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The Role of Family Intervention in Improving Individual and Family Functioning in DBT for Adolescents

A dissertation submitted in partial fulfillment of the requirements for the degree of

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by

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Abstract

Having a child struggle with suicidal or self-injurious behavior is a major challenge: families are rarely prepared to handle such difficulties and the role of family interventions has been largely neglected. Utilizing a randomized control trial design with a waitlist control group (WL), the present study tested the effectiveness of FC vs WL in: 1) improving adolescent individual outcomes, 2) improving family functioning, and 3) reducing parent distress and burden, and increasing their ability to cope. 116 families were recruited from an adolescent residential treatment facility that provides comprehensive DBT. Adolescents completed measures of individual and family functioning early following admission (T1), one-month post FC or at the end of a waiting period (T2), and within seven days of discharge (T3). Parents completed measures of individual and family functioning at T1, and again at T2. Results showed that adolescents whose parents were randomly assigned to FC had better treatment gains, and reported greater improvement in parent-child communication. Specifically, adolescents in the FC condition reported decreased difficulties with emotion dysregulation and distress, above and beyond gains achieved through standard DBT treatment. Additionally, parents in the FC condition were rated by their teens as more validating, less invalidating and more emotionally available four weeks after participating in FC. Changes in validating and invalidating responses were correlated with treatment outcomes. These findings suggest the importance and effectiveness of interventions specifically designed for parents and of FC in particular.

Introduction

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The Role of Family Intervention in Improving Individual and Family Functioning in DBT for Adolescents

Suicide is the third leading cause of death among adolescents in the USA (CDC, 2010), with over 100,000 teen deaths worldwide each year (WHO, 2002). Suicide accounts for more deaths among teens than all natural causes combined (Anderson, 2002). The CDC estimates that 20% of teens have seriously considered suicide with at least 15% having a specific plan and 8.8% making an attempt. Estimates of the prevalence of non-suicidal self-injury (NSSI) range from 15% to 35% among adolescents, with NSSI presenting a significant risk of suicide (Gratz, 2001). Further, between 31% and 50% of adolescent suicide attempters engage in a subsequent attempt, many within a span of only a few months from the first attempt (Miller, Rathus & Linehan, 2017). These repeated attempts often result in multiple hospitalizations and significant financial and psychological burden for families (Marsh, Lefley, Evans-Rhodes, Ansell, Doerzbacher, LaBarbera, & Paluzzi, 1996). Of more significant concern, repeated suicide attempts are a strong predictor of eventual completed suicide (McLean, Maxwell, Platt, Harris, & Jepson, 2008). Additionally, adolescents who are most at risk for suicide attempts often experience multiple problems including substance use, mood, anxiety and eating disorders (Brent, Perper, Goldstein, Kolko, Marjorie, Allman, & Zelenak, Miller et al, 2007). In fact, the odds of suicide attempt increase exponentially for each new problem behavior, with a 277.3 greater risk of suicide attempt when six problem behaviors are present (Miller et. al, 2017). It is easy to see how having a child struggle with suicidal or self-injurious behavior and emotion dysregulation can significantly impact a family. Parents are rarely prepared to handle such difficulties and often report feeling at a loss for what to do (Hoffmam, Fruzzetti, Buteau, et al., 2005).

Dialectical Behavior Therapy (DBT) has been adapted to treat multi-problem adolescents (Miller, et. al 2017; Miller & Linehan, 2014; Groves, Baker, Bosch, & Miller, 2012) and growing evidence suggests the treatment is effective in outpatient (Mehlum, Tormoen, Ramberg, Haga, Diep, Laberg et al., 2014) and inpatient settings (Sunseri, 2004; Wasser, Tyler, Mcllhaney, Taplin, & Henderson, 2008). Many DBT programs for adolescents include family based intervention, usually in the form of a multi-family skill group as suggested by Miller, Rathus & Linehan (2017) although very little research has investigated the effectiveness of family based interventions in DBT for adolescents. Research on family based interventions for adolescents, including family psychoeducation (e.g. Ong & Caron, 2008) and brief family based interventions with suicidal adolescents (Rotheram-Borus, Piacentini, Cantwell, Belin, & Song, 2000) suggest that these interventions can augment treatment outcomes for teens.

Why family intervention matters: a transactional model

Individual and family functioning are inevitably connected (Fruzzetti, 1996; 2006). The psychological impact of having a chronically suicidal child or family member can lead to significant impairment in parent and family functioning (Harned et al., in review). The transactional model hypothesizes that the problems associated with suicidality and self-injurious behaviors can be attributed to pervasive emotion dysregulation, which is developed and maintained through long-standing transactions between an individual's dispositional vulnerabilities and an invalidating social environment (Linehan, 1993; Fruzzetti et al., 2005; Sturrock & Mellor, 2013), with mutual influence between these two factors. In fact, difficulties with emotion dysregulation have been found to be exacerbated when parent-adolescent conflict occurs frequently, and this effect is particularly problematic for

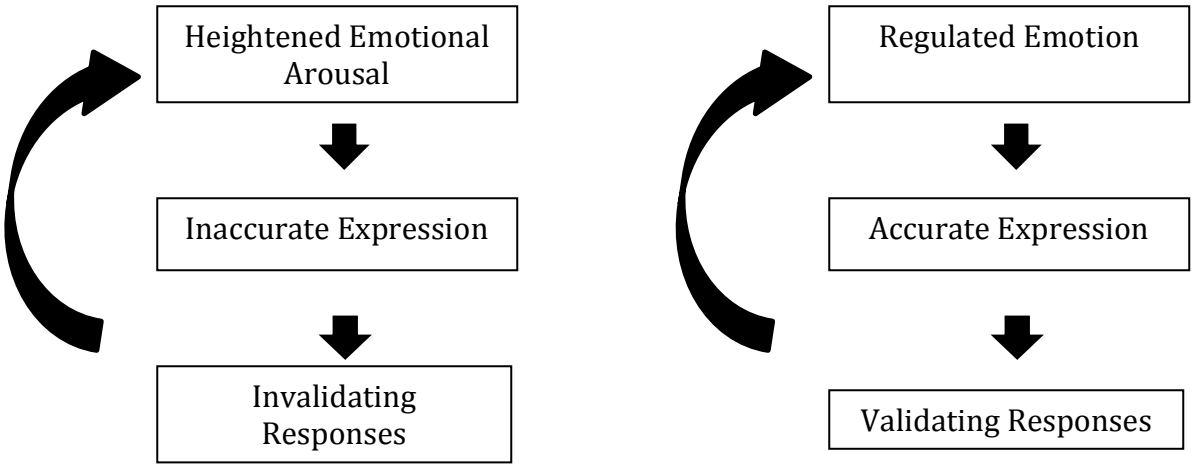
adolescents with high emotional sensitivity (Lissa, Koot, Hawk, Branje, Meeus, 2017). Without improvement in family functioning, individual difficulties can be created or exacerbated overtime, which in turn will increase difficulties in the family environment (Fruzzetti & Worrall, 2010).

Evidence suggests that emotion dysregulation may play a role in the causal and maintaining factors of mood, anxiety, substance use and eating disorders, and even schizophrenia and psychotic disorders (e.g. Cisler, Olatunji, Fender, & Forsyth, 2010; Haynos & Fruzzetti, 2011). Many diagnostic labels, such as eating disorder, depression, substance use and PTSD may be linked to difficulties with emotion vulnerability and lack of sufficient regulation strategies. Depending on where these difficulties lie (difficulties with attention, interpretations, reactivity, etc.) the resulting psychopathology may differ (Neasciu et. al. 2014.) Interventions targeting specific emotion regulation strategies have been shown to be effective in treating emotion dysregulation across disorders (Neacsiu, Bohus, & Linehan, 2014.) Emotion dysregulation occurs when high emotional arousal interferes with effective self-management, leading the person to focus increasingly in reducing painful emotions and regaining self-control in the short-term, often at the expense of his or her long-term goals. Pervasive emotion dysregulation refers to the difficulties across a wide range of emotions and situations, often leading to significant impairment or distress (Neasciu et. al. 2014). Individuals struggling with severe emotion dysregulation often experience high negative emotional arousal, which when sufficiently elevated, leads to increased focus on *escape* from this painful experience and less on effective problem solving, tolerating the experience, or engaging with a loved one in a constructive way (Fruzzetti & Jacobson, 1990). Dysfunctional behaviors, such as self-injury, substance abuse, and even aggression, develop

as a means of escaping aversive emotional arousal.

