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Dialectical Behavior Therapy and Adolescent Patient Treatment Dropout

Danessa Mayo

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Dialectical Behavior Therapy and Adolescent Patient Treatment Dropout

by

Danessa Mayo

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A Dissertation submitted in partial satisfaction of
the requirements for the degree
Doctor of Philosophy in Clinical Psychology

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December 2015

Each person whose signature appears below certifies that this dissertation in his/her opinion is adequate, in scope and quality, as a dissertation for the degree Doctor of Philosophy.

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"When you want something, all the world conspires in helping you to achieve it."

— Paolo Coelho, *The Alchemist*

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ABBREVIATIONS

DBT	Dialectical Behavior Therapy
DSH	Deliberate Self Harm
NSSI	Nonsuicidal self-injury
Y-OQ-SR	Youth-Outcome Questionnaire—Self-Report

ABSTRACT OF THE DISSERTATION

Dialectical Behavior Therapy and Adolescent Patient Treatment Dropout

by

Danessa Mayo

Doctor of Philosophy, Graduate Program in Clinical Psychology
Loma Linda University, December 2015
Dr. Kimberly R. Freeman, Chairperson

Attrition in mental health treatment is an area of concern among the adolescent

population, especially with patients engaged in deliberate self-harm. The purpose of this

study was to examine the treatment attrition rate for adolescents with deliberate self-harm

in an adapted dialectical behavior therapy intensive outpatient program. A total of 141

adolescents previously enrolled in the program were available for the study. Results

demonstrated a 31.9% dropout rate. Graduates indicated greater improvement of overall

distress from baseline to post-treatment than dropouts. Dropouts attended an average of

12 treatment sessions. Several factors were examined to identify potential predictors of

patient treatment dropout: patient sociodemographic characteristics (i.e., age, gender,

ethnicity, funding type, number of previous psychiatric hospitalizations) and

psychosocial factors (i.e., Y-OQ-SR Total Score at baseline; BASC-2 PRS-A

Externalizing Problems composite score; BASC-2 SRP-A School Problems; and the

PRQ-CA Communication, Involvement, and Relational Frustration scale scores). None of

the identified variables significantly predicted the number of treatment days. This

suggests that the predictive factors of treatment dropout in youth with DSH may not be

directly similar to those typically associated with general adolescent mental health

treatment. The current study provides additional support for DBT-A and further

understanding of treatment retention among adolescents with DSH.

CHAPTER ONE

INTRODUCTION

Attrition in mental health treatment is an area of concern among the adolescent population (Gearing, Schwalbe, Dweck, & Berkowitz, 2012; Gearing, Schwalbe, & Short, 2012; Munson, Floersch, & Townsend, 2009; Schwalbe & Gearing, 2012). Studies on adolescent mental health have pointed out the difficulty with treatment retention in this group, who consistently present with a minimum dropout rate of 30% (Gearing, Schwalbe, Dweck, et al., 2012; Spirito, Boergers, Donaldson, Bishop, & Lewander, 2002). The treatment attrition rate is a particularly important area to consider when patients present with high-risk behaviors such as suicide attempts and/or nonsuicidal self-injury. Dropouts in treatment diminish the potential benefits that may be experienced in the therapeutic setting, undermine the efficacy of an intervention, and can be life-threatening in the adolescent population (Gearing, Schwalbe, Dweck, et al., 2012; Gearing, Schwalbe, & Short, 2012; Nock & Kazdin, 2005).

The high rate of deliberate self-harm in the adolescent population has been a cause for concern among clinicians and researchers in the field. Deliberate self-harm (DSH) is an umbrella term for the direct and deliberate injury to oneself that includes either nonsuicidal or suicidal intent (Muehlenkamp, Claes, Havertape, & Plener, 2012). Suicidal self-injury is the act of deliberately harming one's body tissue with the intention of death, while nonsuicidal self-injury (NSSI) is another form of DSH that lacks the intention of death (Nock & Favazza, 2009). Individuals are thought to engage in DSH as a maladaptive coping strategy to experience a physical release from their negative

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emotions or thoughts and with an intent to die, two of the most common reasons for individuals who engage in this behavior (Madge et al., 2008).

Existing data suggest that adolescents are most likely to begin engaging in DSH at ages 13-14 years old (Hawton, Fagg, & Simkin, 1996; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006), and that it most often occurs in youth 15-18 years old (Sourander et al., 2006). The rate of DSH varies according to treatment setting. The lifetime and 12-month prevalence rates for DSH among adolescents in community settings are 16-18% and 11.5%, respectively (Madge et al., 2008; Muehlenkamp et al., 2012). There is a 12-month DSH prevalence rate of 11.2% for females and 3.2% for males in adolescent community samples (Hawton, Rodham, Evans, & Weatherall, 2002). Among those in treatment settings, DSH rates among psychiatric inpatient adolescents are approximately 60-80% (DiClemente, Ponton, & Hartley, 1991; Nock & Prinstein, 2004). The lifetime and prevalence rates from different settings underscore that DSH is a persistent and complex issue that requires further exploration in terms of treatment and interventions.

Various modes of therapy have been implemented to address adolescent DSH. The most popular forms of treatment are based on cognitive, behavioral, and cognitive-behavioral therapy (CBT). While the types of psychotherapy interventions that address DSH in the adolescent population have increased over the years, there is still a lack of evidence-based treatment in this area. CBT treatment strategies such as Problem Solving Therapy, Manual-Assisted Cognitive-Behavioral Therapy (MACT), Developmental Group Psychotherapy, and Dialectical Behavior Therapy (DBT) have been recommended for DSH among both adults and adolescents (D'Zurilla & Goldfried, 1971; Linehan,

1993a, 1993b; J. J. Muehlenkamp, 2006). Early outcome studies on CBT interventions generally show a significant decrease in adolescent patients' repetitive DSH (Wood, Trainor, Rothwell, Moore, & Harrington, 2001). However, such findings have not allowed researchers to conclude which form of treatment is most effective in addressing DSH due to methodologically limited research designs and inconsistent results (Hawton et al., 1998; Townsend et al., 2001; Wood et al., 2001). This is a serious issue for adolescents, given that the gold standard of treatment for adolescent DSH is yet to be determined.

Dialectical Behavior Therapy (DBT) is a form of cognitive-behavioral therapy that has been used primarily to treat adult female patients with borderline personality disorder (BPD) and co-occurring DSH (Linehan, 1993a, 1993b). Its effectiveness for decreasing DSH among adults has been shown in multiple randomized control trials and quasi-experimental studies (Barley, Buie, Peterson, & Hollingsworth, 1993; Bohus et al., 2004; Fries, 2002). More recently, DBT has been adapted for use with adolescents (DBT-A) with DSH (Miller, Rathus, & Linehan, 2007). Currently, only one DBT-A randomized controlled trial (RCT) has been conducted with results showing the effectiveness of DBT-A in reducing DSH, suicidal ideation, and depressive symptoms as compared to an enhanced usual care (EUC) group (Mehlum et al., 2014). The EUC treatment group consisted of weekly standard care and utilized either a psychodynamic therapy orientation or CBT with medication management. These findings add to the growing evidence that DBT-A is an effective treatment in decreasing adolescent DSH as well as other co-occurring problems such as number of inpatient hospitalizations, suicidal ideation, and frequency of treatment dropout (Katz, Cox, Gunasekara, & Miller, 2004;

Rathus & Miller, 2002). In regard to the lasting effects of treatment, a study on adolescents undergoing DBT-A treatment reported a significant decrease in DSH behaviors from pre-treatment to one-month and one-year follow-up (Fleischhaker et al., 2011; Fleischhaker, Munz, Böhme, Sixt, & Schulz, 2006). Although additional studies are needed, taken together the above findings help substantiate the already growing evidence that DBT-A is effective in decreasing DSH in adolescent.

RCTs with adult patients with BPD and co-occurring DSH using DBT are known for their low attrition rates of approximately 12-37% (Linehan et al., 2006; van den Bosch, Koeter, Stijnen, Verheul, & van den Brink, 2005). The current attrition rate for adolescents with DSH in a DBT-A program is comparable at approximately 25-38% (Fleischhaker et al., 2011; Fleischhaker et al., 2006; Rathus & Miller, 2002; Woodberry & Popenoe, 2008). However, the findings on adolescents with DSH are based on small sample sizes ranging from a total of 12 to 46 subjects and include highly selective research criteria, which may pose limitations to their external application. It is also unknown to what extent such attrition rates for adolescents with DSH would be applicable to a real-life clinical, intensive outpatient program. Further, it is unclear if adolescent patient dropouts with DSH benefit from the program at the point of dropout. Supplementary findings and identification of this clinically relevant information are clearly needed.

