances, other behaviors, such as criticism, slightly increased by the end of the treatment (see Dyad D). At this point during the treatment, the dyads were working on implementing the interventions to help reduce anxiety rather than discussing the anxiety and helpful interventions without action. When practicing interventions, the dyads became more interactive with one another, resulting in more conversation about what may or may not be working at the moment. When working with interventions in real-time in the presence of a therapist, the interactions became more authentic and more realistic. If something was not working, the parent would often refer to the therapist, point out the behavior, and ask for guidance verbally. Since criticism was coded as a verbal behavior, the increased opportunity for the parent to verbally interact and problem-solve with the child could be the reason there was an increase of criticism and hostility during the latter half of treatment, when there was more opportunity for the two to interact directly. As mentioned earlier, youth with ASD struggle interpreting non-verbal behavior(Solomon et al., 2011), so since the parents are working closely with their child, they may be come more aware of those challenges possibly leading to a more instances of verbalizing their needs towards the child towards the end of treatment.

In many instances, the presence of overinvolvement was much more evident during times that both the parent and child were present, and criticism and hostility were more present during times the child was gone. This idea makes sense as it is easier to intervene, interrupt, and control the child while sitting next to the parent compared to while they are gone, and parents of children with ASD typically demonstrate more of these negative parenting behaviors towards their child (Blacher et al., 2013). As for criticism and hostility, people are typically more willing to express their frustrations and displeasure about others when the individual is not present, which could explain the reasoning behind the increased numbers of these variables during these times (Hooley,

2007). This increase of overinvolvement while the child was present could be explained by Dyad C's response to the overall treatment experience stating they became more aware of the anxieties by the end of treatment.

When it comes to the reported anxiety levels at the end of treatment, both the parent and the youth reported similar changes, with the majority of the dyads reporting lower levels of anxiety. However, one dyad reported an increase of anxiety. In the intial study, the therapist noted that the dyad learned more about anxiety over the course of treatment, and the therapist hypothesized that the increase reflects increased understanding of the youth's problem behaviors as anxiety driven and less as oppositional or noncompliant (Hepburn et al., 2016).

Limitations

When it comes to making inferences, the presented study has a variety of limitations to consider. Since there were only four total participants in the study, there is a low external validity, meaning it cannot be used to generalize to the specific population. Plus, the inclusion criteria required verbal fluency and average intellectual functioning, making it less generalizable to the entirety of the adolescents with ASD population. The research was also only conducted in the Colorado area, so it cannot be generalized to other locations. With the small sample size, there were limited options for statistical analysis, so a cause-effect relationship cannot be inferred by these results. This study was exploratory to guide further studies. When interpreting results, another limitation would be the use of using percent agreement to measure inter-rater reliability instead of kappa, as kappa is more accurate as it accounts for the possibility of chance. In future studies, kappa should be used to measure reliability instead of percent agreement.

Another limitation of the study is the use of secondary data, meaning the study could not be designed to answer the research question directly and could not control for all variables.

Suggestions to reduce these limitations would be collecting data from a larger sample size, coding using secondary data from a treatment focused on the effects parenting styles have on children's anxiety levels, coding using in-person sessions, and using data from other locations other than Colorado State.

Conclusion

The results of the study partially support the hypothesis that there is a negative association between negative parental expressed emotions (indicated by higher scores in criticism, hostility, and emotional overinvolvement) and positive family-focused treatment outcomes (as indicated by the parent and youth self-report of the severity of anxiety symptoms before and after the intervention). This hypothesis was expected as parents who show higher rates of parental stress, and negative parenting behaviors typically report higher rates of problem behaviors in their child (i.e., conduct issues, hyperactivity) often associated with anxiety (Matson et al., 2009; C. Smith et al., 2018). As demonstrated by this study, the stress level between the parent and the child may influence the treatment outcomes and effectiveness of therapy related to reducing anxiety symptoms in adolescents with ASD. When parents start decreasing the frequency of negative behaviors towards the youth, both the youth and parent may see a decrease in their anxiety symptoms. With this knowledge, treatments can be measured and developed focusing on reducing the parent's levels of overinvolvement, criticism and hostility when interacting their child with ASD. When these behaviors are reduced, the children may show less presence of anxiety possibly decreasing the parent's stress levels. Further research is needed to determine if these results can be replicated with other populations other than youth with ASD and if this is evident in various stages of life. The in-depth analysis of this sample using an EE lens can help future studies explore EE in parents with adolescents with ASD, as case series are often starting points for future research

(Kazdin, 1983). The in-depth single-subject design is important in providing foundations for developing and implementing future evidence-based practices (Byiers et al., 2012).

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