As figure 1 shows, when arousal is high, it becomes difficult to express one's experience in a way that is accurate and easily understandable. It is much easier to validate another when the person expresses him- or herself accurately, that is, when someone expresses his or her thoughts, emotions, wants or experiences without interpretations or judgments. When those experiences are validated, arousal is soothed and goes down significantly even in distressing situations (Shenk & Fruzzetti, 2011), which in turn helps the individual stay oriented to goals and maintain accurate expression, creating a pattern that allows for each party to be understood. In contrast, the inaccurate expression that occurs when arousal is high leads to a shift in attention towards judgments, finding fault ("wrong" or "bad"), or defensiveness with the other person or with the self. These judgments fuel negative emotional arousal making it more likely that the person will say or do hurtful things. These inaccurate expressions are easily *invalidated.* Invalidation in turn, further heightens emotional arousal, creating a pattern of conflict, mutual blame and distancing.

Figure 1: *Transactional Model.*



Evidence for this model suggests that perceived parental invalidation in childhood, as well as current invalidation in meaningful relationships are predictors of difficulties with emotion regulation in adulthood (Sturrock & Mellor, 2013), while validating responses help soothe emotions and reduce distress (Shenk & Fruzzetti, 2011). Due to the increased frequency of high negative emotional arousal experienced by individuals with high emotion vulnerability and poor emotion regulation skills, they tend to be invalidated frequently and often inadvertently by well-meaning family members and others in their environment. Overtime, these invalidating experiences contribute to individual's difficulties in distress tolerance and emotion regulation (Sturrock et al., 2013).

Chronically elevated negative emotion and emotion dysregulation create a dysfunctional cycle that can quickly burden family relationships as well as exacerbate individual distress and psychopathology. It is important to note that a pattern of problematic transactions do not occur solely because of either dysregulation or invalidation. One factor influences the other, creating the pattern of problematic transactions over time. There is a reciprocal relationship between vulnerability to negative emotional arousal and invalidating environment, in such a way that if either factor is sufficiently extreme, it can lead to or exacerbate the other (Fruzzetti, 2006). Thus, family members are encouraged to focus on what they can do to change the transaction by creating a more validating environment, that is, one that tolerates and accepts differences, legitimizes other's experiences, and communicates acceptance.

Family based interventions for emotionally dysregulated, multi-problem adolescents

Although some recent research efforts have focused on specialized treatment for chronically suicidal adolescents, such as DBT (see Groves, Backer, Bosch, & Miller, 2012

for review; Mehlum et al., 2014), the role of family interventions have not received as much research attention. DBT programs for adolescents typically include individual therapy and family intervention, typically via multi-family skills training groups, family therapy, and sometimes both. Research on the effectiveness of family interventions per se in DBT for adolescents is extremely limited. Very little research has explored the specific challenges faced by parents and family members of suicidal teens and only one study has included data from parents. Studies conducted to date have indicated that multi-family skills training group is effective in reducing hospitalizations and increasing rates of treatment completion (Rathus & Miller, 2002), reducing adolescent depression and dissociative symptoms, as well as reducing parent depression (Woodberry & Popoenoe, 2008). While there is limited data on the effectiveness of family based interventions for individuals with severe emotion dysregulation difficulties some evidence suggests that improvement in family functioning mediates treatment outcomes for young adults (Fruzzetti et al. 2015).

Families of individuals with mental illness often serve as the first and last resort for their relatives (Marsh & Lefley, 2003) and in many cases end up on the front line serving as informal case managers and crisis intervention workers. Too often these roles require family members to manage situations for which they are ill-prepared, and the impact on them can be catastrophic (Marsh, 1992). In turn, the ramifications of the impact of the illness on the family member may impact the adolescent, as family members with their own levels of depression and distress are less able to help their relative when needed (Hoffman et al., 2003; Perlick, Rosenheck, Clarkin et al., 2001). This inevitably exacerbates the problem: without improvement in family functioning, individual difficulties can be created or exacerbated overtime, which in turn will increase difficulties in the family environment (Fruzzetti &

Fruzzetti, 2003). For families struggling with severe emotion dysregulation, the impact can be even more catastrophic. Studies have shown that family members of individuals with severe emotion dysregulation difficulties report strained family and marital relationships, shame, guilt, resentment, and stigma from both friends and mental health professionals, and isolation (Ekdhal, Idvall, & Perseius, 2014). In addition, families encounter "surplus stigma", stigma that is above and beyond what is typically experienced by family members of individuals with severe mental illness (Hoffman, Fruzzetti, & Buteau, 2007). This includes patients and their families being turned down for services, and receiving contradictory or judgmental information that is blaming of families or patients. It is clear that these families simply cannot do it alone and that family based interventions are likely to have significant impact on treatment outcomes for disordered family members, preventing relapse, and as an end in itself for family members (Hoffman & Fruzzetti, 2007).

While some family based programs have been developed, their availability remains limited and it is almost exclusively offered as an outpatient service (e.g. Dixon et al. 2001, Hoffman et. al. 2005, Gunderson et al. 2002). When suicidal adolescents require residential treatment, their parents are often left with very few resources during and after their child's hospitalization. The level of family intervention that is possible in this type of setting is often insufficient. Patients are admitted and discharged with lengths of stay that vary considerably, and families are typically geographically distant. To date, there are no empirically supported treatments or programs developed specifically to address the problems faced by these parents and families.

Family Connections

Family Connections is an empirically supported program for families struggling with emotion dysregulation (Hoffman et al, 2007). Unlike other multi-family psychoeducational programs, FC is exclusively intended for family members, and patients do not participate in the program. The program typically follows a 12-week multi-family group format, where trained family members and/or professionals provide psychoeducation, individual and family DBT-based skills and social support (e.g., Fruzzetti, Gunderson & Hoffman, 2014). FC has been shown to be effective in reducing family member experience of depression, grief and burden, as well increase mastery, empowerment, and well-being with results being maintained or enhanced at a 3 month follow up assessment (Flynn , Kells, Corcoran, Herley, Suarex, Cotter, et. al, 2017; Hoffman et.al, 2005; 2007, Rajalin et.al, 2009). In a qualitative analysis of participant experience following the program, Ekdahl et al. (2014) found that families described feeling more connected to their relative, gaining new confidence as parents, and finding a sense of hope that things would improve. They also described that their participation in the program was motivating for their relative to stay in treatment. In addition to that, participants described having learned valuable tools to help them navigate their family environment and reported greater understanding and acceptance of their loved ones difficulties.

Figure 2: *Summary of FC Research Outcomes*.

	Hoffman et al., 2005	Rajalin et al., 2009	Hoffman et al., 2007	Ekdahl et al., 2014	Flynn et al. 2017
# of Sessions	12	9	12	10-12	12
Diagnosis	BPD	Suicidality	BPD	BPD	BPD
N	44	18	55	70	51
Types of Relatives	Parents: 39 Siblings: 1 Spouse/Partner: 4	Parents: 12 Siblings: 1 Spouse/Partner: 4	Parents: 42 Siblings: 4 Spouse/Partner: 9	Parents: 70 Siblings: 0 Spouse/Partner: 0	Parent: 29 Spouse: 14 Other: 8
Family Member Outcomes Post Treatment:	↓ Burden ↓ Grief ↑ Mastery	↓ Burden ↓ Anxiety ↓ Depression ↓ Perceived Criticism ↓ Critical Comments ↓ EOI	↓ Burden ↓ Subjective Burden ↓ Objective burden ↓ Grief ↓ Depression ↑ Mastery	↓ Depression ↓ Anxiety ↑ Hope for the future ↑ Daily life strategies	↓ Burden ↓ Grief
Average # of Sessions Attended	10 (83%)	7 (79%)	10 (83%)	10-12 (100%)	N/A
% Completed Program	80%	72.2%	91%	74.2%	100%
Follow Up:	3 months	None	3 months	None	3 and 19 months

Family Connections is typically delivered in a multi-family group format, where participants are family members, or close friends of individuals struggling with problems related to severe emotion dysregulation (e.g., suicidality and self-harm, substance use problems, and related difficulties). However, this original format is not often feasible for families in the most severe group of teens and parents, when the child requires long-term residential care. In an effort to bridge this gap in services, the Family Connections program was adapted from its original format to a 2-day workshop to meet the specific needs of this population. Parents receive psychoeducation, psychological skills including emotion, crisis, and problem management, and parenting skills, as well as social support from other families.