Studies on factors associated with treatment attrition among adolescents in mental health treatment report mixed findings. Among adolescents with who have attempted suicide, sociodemographic (e.g., age, gender) and psychosocial factors (e.g., comorbid substance use, conduct disorders, depressive disorders) have been most often studied and

associated with treatment attrition (Burns, Cortell, & Wagner, 2008; Haw, Houston, Townsend, & Hawton, 2002; Piacentini et al., 1995; Trautman, Stewart, & Morishima, 1993). Given the limited current information, it is not clear to what extent these predictive factors for patient dropout from general adolescent mental health treatments or suicidal adolescents apply to adolescents with DSH in a DBT program. Identifying the factors associated with patient dropout in DBT adolescent programs may help clinicians identify potential patients who pose an increased risk for dropout and enable them to address such barriers or risks with specific patients earlier in treatment.

Aims

The purpose of this study is to determine the association between patients' dropout status and treatment outcomes at time of dropout. In addition, the purpose of the current study is to examine factors related to patient dropout in an adapted DBT-A intensive outpatient program. As such, the specific aims of this study are:

1. To determine whether patient dropouts show improvement at the time of dropout.
2. To determine factors related to treatment dropout.

CHAPTER TWO

LITERATURE REVIEW

The following literature review will discuss important background information regarding deliberate self-harm and current research information in the field. Next, an overview of dialectical behavior therapy will be presented, along with the current research findings on adult and adolescent populations. The next section will provide a review of the research on attrition rates in adolescents in mental health treatment including current findings specifically related deliberate self-harm. Lastly, the study's overall aims will be addressed.

Deliberate Self-Harm

Deliberate self-harm (DSH) is recognized as an intentional act to cause physical harm to one's body with or without the intention of death (Hawton et al., 2002). There are two broad categories described as DSH, which consist of suicidal and nonsuicidal self-injury (NSSI). A distinction is made between the two types of DSH because, unlike suicidal self-injury, NSSI is the act of physical harm toward one's body without the suicidal intent. Research on DSH has been complex due to the lack of consensus on what defines DSH. The terminology of DSH has also been used to describe self-injurious behaviors that exclude any intention of death. However, several extensive and large preliminary studies on DSH have used the term to describe self-injurious behaviors regardless of suicidal intent (Hawton et al., 2002). As such, the current study will use the term DSH to describe the act to inflict self-harm with a non-fatal outcome regardless of suicidal intent.

Epidemiology of Deliberate Self-Harm

There is a wide range of forms of DSH, such as cutting, scratching, overdose, burning, and biting oneself. Of the various forms of DSH, cutting (59.2%) and overdose (29.6%) have been cited as the most common type (De Leo & Heller, 2004; Laye-Gindhu & Schonert-Reichl, 2005). In addition, most individuals typically engage in more than one form of DSH in their lifetime (De Leo & Heller, 2004; Gratz, 2001; Herpertz, 1995; Laye-Gindhu & Schonert-Reichl, 2005; Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007).

It is estimated that DSH prevalence rates vary based on the population examined. Among adolescents in the community, the lifetime prevalence rates for DSH range from 16-18% (Madge et al., 2008; Muehlenkamp et al., 2012) and the 12-month prevalence rate is reported at 6-12% (De Leo & Heller, 2004; Madge et al., 2008; Ystgaard, Reinholdt, Husby, & Mehlum, 2003). However, the rates of DSH among adolescents in psychiatric treatment settings (from current hospitalization to past two years) vary from 36-80% (DiClemente et al., 1991; Nixon, Cloutier, & Aggarwal, 2002; Nock & Prinstein, 2004; Swenson, Spirito, Dyl, Kittler, & Hunt, 2008). Given these statistics, the high prevalence rate of DSH among adolescent psychiatric patients is a concerning issue among youth.

Among those who engage in DSH, studies show that the primary age of onset is approximately 13-14 years old (Hawton et al., 1996; Nock et al., 2006). Other studies have reported some variations in age of onset (Skegg, 2005), but the general consensus shows that individuals typically begin to engage in DSH during adolescence. This

information warrants the strong need for improved understanding of DSH

phenomenology and development of evidence-based treatment for adolescents.

DSH prevalence rates between genders have also demonstrated mixed findings

based on the treatment setting. In a community sample, a study on the yearly rate of DSH

among adolescent males (4-8%) and females (6-9%) in a junior high school population

reported no significant gender differences (Martin, Rotaries, Pearce, & Allison, 1995;

Patton et al., 1997). This finding was supported by several other studies on adolescent

community samples in different countries such as Sweden (Bjärehed & Lundh, 2008) and

Finland (Laukkanen et al., 2009). However, gender differences among adolescents with

DSH have been shown to occur in psychiatric treatment settings (Patton et al., 1997;

Rodham, Hawton, Evans, Exist, & Animals, 2005; Ross & Heath, 2002). Based on two

11-year study periods (1985-1995, 1990-2000) by Hawton et al. (2000; 2003) in Oxford,

England, 73-77% of patients with DSH who were referred for treatment in an emergency

psychiatric service were females. Taken together, these findings suggest that despite the

similar rates of reported DSH phenomenon in both male and female adolescents within

community settings, a majority of those who present in treatment settings tend to be

female.

International studies on adolescent populations from various ethnic backgrounds

suggest that DSH is a worldwide public health concern (Hawton et al., 2003; Hilt, Nock,

Lloyd-Richardson, & Prinstein, 2008; Laye-Gindhu & Schonert-Reichl, 2005). In one

study a majority of adolescents in psychiatric and community adolescent populations who

engage in DSH were more likely to be Caucasians (Barrocas, Hankin, Young, & Abela,

2012; Guertin, Lloyd-Richardson, Spirito, Donaldson, & Boergers, 2001; Ross & Heath,

2002). However, one study reported a higher prevalence rate among African-American youth (Gratz et al., 2012). Studies focused on socioeconomic status show that adolescents from all levels of income engage in DSH behaviors (Burrows & Laflamme, 2010; Yates, Tracy, & Luthar, 2008). While adolescents from low socioeconomic status were reported to be at greater risk for engaging in DSH in one study (Burrows & Laflamme, 2010), Yates et al. (2008) reported an elevated rate of DSH among adolescents from privileged or high income backgrounds. Despite the divergent findings, the current studies show that DSH affects adolescents from diverse backgrounds and that further research is needed to clarify the relations between demographic factors and DSH.

In addition to the above, DSH has been linked with various clinical disorders. Affective disorders are the most commonly diagnosed psychiatric disorders among adolescent patients with DSH (Haw, Hawton, Houston, & Townsend, 2001). Psychological disorders typically reported among adolescents with DSH are substance use, depression, and anxiety disorders (Asarnow et al., 2011; Brunner, Parzer, Haffner, & et al., 2007; Muehlenkamp & Gutierrez, 2007). Borderline personality disorder (BPD) has been reported as the most common personality disorder among adolescents and adults with DSH (Favazza, 1998; Ghaziuddin, Tsai, Naylor, & Ghaziuddin, 1992; Haavisto et al., 2005; Haw et al., 2001; Rodham et al., 2005; Zlotnick, Mattia, & Zimmerman, 1999). DSH is a diagnostic criterion that is found in most patients with BPD (Favazza, 1998). BPD patients are typically characterized by a pervasive and persistent pattern of emotional dysregulation (Donegan et al., 2003), impulsivity (Sansone, Sansone, & Wiederman, 1996; Sansone, Wiederman, & Sansone, 2000), difficulties with interpersonal relationships (Brown, Comtois, & Linehan, 2002; Kleindienst et al., 2008;

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Nock & Prinstein, 2004), and a negative self-image (Cailhol, Gicquel, & Raynaud, 2012; Lieb, Zanarini, Schmahl, Linehan, & Bohus, 2004). Nevertheless, DSH has also been common in non-diagnosed adolescent populations (Bjärehed & Lundh, 2008; Laye-Gindhu & Schonert-Reichl, 2005) once again pointing to the need for additional research.

Theoretical models on the functions of DSH describe several reasons for engaging in the behavior. One of the leading theoretical models on DSH is the biosocial theory (Linehan, 1993a), which assumes that the relationship between the individual and the environment is transactional. The biosocial theory asserts that personal problems are due to both biological and environmental factors. The two main areas where personality and cognitive disorders originate are through emotional dysregulation and an invalidating environment. Emotionally dysregulated individuals tend to be highly sensitive to their surroundings, engage in intense emotional responses, and return to homeostatic levels after a longer duration of time. An invalidating environment is a situation in which there is no acknowledgement of individual experiences, and there is a tendency to negate or devalue others' feelings or opinions (Miller et al., 2007). Patients who engage in DSH do so to reduce negative arousal and validate their own self-constructs or social experiences (Lynch & Cozza, 2009). Thus, the interaction between emotional dysregulation and an invalidating environment is thought to result in high-risk and impulsive behaviors associated with DSH.

Despite DSH's maladaptive function of providing emotional relief, it has also been reported to develop as an addictive behavior (Nixon et al., 2002). Repetitive DSH has been described as an "irresistible" method of immediate tension relief, which reinforces the behavior over time. It has also been noted as a form of "self-medication"

for adolescents who experience severe symptoms of depression and high levels of internalized anger (Nixon et al., 2002). Adolescents with DSH report increased frequency and severity over time in order to achieve the same level of tension relief. Constant bodily abuse might also result in suicidal attempts or accidental death among individuals who underestimate the lethality of their DSH behaviors. Patients with DSH reported an increased likelihood of having future suicide attempts (Andover & Gibb, 2010; Nock et al., 2006). This information suggests that DSH may eventually lead to other high-risk behaviors if not addressed, and emphasizes the need for effective treatments for these individuals.

Dialectical Behavior Therapy

Dialectical Behavior Therapy (DBT) is a form of cognitive-behavioral therapy that was specifically created for patients diagnosed with BPD in an outpatient facility (Linehan, 1993a, 1993b; Linehan, Heard, & Armstrong, 1993). DBT is based on the biosocial theory, which describes why patients with BPD have difficulty with emotion regulation, self-image, impulsivity, self-injurious behaviors, and interpersonal relationships. DBT is a comprehensive treatment that targets the above through four primary modes of treatment: individual therapy, group skills training, telephone consultation, and therapist case consultation (Linehan, 1993a).

During individual psychotherapy, DBT focuses on an organized hierarchy of goals such as decreasing patients' DSH, reducing therapy interfering behaviors (e.g., problems with attendance), and addressing additional factors that harm patients' quality of life (e.g., substance use). Patients attend a full year of individual psychotherapy once a

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week for 50-60 minutes, but may attend twice a week if needed and for longer durations in times of patient crisis (Linehan, 1993a).

Various skills are learned and practiced throughout DBT, including the following modules: (1) emotion regulation, (2) interpersonal effectiveness, (3) distress tolerance, and (4) mindfulness. The emotion regulation module teaches patients how to identify their emotions and determine how to positively react in order to change the situation, if needed. The interpersonal effectiveness module highlights how to develop healthy and meaningful social interactions with others while retaining one's personal values and sense of self. Distress tolerance training involves helping patients develop the ability to tolerate negative feelings, thoughts, and events. In addition, the distress tolerance module teaches patients how to radically accept their situation when change is not possible. Lastly, the mindfulness module teaches patients to have a greater awareness for the present moment and live in the "here and now." The mindfulness module helps patients let go of efforts to change the past and worries about the future. By focusing on the present moment, mindfulness training teaches patients to reduce self-judgment from past mistakes or experiences, and to let go of negative emotions that may precipitate increased urges to engage in DSH behaviors.

In addition to individual therapy and DBT skills training, patients are offered telephone consultations with their individual therapist (Linehan, 1993a). This allows for the development of DBT skills generalization into real-life situations outside of therapy sessions. In addition, telephone consultations promote the development of healthy help-seeking behaviors within a well-defined boundary between patients and therapists. The fourth mode of DBT consists of case consultation meetings for therapists (Linehan,

1993a). This is an important part of DBT, as it recognizes the stressful nature of working with patients who exhibit such emotionally dysregulated and high-risk behaviors. DBT case consultation meetings provide therapists with the support needed to address difficulties encountered with patients and work-related stress, and help prevent therapist burnout (Linehan, 1993a).

Given the high-risk nature of the clinical presentation of BPD, treatment adherence and attrition among patients is an ongoing concern. The overall treatment attrition rates reported for RCT studies on adult BPD patients using DBT range from 17-37% (Linehan, Armstrong, Suarez, Allmon, & Heard, 1991; Linehan et al., 2006; Turner, 2000). In comparison, earlier studies on adults with BPD receiving other types of psychotherapy interventions show treatment attrition rates from 63-92% (Budman, Demby, Soldz, & Merry, 1996; Gunderson et al., 1989; Skodol, Buckley, & Charles, 1983). Such findings demonstrate the overall effectiveness of DBT in addressing BPD symptoms in adult patients and strong retention rates in the treatment setting.

Dialectical Behavior Therapy for Adolescents

The application of DBT to adolescents with DSH is currently limited, but growing. Miller et al. (2007) adapted DBT for adolescents (DBT-A), which varied from standard DBT in the following areas: (1) the inclusion of parents or other family members in multifamily skills group; (2) the inclusion of family therapy sessions as needed; (3) family consultation and telephone coaching; (4) an additional component for patients and families to explore dialectical dilemmas; (5) shortened treatment length to 16 weeks and an optional 16-week post-treatment group for program graduates; (6)

modification of skills taught in each DBT module; (7) the addition of the "Walking the Middle Path" module; and (8) the use of simplified, age-appropriate language in teaching DBT skills to adolescents. The original DBT programs discussed by Linehan et al. (1991, 1993a) were based on older adolescents and young adults. However, when dealing with a group that consists of predominantly adolescents, Miller et al. (2007) recommended the adaptation of standard DBT to fit the needs of the younger population while retaining the essential components of standard DBT.

Outpatient studies using DBT with adolescents with BPD and co-occurring DSH have shown a significant decrease in hospitalizations and greater treatment completion rates compared to treatment as usual (TAU) patients (Mehlum et al., 2014; Rathus & Miller, 2002). DBT-A groups reported a 25-38% dropout rate, while TAU groups reported a 28-60% dropout rate. They also found a marked decline in suicidal ideation in the DBT group, despite participants having higher symptom severity and levels of depression at baseline. In an evaluation of DBT on suicidal adolescent inpatients in comparison to TAU, the DBT group showed a significant decline in the number of behavioral problems and number of incidents on the ward in comparison to TAU (Katz et al., 2004). However, Katz et al. (2004) reported similar rates of improvement between DBT and TAU patients in the ward, and suggested that the hospital setting and pharmacotherapy may have confounded their findings.

A pilot study of a modified DBT program in a community treatment setting was implemented for adolescents with DSH, in which parents participated in family therapy (Nixon, McLagan, Landell, Carter, & Deshaw, 2004). The authors found that the treatment setup enabled parents to have a better understanding of their children's

behaviors and facilitated effective communication among families and their children. In addition, they reported a 33% ($n = 2$) dropout rate for the study ($n = 6$). In another study, pre- and post-treatment evaluations of a community study on DBT with 16 female adolescents engaged in DSH showed a significant decrease in depression, sense of hopelessness, and self-harm behaviors (James, Taylor, Winmill, & Alfoadari, 2008). Of the 16 adolescents, 2 patients (12.5%) dropped out prior to the end of treatment. Although the study was limited in its scope due to the small sample size, significant reductions of DSH and increases in adaptive behavioral and coping skills did occur.

An application of DBT for adolescent females in a residential treatment setting showed significant reductions in patients' withdrawal from the program, number of inpatient days, and duration of physical restraints and seclusions (Sunseri, 2004). The dropout rates for this study were at 16.7% and 0% when measured at two different study time points. DBT was assumed to have increased participants' motivation for treatment and to have effectively provided valuable coping skills to the participants for more adaptive emotional regulation.

A recent meta-analytic study by Quinn (2009) based on three clinical trials by Katz et al. (2004), Rathus and Miller (2002), and Trupin et al., (2002) shed light on the efficacy of DBT for adolescents with DSH in comparison to other forms of treatment. The three studies varied in randomization and implementation (i.e., inpatient, outpatient, and residential programs). Overall, DBT was determined as an effective treatment approach for adolescents engaged in DSH because it targeted the same maladaptive coping strategies that have been found in adults with BPD. By correcting the maladaptive coping strategies early on, it was indicated that adolescents would have a

greater chance of improvement and overall skill building. However, the poor quality of the studies due to lack of randomization, small sample sizes, and uncontrolled treatment factors (e.g., medications) did not yield any conclusive results on the efficacy of DBT for adolescents. Quinn (2009) recommended the implementation of more structured and consistent DBT program for adolescents with more appropriate outcome measures that address DSH and overall patient improvement.