Figure 3. *Summary of Family Connections curriculum.*

Family Connections

Psychoeducation | Skills | Support

Modules	Goals	Content
I. Introduction and Orientation	• Goals and guidelines for the group • Overview of the program	• Group guidelines • Rights of relatives • Criteria of Borderline Personality Disorder • Basic assumptions of FST
II. Family Education	• Understanding emotion dysregulation • The Transactional Model • Research on Treatments	• Five areas of dysregulation • Types of treatment for BPD • Co-occurring problems with BPD • Etiology of BPD: emotion vulnerability and invalidating environment • The Transactional Model
III. Relationship Mindfulness Skills	• Describing a "validating family environment" and the role of mindfulness of others in increasing understanding • Managing negative emotions • Reducing invalidating responses	• What is a "validating family environment"? • Relationship mindfulness • Reducing judgments • Emotional self-management • Relationship Mindfulness skills
IV. Family Environment Skills	• Understanding reciprocity in relationships and how individual and family well-being are interdependent	• What makes it difficult to validate • Applying the Transactional Model • Finding balance: dialectical polarities and tensions • Radical Acceptance
V. Validation Skills	• What to validate and how to do it	• What is validation? • Types of validation • What and how to validate • Levels of validation • Self-invalidation • Interpersonal Skills: DEARMAN, GIVE, FAST
VI. Problem Management Skills	• How to use all the previous skills to choose whether to accept a situation or problem, or to try to change it, • How to engage effectively in collaborative change	• Approaching problems effectively • Problem analysis • Chain Analysis • Acceptance and Change

The program is unique in that it provides families with the needed coping skills to manage the difficulties of having a chronically suicidal child undergoing intensive treatment, family and relationship skills to improve family functioning, and help preparing families for the potential difficulties faced after discharge, when families attempt to return to their routines. Additionally, families are educated on the causes of the problems their child is experiencing in a non-blaming manner (i.e., a transactional model, as noted above), available treatments, and receive social support from leaders and other group members who are simultaneously going through similar difficulties.

Preliminary data

In a pilot study evaluating this program, in preparation for the present study, adolescent patients were asked to rate their parent's validating and invalidating responses before parents attended FC, and at a 2-week follow up. The results indicate significantly increased validating responses from their parents, and significantly decreased invalidating responses (Payne & Fruzzetti, 2014).

While data from this preliminary study were encouraging, further data from a randomized controlled trial are needed. Of particular interest is the investigation of the effectiveness of the program for both patients and parents. Given the transactional model on which the FC program is predicated, we anticipate that there would be beneficial effects of parent program participation for the adolescent. That is, if family members are learning to manage their distress more effectively, and also learn how to be more validating of their loved ones, this should contribute to improvements in adolescent treatment outcomes.

The present study

The present study aimed to evaluate the effectiveness of a 2-day Family Connections program, adapted from an empirically supported program for family members, and designed to meet some of the specific challenges faced by parents of emotionally dysregulated adolescents. Specifically, this study evaluated the effectiveness of the FC program in individual treatment outcome for adolescents and the effectiveness of the program in reducing parent distress and problematic communication patterns utilizing a randomized design.

Hypotheses:

1. Adolescents whose parents were randomized to the FC condition will report significantly greater improvements in their parents' responses to them (i.e., increased validating and decreased invalidating responses, increased emotional availability) than adolescents whose parents are randomized to the waitlist condition.

2. Changes in adolescent reports of their parents' responses to them will predict (mediate) adolescent treatment outcomes (i.e., decrease DERS and DASS scores, and decrease out of control behavior) at discharge.

3. Adolescents whose parents participate in FC will have significantly better treatment outcomes at discharge than adolescents whose parents do not attend FC.

4. Parents in the FC condition will report significantly lower burden, distress, and grief and increased empowerment than parents in the waitlist condition.

Method

Setting

Data was collected in a residential treatment facility for suicidal and self-injuring adolescents. The facility has a dedicated DBT unit with an average length of stay of 3-4 months. The program offers a comprehensive DBT based treatment package (Linehan, 1993) that includes: 1) weekly individual therapy for the teen; 2) weekly family therapy that typically includes the teen and one or more parents or other caregivers; 3) skills training group at least four times per week for the teen; 4) skills coaching across the milieu; 5) weekly DBT consultation team meetings. The multidisciplinary treatment team includes psychiatrists, nurses, and mental health technicians, all of whom receive some training in DBT skills. All DBT therapists are master's level therapists intensively trained in DBT.

Participants

112 adolescents and 94 parents participated in the study. 54 (48.2%) families were randomized to the FC condition and 58 (51.8%) were randomized to the waitlist condition. The sample for this study included 108 females and 3 males. Mean age was 15 (SD=1.3), with 66.7% identifying as Caucasian, 20.7% of mixed/other ethnicity, 6.3% Hispanic/Latino, 4.5% African America, 1% Middle Eastern, and 1% Native American. The average length of treatment for this sample was 12 weeks (SD=6.9), ranging from 4-34 weeks.

Participating parents (N=94) consisted of 28 males and 66 females. The mean age for parents was 45.4 (SD=7.2). 84% of parents identified as Caucasian, 5.3% Asian, 5.3% Hispanic, 2.1% Native American, 1.1% Middle Eastern, and 2.2% identified as being from other ethnicity. 77.7% of parents were married, 17% were divorced, 2.1% were single, 2.1% were separated, and 1.1% widowed. Parental level of education varied, with 3% of parents

indicating that they completed less than a high school education, 15.4% completed high school, 20.9% completed some college, 30.8% completed college, 33% had more than college education. Additionally, 30.9% of parents identified themselves as being a member of the U.S military.

Only patients who had a parent or legal guardian involved in treatment (i.e. attending family sessions or planning to attend FC) were included. Adolescents in custody of the State were not included or those who were transferred to a different unit within WSC were excluded from the study. Data from parents or legal guardians actively involved in treatment (i.e. attending family sessions) were included in this study.

Table 1. *Participant Demographics.*

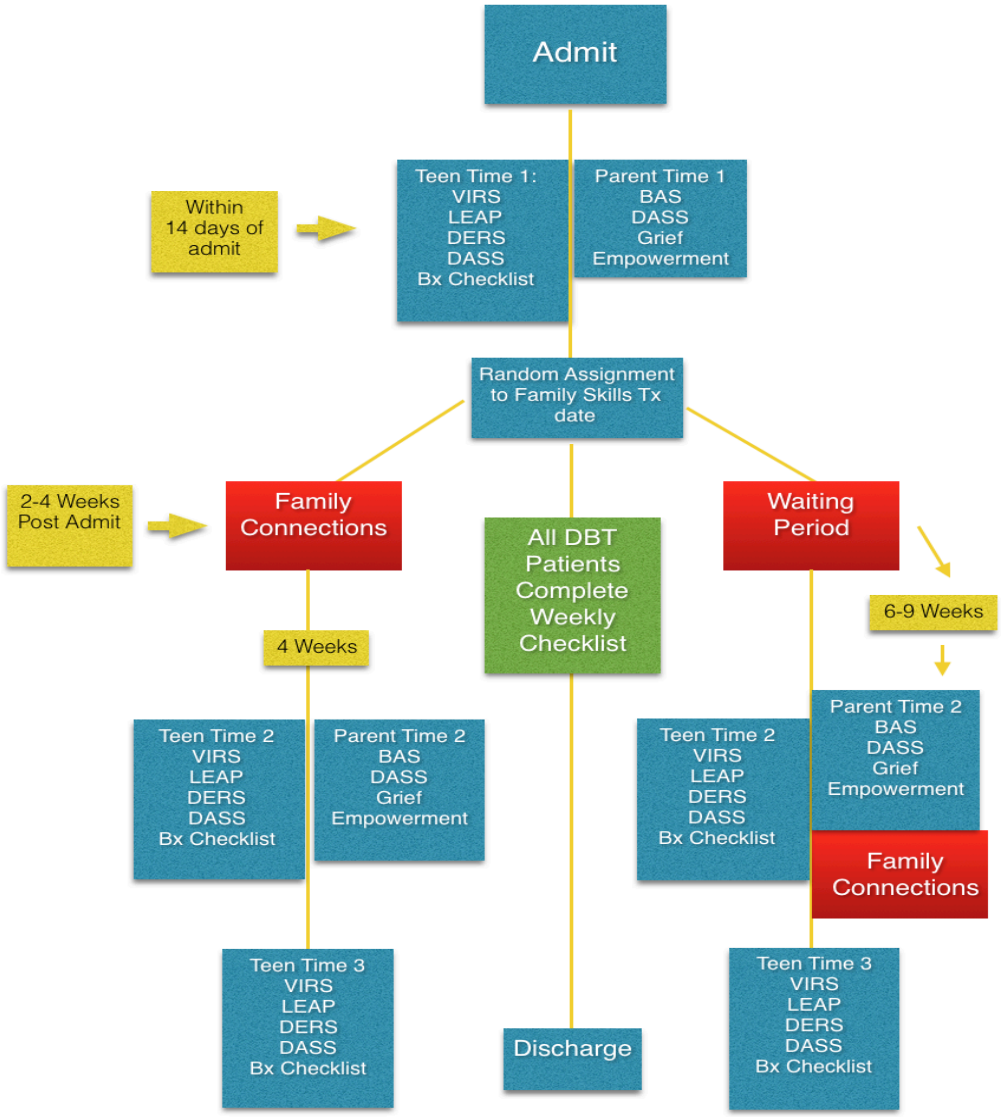
	Adolescents	Parents
N	112	94
Age	M=15 (SD=1.3)	M= 45.4 (SD=7.2)
Sex		
Female	109	66
Male	3	28
Gender		
Female	90	66
Male	11	28
Other	11	N/A
Ethnicity		
Caucasian	66.7%	84%
African American	4.5%	N/A Hispanic/Latino 6.3% 5.3%
Asian	N/A	5.3%
Middle Easter	1%	1.1%
Native American	1%	2.1%
Other/Mixed	20.7%	2.2%
Treatment Duration	12 weeks (SD=6.9)	N/A
Marital Status	N/A	
Married		77.7%
Divorced		17%
Single		2.1%
Separated		2.1%
Widowed		1.1%