Mehlum et al. (2014) conducted the first RCT on DBT-A on multi-problem adolescents with self-harm. Their findings supported that DBT-A was an effective therapy intervention for multi-problem youth with self-harm and BPD features, and was superior versus enhanced usual care (EUC) in decreasing instances of self-harm, suicidal ideation, and symptoms of depression. Mehlum et al. (2014) reported no patient dropouts during their 19-week program. The Mehlum et al. (2014) study shows that DBT-A is not only able to target life-threatening behaviors such as DSH or suicidal ideation, but it is also able to address the more complex presentation of comorbid disorders among adolescents.

The existing literature on DBT-A indicates that this treatment shows promise for effectively reducing DSH while boasting low treatment attrition rates of approximately 18-38% (Fleischhaker et al., 2011; Fleischhaker et al., 2006; Hjalmarsson, Kåver, Perseius, Cederberg, & Ghaderi, 2008; Rathus & Miller, 2002; Woodberry & Popenoe, 2008). However, the DBT studies on adolescents with DSH have been based on small sample sizes within highly controlled research settings (Fleischhaker et al., 2011; James et al., 2008; Woodberry & Popenoe, 2008). While randomization and well-controlled clinical studies are important to assess the efficacy of DBT, the findings from such

groups may not engender the same outcomes for real-life clinical settings. Patients in community and outpatient treatment settings who present with comorbid disorders and additional psychosocial complications (e.g., learning disorders, low income background) may not respond similarly to treatment. Further, no studies have examined the factors related to dropouts using DBT-A. As such, it is important to determine how the attrition rate holds when examining a larger sample of adolescents with DSH, when using DBT-A within a more naturalistic treatment setting, and to explore factors related to treatment dropout among this population.

Adolescent Mental Health Treatment and Attrition

One of the most challenging problems in adolescent mental health is to have patients attend and successfully complete treatment. Clinicians describe treatment adherence to consist of two different categories (Gearing, Schwalbe, & Short, 2012): 1) attendance (i.e., attrition or dropout); and 2) participation (i.e., homework compliance, engagement with therapist). While both areas are important to consider in treatment, the purpose of the current study is to examine adolescent patients' treatment attrition, which focuses on the study of patient dropout rates and factors associated with early termination. Treatment attrition is defined as leaving treatment against the recommendations of treatment providers prior to the end of full treatment length (Strauss, Guerra, Marx, & Calhoun, 2010).

Attrition Rates in Adolescent Mental Health Treatment Settings

Most research on treatment attrition has been focused on the adult population

(Block & Greeno, 2011). However, it has been reported that at least 30-77% of adolescents in mental health treatment are likely to drop out prior to the end of the program regardless of the type of treatment program (Armbruster & Fallon, 1994; Gearing, Schwalbe, Dweck, et al., 2012; Spirito et al., 2002; Trautman et al., 1993; Wierzbicki & Pekarik, 1993). Engaging troubled adolescents in mental health treatment has proven to be a difficult task, and high attrition rates in adolescent mental health are problematic because they can undermine the effectiveness of psychotherapy interventions. With nearly or over half of the adolescents in studies showing failure to successfully complete treatment, it is apparent that attrition is a significant problem in adolescent mental health treatment and warrants improvements.

The variability in adolescent treatment attrition rates may be due to the types of clinical settings examined (Baruch, Gerber, & Fearon, 1998). Specifically, the rates of treatment attrition in adolescent community mental health studies range from 20-54% (Essau, 2005; Pellerin, Costa, Weems, & Dalton, 2010). In comparison, the dropout rates in adolescent outpatient groups are approximately 41-48% (Armbruster & Schwab-Stone, 1994; Harpaz-Rotem, Leslie, & Rosenheck, 2004; Luk et al., 2001). The procedure for patient referrals may be an issue, in which clinics that encourage self-referrals are more likely to attract highly self-motivated adolescents, and clinics that rely on treatment provider referrals are more likely to encounter adolescents who have demonstrated a presenting problem upon others' evaluation (Baruch et al., 1998). Thus, patients referred by clinicians, teachers, or parents for mental health treatment may not have similar levels of motivation to complete or continue treatment. Patients from research treatment settings are also more likely to report lower treatment attrition rates in comparison to non-

research settings (Strauss et al., 2010). Studies by Luk et al. (2001) and Strauss et al. (2010) showed that adolescent patients in a RCT study and those in a naturalistic outpatient clinical setting reported treatment attrition rates of 36% and 48%, respectively. The differences in attrition rates may be due to the types of inclusion and exclusion criteria that research-affiliated clinical settings have in place, which limit the complexity of patients' presenting problems (e.g., no comorbid diagnoses, severe psychopathology). In addition, patients from research-affiliated clinical settings may receive additional pre-treatment information about what to expect and feel a sense of commitment to continue with the program (Sledge, Moras, Hartley, & Levine, 1990). Taken together, the above findings indicate that adolescent patients in real-world clinical settings show the poorest retention and satisfaction with their mental health treatment. Thus, it is important to study the factors related to attrition in widely used naturalistic treatment settings in order to reach a greater number of patients.

Adolescent Patient Factors Related to Treatment Attrition

Despite the recognized importance of treatment attrition, there is limited information on patient factors that contribute to adolescents' attrition rates in mental heath. In order to strengthen the current interventions for adolescents in mental health settings, we need to develop greater understanding of patient-related factors to treatment dropout, address potential barriers to mental health care, and promote the importance of psychosocial treatment in patients' overall health care.

According to Armbruster and Kazdin (1994), we have yet to identify the typical profile for adolescent patient dropouts and the reasons why they prematurely withdraw

from treatment. Studies on factors associated with adolescent treatment attrition have tended to report inconsistent findings over the years (Baruch 1998). Nonetheless, the current findings as indicated below identify the general adolescent patient-related factors associated with or of interest in the mental health treatment attrition literature.

Sociodemographic Characteristics

Previous studies have explored several sociodemographic patient factors that may be associated with adolescent mental health treatment attrition such as a gender, age, and minority ethnic group (Gearing, Schwalbe, & Short, 2012). Unfortunately, most of the studies have reported conflicting findings on the patient sociodemographic factors, which leaves the current literature on adolescent mental health and treatment attrition open to follow-up studies that can provide more conclusive evidence.

Some studies have shown that adolescent females are more likely to show higher treatment attrition rates (Lai, Pang, Wong, Lum, & Lo, 1998; Trautman et al., 1993). On the other hand, others have indicated that males are more likely to drop out of mental health treatment (Piacentini et al., 1995). Such ambiguity in the findings reported by various studies that examined gender may be affected by the general tendency of more females to seek health care or more males to be in treatment for externalizing or high-risk behaviors. A meta-analytic study failed to show any significant differences between genders (Wierzbicki & Pekarik, 1993), which might indicate that mental health treatment attrition is an equal problem for adolescent males and females.

Age has also been an inconsistent factor in its association with treatment attrition. Older adolescent patients are reported to have lower adherence rates for treatment in

some studies (Edlund et al., 2002; Pelkonen, Marttunen, Laippala, & Lönnqvist, 2000; Piacentini et al., 1995), while others reported that younger adolescent patients were more likely to report lower adherence rates for mental health treatment (Baruch et al., 1998; Greenspan & Kulish, 1985; Jellinek, 1978; Stickney, Hall, & Garnder, 1980). Although age tends to be one of the most studied sociodemographic characteristics examined, the contradictory findings reported may be attributed to the heterogeneity of samples in adolescent research studies. In addition, the adolescent period is a time of significant developmental growth, which could be affecting the outcomes reported in studies via patients' assertion of independence and identity formation (Block & Greeno, 2011).

In comparison, socioeconomic status has been strongly correlated with adolescent treatment attrition in mental health. Multiple studies have highlighted that patients from a low-income background or those who do not have health insurance are more likely to drop out of treatment (Edlund et al., 2002; Kazdin, Mazurick, & Bass, 1993; Pelkonen et al., 2000; Wierzbicki & Pekarik, 1993). In addition, adolescent patients with low educational background are also at higher risk for treatment attrition (Wierzbicki & Pekarik, 1993). This indicates that adolescents' access to care may be an important factor to consider when dealing with mental health treatment (Gearing, Schwalbe, & Short, 2012).