Procedure

Parents of adolescents undergoing residential DBT were randomly assigned either to a treatment (FC) or wait-list control group. Parents in the treatment group were assigned to the first available treatment date, typically within 2-4 weeks after the adolescent was admitted. Parents in the control group were offered the opportunity to participate in FC

following the waitlist period (typically 6-9 weeks waiting period), thus all families in need of treatment have the opportunity to participate in the program. FC groups were offered once a month for the duration of the study. Group size varied and accommodated up to 35 participating parents, who represented an average of 15 families/teens. Figure 1 shows the summary of the study flow and procedure

Figure 4: *Study procedure flowchart.*



Recruiting and consent. Upon admission, parents were contacted by the research team via telephone and were informed of the study. Parents who expressed willingness to participate received a link to an online survey. The online survey included information regarding parent and teen participation consent indicated by clicking the 'continue" button on the online survey. A member of the research team provided full disclosure of procedures to adolescents at WSC during the first week of treatment. Adolescents were offered the opportunity to provide assent or refuse participation at that time, prior to completing any assessment.

Data collection. Family members completed an assessment packet between days 7 and 14 following admission to treatment (T1), 1 month after FC or at the end of waiting period (T2). Adolescents completed an assessment packet between days 7 and 14 of being admitted (T1), one month after their parents' scheduled FC date or at the end of waiting period (T2), as well as one week prior to discharge (T3). Additionally, adolescents completed a weekly *Behavior Checklist* with their individual therapist. Checklists from the first and last three weeks of treatment were included in this study.

Measures

Adolescents. A member of the research team provided paper and pencil questionnaires to adolescent.

Demographic questionnaire is a brief questionnaire written by the researchers assessing adolescent age, gender, ethnicity, and year in school.

The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) is 36-item self-report measure designed to assess clinically relevant difficulties in emotion regulation, and emotion regulation strategies. Items are rated on a 1-5 scale ranging from "almost

always" to "almost never." The DERS is a widely used and reliable measure of emotion regulation with high internal consistency. Sample items include "When I am upset I feel out of control", "I have no idea how I feeling", and "When I am upset, I acknowledge my emotions".

The Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995) is a 21-item self-report measure that assesses the severity of a range of problems common to depression, anxiety, and stress. Items are rated on a 0-3 scale, ranging from "Did not apply to me at all" to "Applied to me very much or most of the time" (over the previous week.) The Depression scale assesses dysphoria, hopelessness, and anhedonia, among others. The Anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The Stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient. Sample items include "I felt down-hearted and blue", "I found it hard to wind down", and "I felt I was close to panic"

Behavior Checklist (Payne & Fruzzetti, 2015) is self-report measure designed to measure coping behaviors and skills use throughout treatment. Participants indicate the extent to which they engaged on each behavior on the checklist on a scale ranging from "Not at All" to "A Lot", as well as indicate whether they experienced urges to engage in the behavior. Adolescents completed this measure weekly during individual DBT session with the help of their therapist. Items include behaviors targeted in treatment such as self-harm, suicide attempts, and aggression (Problem Behavior subscale), as well as skillful coping behaviors such as self-soothing, distracting and self-validation (Skill Use subscale).

The Validating and Invalidating Response Scale- Family (VIRS; Fruzzetti, 2007) is a 16-item self-report measure to assess general levels of validating and invalidating responses from a family member. Items are rated on a 0-4 scale ranging from "Never" to "Almost all of the time". The VIRS consists of two subscales, one measuring validating responses and the other measuring invalidating responses. The two sub-scales are moderately correlated . Sampel items include: "My parent pays attention and listens carefully", "My parent is accepting of how I think, feel or want", and "My parent is very critical or judgmental of my thoughts, feelings and desires".

Lum Emotional Avaialbility of Parents (LEAP, Lum & Phares, 2004) is a meaure of adolescents' perceptions of parental emotional availability and is related to other measures of parenting and emotional/behavioral functioning. Items are rated on a 1-6 scale ranging from "Never" to "Always". cThe measure shows good psychometric properties regarding both reliability and validity. Sample items include "My parent supports me," "My parent shows genuine interest in me," and "My parent pursues talking with me about my interests."

Family members. Family members chose whether they would like to complete assessments via paper and pencil questionnaires or via an online survey.

Demographic questionnaire is a brief questionnaire written by the researchers assessing parent: age, gender, education level, income, marital status, number of children, and psychological treatment history for parent and adolescent.

Burden Assessment Scale (BAS; Reinhard et al., 1994) is a 19- item measure of objective and subjective burden, where higher scores indicate greater experiences of burden. The measure includes factors of disrupted activities, personal distress, time perspective (involving

a negative temporal aspect of managing mental illness), guilt, and basic social functioning (including significant changes in work and social and family life). Participants indicate the extent to which their relative's difficulties impacted these areas of functioning, including: "Had financial problems", "Became embarrassed because of (loved one's) behavior", "Neglected other family member's needs", and "Felt guilty because you were not doing enough to help".

Grief Scale (GS) is a 15-item self-report grief scale adapted from the Mental Illness Version of the Texas Grief Inventory of Grief (Miller, Dworkin, Ward, et al.,1990) and the Texas Revised Inventory of Grief (Fachingbauer, Zisook and De Vaul,1987). The scale has a response category on a 5-point scale ranging from "always true" to "never true," with higher scores indicating higher grief. Items include: " I cry when I am alone and think about my relative's problems", and "I feel pain and sorrow because of what has happened to my relative"

The Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995) is a 21-item self-report measure that assesses the severity of a range of problems common to depression, anxiety, and stress. The Depression scale assesses dysphoria, hopelessness, , anhedonia, among others. The Anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The Stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/agitated, irritable/over-reactive and impatient. **Family Empowerment Scale** (FES, Koren, DeChillo, & Friesen,1992) is a 34-item scale with three subscales: family (12 items), community (10 items) and service (12 items) system empowerment. The items are rated on a 1-5 scale with higher scores indicating greater sense of empowerment. Alpha

for full scale is .90; .82 for Family subscale; .85 for Community subscale is; .91 for Service System subscale. Sample items include" "When a problem arises with my relative I feel I can handle them pretty well", "I know the steps to take when I am concerned my relative is receiving poor services", "I tell professionals what I think about services being provided to my relative".

Results

Participants

117 adolescents completed the assessments. Data from 5 adolescents were excluded from data analyses due to identified response pattern in their assessment packets (e.g. responded all 0s). The remaining 112 were included in analyses. In order to maximize the number of participants utilized in each analysis, participants were not excluded due to missing data. There were a few factors that resulted in missing data. Some adolescents received discharge orders prior to T2, while others discharged before the research team was able to collect T3 data. Additionally, given that paper and pencil data collection utilized with adolescents, some data was missing due to collection error (e.g. participant missed one page in the packet). All missing data appeared to be missing at random, therefore, listwise deletion was utilized in all analyses.

94 parents completed T1 surveys within the first 2 weeks of treatment. 35 parents were removed from analyses as they completed T1 surveys only. Additionally, 11 parents were removed as they did not return T2 surveys within the time frame, and another 9 had not attended FC on their randomized date. This left a sample of 39 parents included in hypothesis 4.

Family Connections attendance

Families were scheduled to participate in FC based on their randomized group. Families in the FC condition attended the first available FC, and families in the WL condition were schedule for the second available FC date (waiting period of 6-9 weeks). Given that this study was conducted in a residential treatment setting, clinical need and scheduling conflict for families unfortunately interfered with randomization frequently, as was expected. When needed, families were permitted to attend FC on a date other than the one to which they were randomized to ensure that all families had the opportunity to participate in FC. Thus, 64 (57.7%) families attended FC as randomized, and 47 (42.3%) families did not follow randomization. Families were considered to have followed randomization if at least one parent or legal guardian attended FC on their scheduled date. A series of t-tests was conducted to identify differences at baseline in families who did and did not follow randomization. There were no significant differences at T1 between the two groups, as reported in Table 2.