Limited findings have been reported on other sociodemographic factors in relation to treatment attrition among adolescents. One study reported that ethnic minority group patients were more likely to drop out of treatment (Wierzbicki & Pekarik, 1993). In addition, adolescent patients with a history of foster care or a history of involvement with

the law were at greater likelihood for mental health treatment attrition (Baruch et al., 1998; Pelkonen et al., 2000; Pellerin et al., 2010).

Among children and young adolescents, the provision of mental health treatment is largely dependent upon parents (e.g., schedule availability, transportation, and financial issues) (Baruch et al., 1998). Hence, intervention programs that incorporate family members in treatment are more likely to be affected by parents' continued participation (Kazdin & Mazurick, 1994; Kazdin et al., 1993). On the other hand, older adolescents may be attempting to assert their independence and decision-making in their personal mental health care and refuse to adhere to treatment recommendations given by their parents or health providers (Block & Greeno, 2011). Due to the variable findings on the association of the sociodemographic variables mentioned with adolescent treatment attrition, it may be helpful to examine other potential factors that can affect mental health treatment.

Psychosocial Characteristics

Based on the inconclusive results from initial studies that explored sociodemographic factors related to treatment attrition rates, it was recommended that additional focus should be made on patients' psychosocial characteristics (Wierzbicki & Pekarik, 1993). In comparison to the sociodemographic factors examined, the psychosocial factors studied with adolescents such as emotion regulation problems, symptom severity, social and role functioning tend to show less discrepancy in the literature on treatment attrition in mental health.

Attrition has been examined in adolescent patients with emotion regulation problems. According to several studies on adolescent outpatients, those who reported higher levels of impulsivity, disorganized behaviors, and a diagnosis of conduct disorder were more likely to drop out of treatment (Baruch et al., 1998; Kazdin & Mazurick, 1994; Kazdin et al., 1993). However, patients with mood-related disorders (e.g., major depression) were not as likely to drop out of treatment (Pelkonen et al., 2000).

Patient symptom severity has also been a prominent psychosocial factor that has been reported in several studies with adolescents. Treatment dropouts consisted of adolescents with higher overall severity of symptoms at pre-treatment, higher overall distress levels, a history of previous psychiatric hospitalization, no psychotropic medications, and comorbid psychiatric disorders (e.g., substance use) (Kazdin et al., 1993; Pelkonen et al., 2000; Pellerin et al., 2010). In addition, an analysis of patients' Global Assessment Scale indicated that early patient dropouts were associated with poorer patient psychosocial functioning at post-treatment (Pelkonen et al., 2000).

Adolescents' social and role functioning are factors of emerging interest in the literature. Relationships with antisocial peer groups has been associated with treatment dropout among youth (Kazdin et al., 1993). Similarly, family support has been deemed as one of the most important psychosocial factors to consider when examining treatment attrition in adolescents (Gearing & Mian, 2005). Lack of parental involvement and motivation to continue treatment for their children are influential factors in attrition (Block & Greeno, 2011; Gearing, Schwalbe, & Short, 2012). The identification of negative parent-child relationships, increased parental stress, and parental psychopathology (e.g., depression) were associated with adolescent patient dropout in

mental health treatment (Gearing, Schwalbe, & Short, 2012; Pellerin et al., 2010). Further, adolescents with academic difficulties were also reported to have higher likelihood of treatment attrition (Baruch et al., 1998; Kazdin et al., 1993).

While it is not fully understood which domain of factors is more influential to treatment attrition, the greater number of factors present for adolescent patients in mental health treatment is associated with higher rates of treatment dropout (MacNaughton & Rodrigue, 2001). It is concerning that severely high-risk adolescents who might need mental health care the most may not be receiving appropriate treatment because they are dropping out. The improvement of treatment retention rates for such high-risk patients is gravely needed.

Treatment Attrition Rates and Factors among Adolescents with Deliberate Self-Harm

There is currently limited information on attrition among adolescent patients with DSH. Thus, there is no well-defined information on the dropout rates, or on patient sociodemographic and psychosocial factors that contribute to attrition for adolescents with DSH. The following studies offer preliminary information on attrition rates and patient factors on adolescents with DSH in various treatment settings. Notably, some of the information reported shows overlap with identified factors in studies of attrition in general adolescent mental health treatment. Nonetheless, these few studies on adolescents with DSH show that their adherence to mental health treatment is low.

The first 18 months after a suicide attempt is a critical period in adolescent mental health treatment due to the highest risk for repeated attempts (Prinstein, 2008). According to studies on adolescents with DSH, the patient dropout rates in mental health settings

range from 28-77%. (Barbe, Bridge, Birhamer, Kolko, & Brent, 2004; Piacentini et al., 1995; Trautman et al., 1993). Spirito et al. (2002) indicated that 52% of adolescents with previous suicide attempts attended six or fewer outpatient treatment sessions. The average number of sessions that patients attended varied from 5-13 sessions (Piacentini et al., 1995; Rotheram-Borus et al., 1996; Spirito et al., 2002). Assumptions regarding adolescents' greater independence-seeking or control and parents' decreased motivation to intervene were cited as possible reasons for the high dropout rates (Piacentini et al., 1995).

Sociodemographic factors associated with treatment attrition in adolescents with DSH have been examined. Gender and ethnicity were among the most common sociodemographic factors identified, but with mixed findings. Female adolescents with DSH were reported to have higher likelihood of treatment dropout (Trautman et al., 1993), while a study by Piacentini et al. (1995) indicated no gender differences in treatment attrition. Adolescents with DSH from minority ethnic groups (e.g., Hispanic) were more likely to drop out of treatment (Trautman et al., 1993). In terms of age, an interaction effect between age and gender was reported. Younger male adolescents with DSH attended more sessions compared to older males, and younger and older females (Piacentini et al., 1995). The possible effects of SES and treatment access barriers were also noted, and factors such as transportation difficulties and cost were associated with treatment dropout among adolescents with DSH (Spirito et al., 2002; Trautman et al., 1993). In addition, an increased number of previous suicidal attempts was identified as a risk factor for treatment attrition (Rotheram-Borus et al., 1996; Spirito et al., 2002; Spirito et al., 2011; Trautman et al., 1993), while another study reported that patients with

no history of suicidal attempts were more likely to drop out of treatment (Pelkonen et al., 2000). The current findings on adolescents with DSH show that psychosocial factors related to treatment attrition reflect the same inconsistent results as general treatment attrition studies on adolescents in mental health treatment.

Several psychosocial factors have been associated with treatment attrition among adolescents with DSH. Mood disorders, difficulties with coping and emotion regulation have been identified as possible risk factors for treatment attrition in adolescents with DSH. More specifically, adolescents with DSH who reported difficulties with problem solving skills, coping skills, self-regulation/self-soothing, increased maladaptive thoughts, immature or rigid self-defense mechanisms, and low self-esteem demonstrated a higher likelihood of treatment dropout (Rotheram-Borus et al., 1996; Spirito et al., 2002; Spirito et al., 2011). Approximately 40-80% of suicidal youth met criteria for depression at the time they engaged in the behavior (Barbe et al., 2004), and those with increased depression severity at pre-treatment were more likely to drop out of treatment (Spirito et al., 2011).

Symptom severity has been a key factor of interest in treatment attrition rates with adolescents and the DSH population. Adolescents with DSH in an outpatient program after a recent inpatient psychiatric hospitalization and those with currently prescribed psychotropic medications were more likely to attend a greater number of treatment sessions (Spirito et al., 2011). In contrast, a study by Trautman et al. (1993) reported that patients with a history of suicide were less likely to attend treatment sessions and were more likely to drop out of treatment earlier. Patients with a history of suicide attempts

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reported an average of three sessions attended prior to dropout, while the control group reported an average of 11 sessions (Trautman et al., 1993).

Parent-related factors have also been of interest in association with the risk of treatment attrition among adolescents with DSH. Similar to general treatment attrition studies on adolescents, parental factors such as parents' emotional problems and negative attitudes toward mental health treatment were highly associated with patient treatment dropout (Spirito et al., 2002). Lastly, a greater total number of family barriers to treatment (e.g., emotional problems, ambivalence to mental health treatment, transportation/schedule problems), and lower family cohesiveness were significantly related to a decreased number of treatment sessions attended (Rotheram-Borus et al., 1996; Spirito et al., 2002).