Table 2. *Mean Scores at T1 for adolescents whose parents did and did not follow randomization*

Followed Randomization:	**Yes (N=64)**		**No (N=47)**	
	M	**SD**	**M**	**SD**
DERS	108.1	34.3	102.5	27.2
DASS-Depression	9.3	6.0	8.9	5.1
Problem Behavior	5.0	3.0	6.0	3.8
Mother Validation	28.5	11.5	32.0	10.2
Mother Invalidation	7.6	5.4	6.8	5.6
Mother LEAP	64.7	23.8	64.7	25.2
Father Validation	31.2	12.7	32.6	10.6
Father Invalidation	6.2	5.6	5.5	5.0
Father LEAP	54.4	24.4	54.0	26.2

Ultimately, 81 families (73%) included at least one parent who attended FC during the time their child was in treatment and 30 families (27%) did not have anyone attend FC. A total of 67 (62.6%) mothers and 43 (43.4%) fathers attended FC while 40 (37.4%) mothers and 56 (56.6%) fathers did not attend FC. Many families opted to have one parent attend FC as scheduled while the other parent attended on a subsequent date. As reported in Table 3 below, adolescents whose parents attended FC did not differ significantly from those whose parents did not attend FC in symptom severity at T1 (DERS, DASS-Depression, Problem Behavior.) However, adolescents whose parents did not attend rated the mother to more validating and less invalidating than adolescents whose parents attended FC.

Table 3. *Mean Scores at T1 for adolescents whose parents did and did not attend FC*

FC Attendance:	**Yes (N=81)**		**No (N=30)**	
	M	**SD**	**M**	**SD**
DERS	107.5	32.7	101.1	27.8
DASS-Depression	9.5	5.7	8.0	5.2
Problem Behavior	5.3	3.2	6.0	4.0
Mother Validation	28.5	11.6	34.1*	7.9
Mother Invalidation	7.9	5.6	5.5*	4.6
Mother LEAP	63.8	24.2	67.1	25.2
Father Validation	32.1	11.9	25.3	14.7
Father Invalidation	5.7	5.3	9.3	6.6
Father LEAP	55.4	24.4	51.3	26.8

Note: *p<.05;

Hypothesis 1: ***Adolescents whose parents were randomized to the FC condition will report significantly more improvements in their parents' responses to them at T2 (i.e., increased validating and decreased invalidating responses, increased emotional availability) than adolescents whose parents were randomized to the waitlist condition.***

Data from adolescents whose parent attended FC as randomized (N=64, 36 in FC condition and 28 in waitlist condition) were included. A series of t-tests indicated that there were no significant differences in in the two groups at T1. Given the differences in family structure and parental attendance, the number of adolescents included in each analysis varied. Adolescents were asked to consider communication that occurred in the previous week when completing the validation, invalidation, and emotional availability measures for each parent. Additionally, adolescents were asked to indicate the frequency in which they had

communicated with each parent in the previous week. Communication with a parent that occurred at least 1 time in the previous week was included in the analyses.

Three separate ANOVAs, including adolescent rating of 1) mothers, 2) fathers, and 3) mothers and fathers combined validating responses, invalidating responses and emotional availability at T1 and T2 were conducted. Given the relatively few data points available for fathers, analyses including both mother and father scores were conducted to allow for increased power. While this strategy can potentially violate the assumption of non-independence of data, only 3 adolescents included in the combined parent analyses provided ratings for more than one parent. Results of all three sets of analyses conducted with each independent variable are presented in Tables 3-4 and described below.

Validating Responses

Mothers: Data from 31 adolescents (13 in FC condition and 18 in WL condition) whose mothers followed randomization were included in these analyses. Scores from the validation subscale on the VIRS from T1 and T2 were used as within-subjects factor and treatment condition (FC or WL) as between-subjects factors. Results indicated a main effect for increase in validating responses from T1 to T2, $F(1,29)= 18.358$, $p<.001$, $\eta_\rho^2= .388$, and a significant interaction between the two groups (FC vs. WL), $F(1, 29)=3.421$, $p<.05$, 1-tailed, $\eta_\rho^2= .106$, indicating that the increase in mother's validating responses was significantly greater in the FC condition than in the WL condition.

Fathers: 7 adolescents (3 in FC condition and 4 in WL condition) whose fathers followed study randomization, completed ratings of validating responses. Unfortunately, this sample size is too small to conduct statistical analysis. Mean scores and standard deviations are

reported in Table 3. Validating responses in fathers in the FC group increased from 30 to 37, while scores in the WL group remained unchanged (M=29 at T1 and M=29.9 at T2.)

Combined analyses including mother and father scores: Adolescent ratings for mothers and father (N=38; 16 in FC condition and 22 in WL condition) were included in this analysis. Scores from the validation subscale on the VIRS from T1 and T2 were used as within-subjects factor and treatment condition (FC or WL) as between-subjects factors. Results again indicated a main effect for increase in validation, ($F(1,36)= 14.222$, $p=.001$, $\eta_p^2= .283$, and a significant interaction between treatment condition and validation, $F(1, 36)=3.166$, $p<.05$, 1-tailed, $\eta_p^2= .081$, indicating that the increase in parents' validating responses was statistically greater in the FC condition than parents in the WL condition.

Table 4. *Mean Validation scores from Time 1 to Time 2.*

Validating Responses	Time 1		Time 2	
	M	SD	M	SD
Family Connections				
Mother (N=13)	25.53	10.58	35.61*	8.2
Father (N=3)	30.0	11.1	37.0	4.0
Mother+Father (N=16)	26.37	10.46	35.8*	7.5
Waitlist				
Mother (N=18)	31.72	10.18	35.72*	8.19
Father (N=4)	29.0	6.7	29.7	16.5
Mother+Father (N=22)	31.22	9.5	34.6*	9.9

**p<.05*

Invalidation

Mothers: Scores from the invalidation subscale on the VIRS from T1 and T2 were used as within-subjects factor and treatment condition (FC or WL) as between-subjects factors. Results indicated a main effect for decrease in invalidating responses from T1 to T2, ($F(1,29)= 12.333$, $p=.001$, $\eta_\rho^2= .298$. The interaction between invalidation and treatment condition was not significant, $F(1, 29)=.321$, $p=.575$, $\eta_\rho^2= .011$, indicating that the decrease in invalidating responses was not significant between the two groups.

Fathers: Statistical analyses were not conducted due to the small sample size (N=7). Mean scores and standard deviations are reported in Table 4. Scores for father in the FC condition decreased from 8.6 to 3.3 while scores for father in the WL condition increased from 6.0 to 8.2.

Combined analyses including mother and father scores: Scores from the invalidation subscale on the VIRS from T1 and T2 were used as within-subjects factor and treatment condition (FC or WL) as between-subjects factors. Results indicated a main effect for decrease in invalidation, ($F(1,36)= 9.390$, $p=.004$, $\eta_\rho^2= .207$. The interaction between invalidation and treatment condition was not significant, $F(1, 36)=1.368$, $p=.250$, $\eta_\rho^2= .037$, indicating that the decrease in invalidating responses was not significant between the two groups.

Table 5. *Mean Invalidation scores from Time 1 to Time 2.*

Invalidation	Time 1		Time 2	
	M	SD	M	SD
Family Connections				
Mother(N=13)	7.5	4.4	3.7*	4.4
Father (N=3)	8.6	7.6	3.3	3.2
Mother+Father (N=16)	7.7	4.8	3.6*	4.1
Waitlist				
Mother (N=18)	7.2	5.5	4.5 *	4.7
Father (N=4)	6.0	3.3	8.2	8.5
Mother + Father (N=22)	7.0	5.2	5.1	5.0

**p<.05*

Emotional availability

Mothers: LEAP scores from T1 and T2 were used as within-subjects factor and treatment condition (FC or WL) as between-subjects factors. Results indicated a main effect for increase in emotional availability, ($F(1,28)= 5.418$, $p=.02$, $\eta_\rho^2= .162$. The interaction between emotional availability and treatment condition was not significant, $F(1, 28)=.393$, $p=.393$, $\eta_\rho^2= .026$.

Fathers: There were no significant differences between changes in emotional availability scores between treatment and waitlist conditions, ($F(1,17)= 1.842$, $p=.192$, $\eta_\rho^2= .098$.

Combined analyses including mother and father scores: LEAP scores from T1 and T2 were used as within-subjects factor and treatment condition (FC or WL) as between-subjects factors. Results indicated a main effect for increase in emotional availability, ($F=1,47)= 8.725$, $p=.005$, 1-tailed, $\eta_\rho^2= .157$, and a significant interaction between treatment condition

and emotional availability, (F=1,47)= 3.058, p=.04, 1-tailed, η_p^2= .061, indicating that the increase in emotional availability was statistically greater in the FC condition than in the WL condition.

Table 6. *Mean Emotional Availability scores from Time 1 to Time 2.*

LEAP	Time 1		Time 2	
	M	SD	M	SD
Family Connections				
Mother (N=11)	59.2	25.2	68.3	16.8
Father (N=10)	55.4	25.7	73.5*	14.4
Mother + Father (N=21)	57.4	24.9	70.8*	15.6
Waitlist				
Mother (N=19)	71.1	21.7	75.3	18.2
Father (N=9)	57.2	23.6	59.1	31.0
Mother+Father (N=28)	62.7	22.9	70.1*	23.8

**p<.05*

Hypothesis 2: ***Changes in adolescent reports of their parents' responses to them from T1 to T2 will predict adolescent treatment outcomes (i.e. decrease in emotion dysregulation and depression scores, and decrease in out of control behavior) at discharge.***

To test this hypothesis each parents VIRS scores from T1 was subtracted from their T3 scores to generate a change score for each parent's validating and invalidating responses. These change scores were then entered in a series of multiple regressions utilizing adolescent DERS and DASS-Depression scores as dependent variables (separately). Validation and invalidation change scores were entered simultaneously as predictors.

The sample size for Behavior Checklist-Problem Behaviors was too small to conduct a regression (N=28 for mothers and N=16 for fathers), Descriptive statistics including means and standard deviations are reported.

Difficulties with Emotion Regulation

A series of multiple regressions was run to predict DERS scores at time of discharge from parental validation and invalidation *change scores*. First, T1 DERS scores were entered as a covariate in step 1 and validation and invalidation change scores for both mothers and fathers were entered simultaneously in step 2. The multiple regression model statistically significantly predicted DERS scores at T3, $F(5, 31) = 4.117$, $p < .01$, adj. $R^2 = .326$. Mother validating responses added significantly to the prediction model, $p = .002$.

Table 7. *Summary of Hierarchical Regression Analysis for Change Mother and Father Responses Predicting Adolescent Emotion Regulation at Discharge*

	Step 1			Step 2		
DERS	***B***	SE_B	***β***	***B***	SE_B	***β***
DERS at T1	.256	.162	.277*	.411	.148	.444**
Mother Validation				-1.319	.530	-.446*
Mother Invalidation				.1.027	.851	.217
Father Validation				-.200	.654	-.050
Father Invalidation				-1.044	.956	-.178
R²		.077			.435	
Adjusted R²		.046			.326	
F* for change in *R²		2.496			4.117**	

*Note: N=32, *p<.05, ** p<.01*

To further explore each parent's contribution, two other regressions were conducted: one utilizing mother scores only and the other utilizing father scores only. This allows the model to include all data from adolescents who rated each parent. DERS at T1 was again entered in the first step as a covariate for each regression. For mothers, the multiple regression model statistically significantly predicted DERS scores at T3, $F(3, 61) = 9.9337$, $p < .001$, adj. $R^2 = .305$. Mother validating responses added significantly to the prediction model, $p = .002$.

Table 8. *Summary of Hierarchical Regression Analysis for Change Mother Responses Predicting Adolescent Emotion Regulation at Discharge*

	Step 1			Step 2		
DERS	***B***	SE_B	***β***	***B***	SE_B	***β***
DERS at T1	.274	.108	.310**	.353	.096	.399*
Mother Validation				-1.453	.451	-.487*
Mother Invalidation				.111	.830	.020
R²		.096			.339	
Adjusted R²		.081			.305	
F* for change in *R²		6.395*			9.937*	

*Note: N=62, * p<.01*

For fathers, the model did not significantly predict DERS at T3, $F(3, 32) = 1.251$, $p < .308$, adj. $R^2 = .021$.

Table 9. *Summary of Hierarchical Regression Analysis for Change Father Responses Predicting Adolescent Emotion Regulation at Discharge*

	Step 1			Step 2		
DERS	***B***	SE_B	***β***	***B***	SE_B	***β***
DERS at T1	.232	.145	.264	.247	.150	.281
Father Validation				-.710	.633	-.221
Father Invalidation				-.785	1.236	-.127
R²		.070			.105	
Adjusted R²		.042			.021	
F* for change in *R²		2.545			.631	

Note: N=36

Depression

A series of multiple regressions was run to predict adolescent depression at time of discharge from changes parental validation and invalidation change scores. The same procedure utilized with the DERS described above was employed. The regression model statistically significantly predicted depression scores at T3, $F(5, 25) = 1.315$, $p < .001$, adj. $R^2 = .652$. Mother validating and invalidating responses added significantly to the prediction model, $p = .002$.

Table 10. *Summary of Hierarchical Regression Analysis for Change Mother and Father Responses Predicting Adolescent Depression*

	Step 1			Step 2		
Depression	***B***	SE_B	***β***	***B***	SE_B	***β***
Depression at T1	.496	.120	.609*	.533	.095	.655**
Mother Validation				-.190	.062	-.399*
Mother Invalidation				.174	.095	.233
Father Validation				-.028	.076	-.046
Father Invalidation				-.182	.112	-.200
R²		.371			.710	
Adjusted R²		.350			.652	
F* for change in *R²		17.120*			7.315*	

*Note: N=31, *p<.05, ** p<.01*

For the mothers only model, the multiple regression model statistically significantly predicted depression scores, $F(3, 55) = 15.241$, $p < .001$, adj. $R^2 = .42$. Mother validating responses added statistically significantly to the prediction model, $p < .01$.

Table 11. *Summary of Hierarchical Regression Analysis for Change Mother Responses Predicting Adolescent Depression at Discharge*

	Step 1			Step 2		
Depression	***B***	SE_B	***β***	***B***	SE_B	***β***
Depression at T1	.397	.084	.531*	.427	.077	.571*
Mother Validation				-.178	.073	-.403*
Mother Invalidation				.012	.130	-.015
R^2		.282			.452	
Adjusted R^2		.269			.422	
***F* for change in R^2**		22.353**			8.566**	

Note: N=59, *p<.001

For fathers, depression at T1 significantly predicted depression at T3, however, the father responses did not significantly add to the model, $F(3, 31) = 4.694$, $p < .01$, adj. $R^2 = .246$.

Table 12. *Summary of Hierarchical Regression Analysis for Change Father Responses Predicting Adolescent Depression at Discharge*

	Step 1			Step 2		
Depression	***B***	SE_B	***β***	***B***	SE_B	***β***
Depression at T1	.353	.098	.533*	.402	.111	.607*
Father Validation				-.066	.089	-.153
Father Invalidation				-.181	.159	-.229
R^2		.284			.312	
Adjusted R^2		.262			.246	
***F* for change in R^2**		22.353**			8.566**	

Note: N=35, *p<.001

Problem Behaviors

The measure utilized to assess problem behaviors was obtained from the Behavior Checklist, a measure completed by patients with the assistance of therapists during each therapy session. Given this difference in how data was obtained, there were fewer data points for Behavior Checklists as compliance in completing and returning Behavior Checklists varied. Completed data available was insufficient for this analyses (N=9 for combined parents, N=23 for mothers, and N=10 for father) thus regressions were not conducted for this measure.

Hypothesis 3. ***Adolescents whose parents attend FC will report significantly better treatment outcomes at discharge than adolescents whose parents do not attend FC.***

To test this hypothesis the data from participants in the FC condition were grouped with the data from participants in the waitlist condition who participated in FC following the waiting period, thus creating a FC attendance group. Families were included in the FC attendance group if at least one relative attended FC at any point during the adolescent residential treatment period. Data from adolescents whose parents did not attend FC at all were included in the No-Attendance group. The FC attendance group was compared to the no-attendance group in a series of repeated measures ANOVAs using patient outcomes (DERS, DASS-Depression, and Behavior Checklist-Problem Behaviors) as well as patient reported parental communication measures (VIRS and LEAP) as dependent variables. Given that these two groups are not randomized, we conducted a series of t-tests to evaluate differences between the two groups at T1. There were no differences in adolescent problem severity between the two groups at T1, as reported in Table 3. Furthermore, we investigated whether *timing* of FC attendance led to differences in outcomes at discharge (i.e. FC attendance early vs. late in the adolescent's treatment.) To test for these differences, a series of t-tests were conducted between early vs. late attendance, however no significant group differences were identified, and thus neither of these variables were employed as covariates.

Difficulties with Emotion Regulation

DERS scores from T1 and T3 were used as within-subjects factor and FC Attendance as between-subjects factors. Results indicated a main effect for decrease in DERS, $F(1,76)= 35.499$, $p<.001$, $\eta_\rho^2= .318$, and a significant interaction between FC attendance and decrease

in DERS scores, F(1,76)= 3.058, p=.04, 1-tailed, η_{ρ}^{2}= .043, indicating that the decrease in DERS scores was significantly greater in the FC attendance group than in the No-Attendance group.

Depression

The depression subscale from the DASS was utilized in this hypothesis. Scores from T1 and T3 were used as within subjects factor and FC attendance as between-subjects factors. Results indicate a significant decrease in Depression scores between T1 and T3, however, the interaction was not significant, indicating that there were no significant differences in adolescent reported decreased depression between the two groups, F(1, 73)=.406, p=.52, η_{ρ}^{2}=.006.