The current findings on treatment attrition among adolescents with DSH suggest that patient sociodemographic and psychosocial factors related to gender, age, ethnicity, SES, previous inpatient hospitalizations, externalizing behaviors, coping and adaptability, emotion regulation, pre-treatment symptom severity, and parent-related factors should be considered. While the amount of available information on the treatment dropout rates among adolescents with DSH is limited, it is important to address this issue due to the future implications it may have on the adolescent. Premature treatment dropout potentially results in an inadequate dosage of treatment, reduced credibility of the clinic and the treatment providers, and in therapist burnout and lowered confidence in providing effective care. Most importantly, attrition rates may also reflect patients' dissatisfaction with their overall treatment (Strauss et al., 2010). The somewhat lower dropout rates in adolescents using DBT treatment, along with good preliminary treatment outcomes

indicate the potential benefits of using this treatment approach with DSH patients.

However, more real-world feasibility studies are needed in order to confirm the treatment

attrition rates for adolescents with DSH and determine factors that predict dropout in this

severe population. Hence, it is important to continue to determine patient factors that are

associated with dropout in adolescents with DSH.

CHAPTER THREE

RESEARCH DESIGN

The purpose of this study is to determine the association between patients'
dropout status and treatment outcomes at time of dropout as well as factors related to
patient dropout in an adapted DBT-A intensive outpatient program. Specifically, the
purposes of the study are to determine whether patient dropouts show improvement at the
time of dropout and identify specific predictors of treatment dropout. Given the lack of
current research in this area, it is hoped that this study will provide additional information
on why adolescents with DSH drop out of treatment. Specific goals and hypotheses of the
study are as follows:

Objectives and Hypotheses

1. To determine whether patient dropouts show improvement at the time of
   treatment dropout.

   a. Hypothesis 1: There will be a significant difference between baseline and
      end-treatment overall Y-OQ-SR distress scores between program
      graduates and dropouts.

   b. A descriptive analysis of program dropouts and graduates' treatment
      course and rate will be provided.

2. To determine the relative risk factors of patient dropout over the course of
   treatment in the 16-week (32 sessions) program.

   a. Hypothesis 2: It is predicted that patient sociodemographic characteristics
      (i.e., age, gender, funding type, number of previous psychiatric

hospitalizations) and psychosocial factors (i.e., overall distress level at baseline, externalizing problems, school problems, and parent-child relationship quality) will significantly predict patient status at discharge (graduates or dropouts).

Methods

Participants

Participants were selected from a de-identified dataset of patients who attended an intensive mental health outpatient treatment program for adolescents with DSH at a major university treatment facility in Southern California. Patients were admitted to the program if they were between the ages of 13 and 18 and endorsed symptoms of emotional dysregulation, behavioral problems, and DSH (NSSI or suicidal behaviors) during the clinical interview. The inclusion criteria for first hypothesis of the current study consist of adolescent patients who no longer attended the program as of December 31, 2013, who had a baseline and post-treatment score on the Youth-Outcome Questionnaire-Self-Report (Y-OQ-SR); scored in the clinical range (47 or higher) on their Y-OQ-SR Total Score at baseline, and had baseline scores on the Behavior Assessment System for Children Second Edition (BASC-2) Parent Rating Scales (PRS), Self-Report of Personality (SRP), and Parenting Relationship Questionnaire (PRQ). The current study's first hypothesis reports on 117 patients who satisfied the inclusion criteria.

For the overall program and second hypothesis, the inclusion criteria consisted of adolescent patients who no longer attended the program as of December 31, 2013, were

either grant or insurance-funded for the treatment program, had a baseline score on the Y-OQ-SR, scored in the clinical range (47 or higher) on the Y-OQ-SR Total score at baseline, and had baseline scores on the BASC-2 PRS, SRP, and PRQ. Hence, the current study's second hypothesis was based on a total of 141 patients.

The de-identified database included 242 eligible patients. A total of 157 patients had baseline scores on the Y-OQ-SR, BASC-2 PRS, BASC-2 SRP, and PRQ. Fifteen patients were dropped from the analysis due to non-clinical range Y-OQ-SR Total Scores at baseline (46 or lower). The final sample size included data from a total of 141 adolescents meeting the study's inclusion criteria for the demographic section and the second hypothesis. Patients from the study sample had a higher proportion of graduates (67.6%) in comparison to the 242 eligible patients (59.7%). Otherwise, the study sample did not differ from the eligible sample of 242 patients on any key characteristics.

Treatment Protocol

The program incorporated a modified version of the DBT-A model by Miller et al. (2007). Patients attended the DBT program twice a week for 16 weeks (32 sessions), which consisted of weekly 30 minute to one-hour individual therapy for the adolescents, a parent group, an adolescent peer group, and a multi-family skills group. Patients had to complete approximately 32 sessions in order to graduate from the program. Weekly individual sessions with a therapist were aimed at helping adolescents apply skills learned in the group sessions to their day-to-day life, and to assess their ongoing treatment progress. A weekly parent group (held 1x/week for a total of 16-weeks) was utilized to provide parent support, skill building, and education about how to alleviate parents'

emotional distress and frustrations. Adolescents also attended a twice-weekly peer group where they discussed DBT skills and participated in art and music therapy. Finally, the biweekly multi-family skills group was where the parents and adolescents together learned basic DBT skills such as emotion regulation and distress tolerance. Clinicians trained in DBT provided all aspects of the treatment; however, no measures of treatment fidelity were implemented in the current program.

The current program differed from Miller's DBT-A model in five different ways. First, telephone consultations were not offered to the adolescents or their parents in a consistent manner. Telephone coaching was introduced over the course of the treatment program's development at year three. Second, patients were not required to enter the program during the Mindfulness module. The current program was unable to accommodate this practice due to the demands of the healthcare setting and patient referrals for expedient delivery of treatment. Third, there was no pre-treatment stage prior to patients' initial DBT-A treatment; Miller et al. (2007) identified this as a key stage in gaining patients' commitment to participating in DBT-A and collaborating with their therapist. Fourth, there was no 16-week post-treatment group offered to program graduates at the end of the program. Finally, the parent and adolescent support groups are not considered a standard part of DBT-A and were added to the program as they were modeled after other adolescent outpatient programs within the same treatment facility.

In addition to the treatment components, adolescents and their parents met with clinicians for a baseline assessment on their first day of the program. At this time, the Youth Outcome Questionnaire-Self-Report (Y-OQ-SR) along with other program required assessments were administered to the adolescents and their parents. The Y-OQ-

SR was also administered weekly to the adolescents and their parents while in the program. Post-treatment assessments on the same measures administered at baseline were conducted with patients and their parents as part of the program's exit procedures.

<center>*Materials*</center>

Patient Chart

The de-identified patient database included information collected from a chart review as part of a quality assurance evaluation. Relevant demographical information included variables such as age, gender, ethnicity, funding type, number of previous psychiatric hospitalizations, patient status at discharge, and number of treatment sessions attended. Patient funding type consisted of two groups: insurance and grant-funded. The insurance group comprised of patients who had private insurance that paid for their treatment. The grant-funded group consisted of patients who received foundational funding through the treatment program, which paid for their care (due to either having no insurance or having inadequate insurance coverage for the program).

Patient status at discharge consisted of two groups: graduates and dropouts. Patient graduates consisted of those who either: (1) successfully completed the 16-week (32 sessions) program; or (2) were determined by the clinical team through consensus to have successfully completed the program and had +/-32 total sessions. On a case-by-case basis, some patients did not complete the full 32 sessions (e.g., significant patient improvement to non-clinical range as determined by clinicians, treatment costs, insurance coverage) or attended more than 32 sessions (e.g., patient asked for additional sessions prior to graduation, or clinical team determined need for more treatment). Since these

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issues reflect real-world clinical situations, such patients were considered graduates and part of the study. Dropouts consist of patients who attended at least one treatment session and either (1) discontinued treatment after a failure to attend three treatment sessions; (2) requested to end treatment for various reasons (e.g., moving out of state, schedule conflict, transportation issues, no longer interested in treatment, etc.); and/or were (3) highly recommended to continue treatment due to severity of symptoms but discontinued the program. In all cases the clinician's original designation of whether a patient graduated or not was maintained in the analysis.