Target Behaviors

Given the small sample size in the No-FC group for this variable, inferential statistics were not conducted. Descriptive statistics are reported in Table 14. In the FC group, Target Behaviors decreased from 5 (SD=2.7) at T1 to 1.6 (SD=1.5) at T3. In the No-FC group, problems behaviors decreased from 6.5 (SD=5.3) at T1 to 3.4 (SD=3.1) at T3.

Table 13. *Mean adolescent treatment outcome scores from Time 1 to Time 3.*

	Time 1		Time 3	
	M	SD	M	SD
FC Attendance				
Emotion regulation (N=62)	107.9	33.9	67.6*	28.1
Depression (N=59)	9.7	5.7	5.3*	4.6
Target Behaviors (N=24)	5	2.7	1.6	1.5
No Attendance				
Emotion regulation (N=16)	104.8	32.4	83.6*	32.8
Depression (N=16)	9.4	5.3	6.0*	4.4
Target Behaviors (N=7)	6.5	5.3	3.4	3.1

*p<.05

Hypothesis 4. ***Parents in the FC condition will report significantly lower burden, distress, and grief and increased empowerment at T2 than parents in the waitlist condition.***

A secondary aim of this study was to investigate the effectiveness of FC in ameliorating parental distress and increasing parental sense of mastery and empowerment. To test this hypothesis, a between group comparison was conducted utilizing a series of repeated measures ANOVAs using parents scores on measures of burden (BAS), depression (DASS), grief (GS), and empowerment as within-subjects factors and treatment condition (FC vs. WL) as between-subjects factors. Table 15 presents a summary of results for this hypothesis.

Results indicate that parents in the FC condition reported significant decrease in depression, as well as a significant increase in empowerment and grief. However, the interaction was not significant, indicating no significant differences between the groups in measures of depression, F(1,37)=.162, p=.690, η_ρ^2=.004; Burden, F(1,37)=1.401, p=.244,

η_ρ^2=.036; Empowerment, F(1,36)=.274, p=.604, η_ρ^2=.008; and Grief, F(1,35)=.925, p=.343, η_ρ^2=.026.

Table 14. *Mean parent scores from Time 1 to Time 2.*

	Time 1		Time 2	
	M	SD	M	SD
Family Connections (N=21)				
Depression	3.6	2.3	2.1*	2.7
Empowerment	114.6	21.1	122.7*	15.2
Burden	54.1	9.1	53.5	12.2
Grief	37.9	10.3	41.4*	11.9
Waitlist (N=18)				
Depression	4.2	1.9	3.1	2.4
Empowerment	114.5	23.7	119.2	19.0
Burden	56.0	9.9	59.5	10.7
Grief	34.1	9.6	34.6	11.7

**p<.05*

To further explore the effectiveness of FC, a series of post-hoc analyses was conducted by comparing scores from all parents who attended FC (including waitlist parents who attended FC following the waiting period) to those who did not attend FC. For this subsequent analysis, scores from surveys completed prior to FC attendance (pre) as well as scores from survey completed *after* FC attendance (post) were used. Data from 50 parents were utilized, with 43 parents in the FC attendance group and 7 parents in the no-FC group. A series of t-tests indicated no significant differences pre-FC between parents who attended and those who did not attend FC at baseline.

Results indicate that parents in the FC attendance group reported significant decrease in depression compared to parents who did not attend FC, F(1,47)=4.317, p<.05, η_p^2=083. Additionally, parents in the FC group reported significant increase in Empowerment between T1 and T3; however, results indicated no significant differences in grief and empowerment between the two groups.

Table 15. *Mean parent scores by FC attendance*

	Pre-FC		Post-FC	
	M	SD	M	SD
Attended FC (N=43)				
Depression	3.7	2.1	2.7*	2.6
Empowerment	114.9	20.4	123.0*	15.3
Burden	56.7	7.2	56.8	10.8
Grief	37.8	11.0	40.6	11.7
Did not Attend FC (N=7)				
Depression	2.5	2.0	3.4*	2.0
Empowerment	114.0	18.8	118.5	28.7
Burden	60.0	7.7	57.7	4.5
Grief	35.7	8.4	40.4	10.6

*p<.05

Discussion

The aim of the present study was to investigate the effectiveness of Family Connections for parents of suicidal and self-harming teens in: 1) improving individual functioning in a sample of adolescents already receiving comprehensive residential DBT treatment, 2) improving individual functioning in their parents; and 3) improving relationships between the teens and their parents, in a study utilizing a RCT design (FC vs. Waitlist). This was the first FC study to evaluate FC specifically for families of teens, the first RCT conducted on FC, and the first to include both adolescent and parent outcomes. Additionally, this is the first adaptation of FC for residential settings, bridging a gap in services necessitated by families typically living far from the treatment facility. While several studies have documented the effectiveness of FC in reducing family member burden and distress, no previous studies have examined how *patients* might benefit from parent participation in FC. Data from this study suggests that adding a program specifically designed for parents during residential treatment can have important benefits to adolescents' treatment outcomes and adolescent-parent relationships for families in residential treatment.

Overall, the FC program helped improve adolescent-parent communication, compared to the control group. Specifically, parents who were randomly assigned to attend FC were rated by their teens to show significantly greater improvements in validating responses than parents in the waitlist condition. This was particularly true for mothers in this sample. Further, results indicated that when parents attended FC, their adolescents experienced them as more emotionally available for both positive and negative experiences. These are important findings because it shows that brief and targeted parent interventions can be effective in changing core family communication patterns, and that these changes can

manifest quickly: significant improvements were found after about 4 weeks post FC. One of the targets within FC is to help families create a more validating family environment, in which family members experience each other to be more consistently accepting, understanding and responsive to their private experiences. Thus, a validating family environment for a teen, in particular, is created by parents demonstrating fairly predictably validating responses, which can facilitate communication, problem solving, enhance closeness and provide support during difficult times. It is important to note that changes in validating responses and emotion availability of parents were reported by the adolescents, suggesting high ecological validity of these findings.

Other findings from this study indicate the potential benefits of parental validation and emotional availability. In this sample, improvements in validating parent responses correlated with adolescents' reduced difficulties with emotion regulation and decreased depression at discharge. Results from this study do not indicate the directionality of the relationship between validating responses and emotion regulation but are consistent with the transactional model of emotion dysregulation. Validating responses facilitates emotion regulation which in turn allow more effective and accurate communication, making it easier for parents to understand and validate adolescent's experiences, creating new patterns of transactions. FC may provide the additional opportunities needed to teach and to support parents in learning the multiple skills necessary to change their behavior and the transactions with their teens. When adolescents experience their parents to be emotionally available and validating, it may facilitate their more regulated, and therefore more accurate disclosure of private events (accurate expression), and thus enhance parent-child communication overall. While the present study was not designed to examine the mediating role of validation in

treatment outcomes per se, these findings point to the potential role that parental responses have in adolescent treatment outcome. Research evidence suggests that improvements in family functioning mediate treatment outcomes (Fruzzetti et al., 2017) and the present study results are consistent with these findings. In fact, a recent study found that parents rate the skill of validation as the most helpful in reducing conflict and improving parent-adolescent relationship (Rathus, Campbell, Miller & Smith, 2015), providing further evidence that targeting the transaction between parent and teen may be an important part of treatment.

Another important finding from this study was that adolescents whose parents attended FC (compared to those who did not attend FC at any time) reported greater improvements in emotion regulation, above and beyond the gains achieved through the standard comprehensive DBT treatment program. This is a very important finding as it is the first evidence of the impact of FC on patient treatment outcomes. The differential improvement in the FC group is particularly notable given that all parents and their teens (both groups) received all modes of DBT treatment, including weekly family therapy.

A secondary aim of this study was to replicate and expand the findings from previous FC studies examining how family members (in this case, parents) benefit from participating in FC. Consistent with previous FC studies, parents from this sample reported difficulties with high levels of burden and grief, as well as low sense of empowerment in handling difficult situations with their child. While differences in parent outcomes between the two groups were not significant, parents in the FC condition reported significantly decreased individual distress and increased empowerment at time 2, and parents in the WL condition showed no significant improvements. On the other hand, parents' scores after attending FC indicate that they continued to experience high burden and a small but statistically significant

increase in grief. There are many possibilities that can explain these results. Hoffman et. al (2007) found that unlike other measures of distress, burden experienced by family members decreased slowly over time, showing significant decreases only during the follow up period (3 months after completion of FC). This is to be expected, since recovering from financial burden, loss of time at work, and over-burdened relationships take time. Additionally, and perhaps more importantly, parents in the present study were in the middle of an acute episode with their teen, whereas that was much less likely in previous FC studies. Thus, experiencing high levels of burden and grief might necessarily reflect the stage and process of disorder, and hospitalization, that these parents were living through during the study.