Youth Outcome Questionnaire – Self-Report (Y-OQ-SR)

The Y-OQ-SR (Wells, Burlingame, & Rose, 2003) is a 64-item self-report of psychotherapy treatment progress for adolescents ages 12 to 18 on a five-point Likert scale, ranging from 0 (Never or Almost Never) to 4 (Almost Always or Always). The Y-OQ-SR (which ranges from -16 to 240) was designed to assess treatment outcomes in youth targeting socially adaptive and disruptive behaviors on six scales. The Y-OQ-SR also consists of healthy behavior items (reverse-coded), which results in the lower score range (-16 to 46). A clinical cut-off score of 47 for the Y-OQ-SR's total score and a reliable change index (RCI) of 18 are used to denote clinically significant change (Wells et al., 2003). For the purposes of this study, only the Y-OQ-SR Total Score at baseline and post-treatment will be examined as it reflects the total distress in the adolescent's life and the changes over time.

Similar to the Outcome Questionnaire-45 (OQ-45; Lambert, Hansen, et al., 1996) measure for adults, administration of the Y-OQ-SR weekly lends to the measure's ability

to classify patients into different outcome categories (Lambert, Whipple, Hawkins, Vermeersch, Nielsen, & Smart, 2003). A signaling system has been created to improve identification of patients who may be at risk of treatment failure prior to the end of the program. Thus, the Y-OQ-SR consists of the following change classification categories: (1) Deteriorated (i.e., reliably worse; Y-OQ-SR Total Score worsened from baseline to post-treatment by ≥18 points); (2) No change (i.e., Y-OQ-SR Total Score +/- by less than 18 points); (3) Improved (i.e., reliably better; Y-OQ-SR Total Score decreased by ≥18 points but did not score under the clinical cutoff of 47); (4) Recovered (i.e., clinically significant change; Y-OQ-SR Total Score decreased by ≥18 points and scored under the clinical cutoff of 47). The current study will report on the following information for patients based on a comparison of their baseline and post-treatment measures.

The Y-OQ-SR reported good psychometric properties, with high internal consistency ($\alpha = .96$) for both clinical and community samples, and adequate to high test-retest reliability for the subscale scores ($r = .73$ to .91) and the total score ($r = .89$) (Ridge, Warren, Burlingame, Wells, & Tumblin, 2009). The current study reported a slightly lower but adequate level of internal consistency for the Y-OQ-SR total score ($\alpha = .80$).

Behavior Assessment System for Children (BASC-2)

The Behavior Assessment System for Children (BASC-2) comprises a set of measures that assess the emotional and behavioral functioning of children and adolescents from various perspectives such as the child or adolescent self-report, parent,

and teacher version (Reynolds & Kamphaus, 2004).(Reynolds & Kamphaus, 2004). The

relevant measures are individually described in the sections below.

Parent Rating Scales-Adolescent (PRS-A)

The Behavior Assessment System for Children-Second Edition-Parent Rating

Scales-Adolescent (BASC-2-PRS-A; Reynolds & Kamphaus, 2004) is part of the BASC-

2 assessment system that is used to evaluate the behaviors and emotions of adolescent

from ages 12 to 21 at the home and in community settings through the parent's

perspective. The PRS-A is a 150-item measure that is rated on a four-point scale, with

responses ranging from "Never" to "Almost always." The PRS-A includes a set of

clinical and adaptive scales, and four composite areas, namely: (1) Adaptive Skills, (2)

Behavioral Symptoms Index, (3) Externalizing Problems, and (4) Internalizing Problems

(Reynolds & Kamphaus, 2004). A T-score of 70 and above on the clinical scales denotes

clinically significant levels of maladaptive behaviors, while a score of 30 or lower on the

adaptive scales indicates clinically significant levels of adaptive behaviors.

For the current study, we were interested in examining the parent-reported

Externalizing Problems composite scores at baseline, and determining its association with

adolescents' treatment attrition. The other composite areas (Adaptive Skills, Internalizing

Problems) have not been cited in previous literature as factors that contribute to mental

health treatment attrition among adolescents with DSH. In addition, the Behavioral

Symptoms Index is an overarching composite score that includes both Internalizing and

Externalizing Problems. Our study aims to identify the influence of externalizing

behaviors on treatment attrition. The PRS-A has moderate to high psychometric

properties of validity and reliability. It has high internal consistency of .80 and above, (except for the Activities of Daily Living adaptive scale), which was similar to the current study ($\alpha = .79$). The PRS-A also reported high test-retest reliability of 1 to 7 weeks ($r = .70$ or higher). The interrater reliability ranges from moderate to high. In comparison to other parent rating scales, the criterion-related validity for the PRS-A ranges from moderate to high (Frick, Barry, & Kamphaus, 2009).

Self-Report of Personality-Adolescent (SRP-A)

The BASC-2 Self-Report of Personality-Adolescent (BASC-2 SRP-A; Reynolds & Kamphaus, 2004) is a 176-item self-report measure that assesses the feelings and emotions of adolescents ages 12 to 21. It consists of 12 Clinical scales and four Adaptive scales. The SRP-A yields five composite scores: (1) School Problems, (2) Internalizing Problems, (3) Inattention/Hyperactivity, (4) Emotional Symptoms Index, and (5) Personal Adjustment. A T-score of 70 and above on the clinical scales denotes clinically significant levels of maladaptive behaviors, while a score of 30 or lower on the adaptive scales indicates clinically significant levels of adaptive behaviors. In this study, we were interested in examining patients' School Problems composite scores at baseline. For similar reasons described for the PRS-A, we excluded the Internalizing Problems and Emotional Symptoms Index from our analysis. We also excluded the Inattention/Hyperactivity composite score from our study due to lack of previous findings that cited relationships between inattention and difficulty focusing on tasks and treatment attrition (de Haan, Boon, de Jong, Hoeve, & Vermeiren, 2013). The Personal Adjustment composite score was not examined due to similar reasons as the other excluded variables,

along with the availability of a more comprehensive measure in examining parent-child relationships. Similar to previous studies, the SRP-A has been found to have good reliability for the current sample (α = .80) (Frick et al., 2009).

Parenting Relationship Questionnaire-Child and Adolescent (PRQ-CA)

The Parenting Relationship Questionnaire-Child and Adolescent (PRQ-CA; Kamphaus & Reynolds, 2006) is a 71-item assessment from the BASC-2 that is used to explore the parent-child relationship of children ages 6 to 18 years old from a parent or caregiver's perspective. It consists of seven scales measuring the parent-child relationship: (1) Attachment, (2) Communication, (3) Discipline Practices, (4) Involvement, (5) Parenting Confidence, (6) Satisfaction with School, and (7) Relational Frustration. The PRQ-CA has been validated for use in many settings that deal with parent-child relationships, such as in intervention or treatment programs, school psycho-educational, clinical, pediatric, family counseling, and forensic evaluations (Kamphaus & Reynolds, 2006). It has been shown to have high internal consistency (α = .82 to .87) and test-retest reliability (r = .76), and moderate levels of scale intercorrelations. The PRQ for the current sample reported poor levels of reliability for the Communication (α = .12); Involvement (α = .21); and Relational Frustration (α = .37). We were interested in examining the three of the seven PRQ-CA scales at baseline in relation to adolescent treatment attrition: (1) Communication, (2) Involvement, and (3) the Relational Frustration scale. Based on previous findings related to adolescent mental health treatment attrition, it is believed that maladaptive parent-child communication, low

parental involvement, and negative parent-child relationships will be associated with increased adolescent treatment attrition.

Statistical Analysis and Data Screening

Inferential statistics were used to analyze differences according to patient demographic variables. Separate independent samples *t*-tests were performed to determine the effect of sociodemographic factors (i.e., gender, funding type) on the number of treatment sessions attended. A one-way ANOVA was used to examine possible relationships between ethnicity and the number of treatment sessions attended. Chi square analyses were performed to examine the relationship between sociodemographic factors (i.e., gender, ethnicity, funding type) and patient status at discharge. Pearson correlations were used to determine the relationship of sociodemographic factors (i.e., age, number of previous psychiatric hospitalizations) and psychosocial factors (i.e., Y-OQ-SR Total Score, BASC-2 SRP composite score, BASC-2 PRS composite score, BASC-2 PRQ-CA scale scores) with the number of treatment sessions attended.

Data screening was performed on the patient demographic variables and Y-OQ-SR Total Score at baseline to determine the level of missingness in the dataset. Analysis of missing data indicated that the current sample of 141 patients who satisfied the inclusion criteria differed in the reason for discharge status. No missing items were found for the study sample patient demographic variables.