Similarly, it is possible that learning firsthand the realities of severe psychopathology in their teens, including residential care, can be overwhelming for parents who may benefit from continued support to better "digest" the information learned during the FC weekend and practice skills learned. Parents may need more time to grieve the losses and difficulties they are experiencing, and accept the realities of their child's (and their own) suffering. The original format for FC (weekly meetings for 12 weeks) allows parents to receive social support, coaching, and to practice, throughout an extended period of time. This may allow parents the time they need to manage their grief and suffering with the support from other families while creating opportunities for parents to try the skills learned and receive feedback from the group. This extended format is not feasible in a residential setting, where patient treatment lengths vary and families are often geographically distant. A longer-term follow-up would indicate whether individual treatment for parent distress might be needed, or if FC is sufficient to foster improvements over time. Further study could also suggest utility in a

"booster" session for FC participants following their teen's discharge, to help transfer skills back to the home environment.

There are several limitations to the present study. Firstly, the real treatment setting where the study took place constitute both limitations and strengths of this study. All patients admitted to the DBT program whose family were actively involved in treatment were recruited to participate in the study, regardless of previous treatment history, problem severity, and anticipated length of stay. The influence of these confounding variables in the results cannot be ruled out. At the same time, including a broad sample allowed us to investigate treatment in ways that most closely reflect the challenges encountered in most treatment centers. While the study design allowed for added ecological and external validity, it brought some inevitable limitations in experimental control, as evidenced by incomplete adherence to randomization and incomplete data collection from parents.

Second, although all families were required to participate in the treatment program (e.g., family therapy sessions), actual family involvement in treatment varied considerably. Many families expressed strong interest in attending FC, but were unable to do so due to logistical difficulties. Other families chose to have one family member attend FC and relay the information to other relatives, while others had each parent attend at a separate times due to difficulties in work scheduling or arranging for childcare. This seems to have been most problematic for fathers. While many fathers attended FC, the number of fathers who could attend on the randomized date was much lower than mothers, limiting the study's ability to explore father's outcomes and adolescent-father relationship changes. It is important to also note that family structure and constellation varied considerably, and data from this study includes parents and legal guardians only. However, FC was open to all family members

interested in attending, whether or not family members resided with the patient or were actively engaged in treatment. Participating family members included siblings, grandparents, aunts, uncles and other support persons. Thus, while the program was largely geared for parents and mostly attended by parents, the number of participating family members for each patient varied. It remains to be investigated how these differences in family involvement and participation influence changes in family functioning and treatment outcome for teens.

Additionally, the frequency and form of contact between parents and adolescents varied considerably. A few families were able to attend weekly family sessions in person and make in person visits due to the proximity of their residence to the treatment program, whereas most were restricted to communication via telephone and monthly or occasional in-person visits. To address some of these concerns, families were granted extended visiting hours, passes and additional phone calls to facilitate communication and skill practice during treatment, when possible. These restrictions in communication can potentially limit the interactions between parent and adolescents, making it less likely for conflict to arise and easier for both parents and teens to utilize strategies learned.

There are some limitations in the study design. First, this study utilized self-report data exclusively. This problem is mitigated to some extent by having teens report on their parents' behavior, but other important variables might benefit from objective measures. Future studies should consider utilizing behavioral samples such as recorded parent-child interaction or the use of experience sampling methods to evaluate more precisely (and objectively) changes in communication skills and patterns of transactions. Additionally, this study did not include follow up data from adolescents post discharge to evaluate long term benefits of FC once adolescents return home, or long-term data on parents. Largely, this was

due to the fact that the vast majority of teens' parents eventually did participate in FC, so no meaningful comparison would be possible, and the effects of FC could not be sorted out from the overall effects of treatment. Such investigation, however, would be useful in the future, utilizing a different research design.

Finally, data attrition among parents was a significant limitation of this study. Parents completed surveys online, which facilitated the timely collection of data to all parents who would be involved in treatment. However, survey response was poor and decreased overtime. Data from this study points to some of the reasons why data collection from parents may be challenging while their teens are in residential treatment: Parents are distressed, burdened, and often involved in ongoing treatment decisions and after care planning. It is very likely that timely response to research surveys becomes difficult in the face of these many challenges. Given the amount of missing data, the data collection process may have impacted the power of this study in detecting an outcome. Despite these difficulties, parents' response to program evaluation completed at the end of each FC was overwhelmingly positive. Parents frequently expressed their appreciation for the material covered and their eagerness to learn more. Parents also shared their struggle in finding information about their child's diagnosis and treatment options, as well as finding help for themselves. Continued research on how to meet the needs of these families is needed.

Much remains to be investigated. For example, the present evidence showing the effectiveness of FC in augmenting the treatment of suicidal adolescents and their families needs to be replicated and expanded to other settings. Future studies should explore FC also as part of outpatient treatment, where parents and teens are communicating more frequently and without the restrictions present in a residential setting, and FC could be offered over 12

or more weeks (or in a weekend version). Additionally, it remains to be investigated how the different components of FC (psychoeducation, skills, support) might differently contribute to improvements for both parents and their adolescents. Understanding the mechanisms through which FC leads to improved treatment outcomes for teens, as well as individual and family functioning, may help us tailor the program to more precisely meet the needs of these teens and their parents and families. Furthermore, evaluating FC as a potential moderator of treatment outcomes was beyond the scope of this study, but future studies may provide additional insight as to how FC impacts outcomes and continue to investigate the added benefit of FC as "jump start" or adjunct component to family intervention in residential and outpatient settings. Finally, it remains to be investigated how each parent contributes to adolescent treatment outcomes. Future research can investigate whether mothers and fathers benefit from FC in similar ways, and whether their participation differentially impacts adolescent treatment outcomes.

Overall, the present study provides some encouraging evidence for the impact of targeted family intervention in the treatment of suicidal adolescents. When parents are involved in the treatment process in ways that help them gain knowledge, understanding and skills to manage difficult situations, both parents and their children seem to benefit. A host of skills in FC may contribute to these improvements. For example, learning how to manage their own negative emotions more effectively may help parents develop more patience and less hopelessness and helplessness. This, in turn, may help them become less reactive toward their teens, and provide more listening responses to them ("relationship mindfulness"). As parents listen more and react negatively less, they invite different responses from their teens (e.g., more accurate expression). Parents also learn strategies to communicate understanding

and acceptance of their child's experience, which makes it easier for adolescents to communicate and regulate their emotions. For parents, perhaps feeling supported and having a setting in which they can get support and address some of their own challenges (e.g., having a suicidal or self-harming child), and allows them to engage with their children in more effective, skillful, ways. Similarly, learning about the characteristics of an invalidating environment can help families identify patterns of behaviors that may contribute to problematic transactions, and bolster commitment to practicing new skills to reduce invalidating responses. This focus on parent psychoeducation, skills and support was the main contribution that FC that was not provided in the comprehensive DBT that all participants received, and results suggest these are important treatment ingredients.

In comprehensive DBT programs for adolescents, out of control behaviors and problematic patterns of transaction within the family environment are often addressed in family therapy. However, most inpatient and residential treatment plans have such significant time constraints that parental well-being are typically not thoroughly addressed, often being lower in priority to crisis management. FC offers parents a setting where they can address some of difficulties, connect with other parents, ask questions and practice skills in a supportive environment. For families in this sample, the availability of FC in a 2-day format made it possible for families to receive services that may bridge this gap. In fact, 73% of families in the study attended FC despite logistical challenges and geographical distance. This is very encouraging as it allowed the program to reach families that would otherwise could not receive similar services. One common experience parents reported was that they rarely had the opportunity to discuss and/or address their own distress related to their child's difficulties (Ekdhal, et. al, 2014). In fact, for most parents in the study, FC was their *only*

support and only 23% of parents reported receiving other mental health services. 46.8% reported they had *never* received any kind of mental health service in the past. This is concerning given the high levels of distressed reported by parents. FC aims to create a non-judgmental/non-blaming environment, which may help reduce guilt (that leads to avoidance) and child-blaming (that leads to invalidating responses). Having a space to learn, practice skills, manage their own emotions, as well as receive support and input from peers in FC, may all be important components of motivation and/or learning skills. Additionally, FC is curriculum based and does not focus on any present crisis per se, but instead takes a systematic approach to skills. This might make it possible to cover a breadth of content (skills, psychoeducation and support for parents) that would otherwise be a challenge during family therapy alone. This 2-day version of FC can thus possibly serve a way to "jump start" parental treatment involvement by providing parents with knowledge, support and skills needed to effectively navigate treatment and maximize benefits during family sessions. Traditional treatment programs, both outpatient and residential treatment, understandably target the well-being of their adolescent patients. However, this study provides further support that the needs of parents and caregivers should be addressed directly in treatment, and that significant benefits accrue both to parents and to their adolescent children, and ultimately to their functioning as a family.

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