Normality was assessed on the scale variables (Y-OQ-SR total score at baseline and post-treatment). The skewness and kurtosis for the Y-OQ-SR Total Score at baseline

(*Skewness* = .70, *Kurtosis* = -.02) and Y-OQ-SR Total score at post-treatment (*Skewness* = .53, *Kurtosis* = .30) were within normal bounds and showed an even distribution. Boxplot analyses indicated that there were simple outliers on the Y-OQ-SR Total score at post-treatment (*n* = 3). However, the outliers in the sample are representative of the clinical group of patients who tend to over-report elevated symptoms of overall distress. An exploratory analysis was conducted without the outliers to determine the influence of their inclusion into the study sample. No significant changes were identified with the removal of the outliers, and the study's analyses yielded similar results. Therefore, no outliers were removed from the data set. However, caution will be considered in regards to the interpretation of our results.

Hypothesis 1: A 2 x 2 mixed analysis of variance (ANOVA) was performed to determine whether there was a mean difference between patient status at discharge (graduates or dropouts) on the Y-OQ-SR Total stress score (the dependent variable) at baseline and post-treatment. Assumption testing was conducted on the variables of interest prior to running the ANOVA. Significant main effects and interaction effects are reported. Effect sizes are reported as partial η^2. A power analysis showed that in order to attain a power of .80 at α = .05 for an effect size of .25, a total sample size of 128 participants was recommended. Based on the current study sample for the ANOVAs (*n* = 117), the power attained for the 2 x 2 mixed ANOVA was .76.

In addition to the above analysis, a descriptive analysis of the Y-OQ-SR Total Score over time from Week 1 to Week 16 was used to show the trend in overall distress scores for patients in the study. A table of graduates' and dropouts' Y-OQ-SR Total

Scores over time is shown for comparative purposes. In order to determine clinically significant change on the Y-OQ-SR, the post-treatment subscale scores must satisfy the Y-OQ-SR outpatient cutoff score of 47 for the Total Score, and the RCI of 18.

Hypothesis 2: A Cox regression survival analysis was performed to identify predictors of survival time (i.e., treatment retention), with patient sociodemographic characteristics (i.e., age, gender, ethnicity, funding type, number of previous psychiatric hospitalizations) and psychosocial factors (i.e., Y-OQ-SR Total Score at baseline; BASC-2 PRS-A Externalizing Problems composite score; BASC-2 SRP-A School Problems; and the PRQ-CA Communication, Involvement, and Relational Frustration scale scores) examined as covariates. The patient psychosocial characteristics were drawn from a patient chart review; the psychosocial factors were based on the BASC-2 PRS-A composite score, SRP-A composite score, and PRQ-CA scale scores. Multivariate assumptions for the covariates used were tested prior to the analysis. In addition, multicollinearity was assessed for the covariates used. Those with a squared multiple correlation score of $\geq .90$ were not used in the survival analysis. Patients who did not drop out from the program at the end of the 16-week treatment (32 sessions) were considered right censored in the analysis. Effect sizes were measured using R^2. A power analysis showed that in order to attain a power of .80 at $\alpha = .05$ (effect size level at .15), a total sample size of 123 participants was recommended. The post-hoc power analysis showed an attained power of .87 with the study sample size of 141.

CHAPTER FOUR

RESULTS

Patient Demographics

A total of 141 adolescents were involved in the study. There were 23 males and 118 females (83.70%), with a mean age of 14.85 years ($SD = 1.36$). There were significantly more females than males in the current sample, $\chi^2(1) = 64.01$, $p < .001$, $\varphi = .67$. Similarly, the current sample showed significant differences in the number of patients from each ethnic group, with a majority of the patients identified as Caucasian (55.3%), $\chi^2(4) = 126.70$, $p < .001$, $\varphi = .95$. A total of 63 patients were grant-funded, while 78 patients paid for treatment with their insurance. No significant differences in funding types were reported for the overall group, $p > .10$. Significant group differences were reported between patients' reason for discharge, $\chi^2(1) = 18.45$, $p < .001$, $\varphi = .36$. Of the 141 patients in the study, 96 patients (68.1%) successfully graduated from the program, while 45 patients (31.9%) dropped out prior to end of treatment. Table 1 provides further information regarding patient demographics for the overall group.

An independent samples t-test indicated no significant differences between genders on the number of treatment days reported, $p > .05$. One-way ANOVAs also indicated no significant relationship between ethnicity and number of treatment days, $p > .10$; nor between patients' funding type and number of treatment days, $p > .10$.

Table 1. *Demographic information on the overall group of patients (N = 141)*

Demographic Information	Overall *N* (%)	
Gender***		
Male	23 (16.30)	
Female	118 (83.70)	
Ethnicity***		
Caucasian	78 (55.30)	
African-American	8 (5.70)	
Hispanic	32 (22.70)	
Asian	4 (2.80)	
Other	19 (13.50)	
Funding Type		
Insurance	78 (55.30)	
Grant	63 (44.70)	
Reason for Discharge***		
Graduates	96 (68.10)	
Dropouts	45 (31.90)	
	M	*SD*
Age	14.85	(1.36)
Number of previous psychiatric hospitalizations	1.45	(2.86)
Number of treatment days	24.79	(10.61)
	M (%ile Classification)	*SD*
Y-OQ-SR Total Score at baseline	98.45 (Clinical)	(31.61)
BASC-2 SRP School Problems	57.99 (At-Risk)	(11.24)
BASC-2 PRS Externalizing Problems	62.37 (Clinical)	(14.65)
PRQ-CA Communication Scale	41.40 (Average)	(10.08)
PRQ-CA Involvement Scale	43.05 (Average)	(8.92)
PRQ-CA Relational Frustration Scale	62.40 (Clinical)	(14.69)

Note. BASC-2 SRP School Problems and BASC-2 PRS Externalizing Problems T-scores from 60 through 69 are considered At-Risk; T-scores of ≥ 70 are in the Clinical range. The PRQ-CA Communication and Involvement scale T-scores from 31 through 40 are considered At-Risk; T-scores ≤ 30 are in the Clinical range. The PRQ-CA Relational Frustration Scale T-scores from 60 to 69 are considered in the At-Risk range, and T-scores ≥ 70 and higher are in the Clinical range.
***$p < .001$.

Independent samples *t*-tests were performed to assess whether there were

significant differences in the baseline ratings of overall distress on the Y-OQ-SR Total

Score, BASC-PRS, BASC-SRP, and PRQ between reason for discharge. At baseline,

graduates (*M* = 44.09, *SD* = 9.09) reported significantly higher PRQ Parent Involvement

scale scores than dropouts (*M* = 40.82, *SD* = 8.19), *p* < .05, indicating that dropouts

demonstrated less parent involvement at pre-treatment with scores falling at the clinical

cut-off for the at-risk classification. No significant group differences were indicated

between reason for discharge on the Y-OQ-SR Total Score at baseline, *p* >.10; BASC-SR

School Problems, *p* > .05; BASC-PRS Externalizing Problems, *p* > .10; PRQ

Communication, *p* > .10; and PRQ Relational Frustration scale, *p* > .10.

There were statistically significant positive correlations between the following

variables (see Table 2): Y-OQ-SR total score at baseline and BASC-SRP School

Problems scale, *r* = .37, *p* < .001; BASC-PRS Externalizing Problems and the PRQ

Relational Frustration scale, *r* = .69, *p* < .001; and the PRQ Communication and

Involvement scales, *r* = .50, *p* < .001. Significant negative correlations were indicated for

the following variables: BASC-PRS Externalizing Problems and PRQ Communication

scale, *r* = -.35, *p* < .001; BASC-PRS Externalizing Problems and number of treatment

days, *r* = -.18, *p* < .05; PRQ Communication and Relational Frustration scales, *r* = -.48, *p*

< .001; and the PRQ Involvement and Relational Frustration scales, *r* = -.31, *p* < .001. No

other significant correlations were reported. It should be noted that the stronger

correlations observed among the PRQ subscales was foreseeable given the shared method

variance of being from the same measure.

Table 2. *Pearson correlations on the overall group of patients (N = 141)*

	1	2	3	4	5	6	7	8	9
1. Number of treatment days	--								
2. Age	.12	--							
3. Number of Previous Psychiatric Hospitalizations	.06	.15	--						
4. Y-OQ-SR Total Score at baseline	-.07	-.13	.11	--					
5. BASC-SRP School Problems	-.19*	-.14	.01	.37***	--				
6. BASC-PRS Externalizing Problems	-.18*	.03	.16	-.05	.05	--			
7. PRQ Communication Scale	.10	.01	.08	.02	.02	-.35***	--		
8. PRQ Involvement Scale	.15	.07	.04	-.12	-.03	-.18	.50***	--	
9. PRQ Relational Frustration Scale	-.12	.02	.02	-.14	-.11	.69***	-.48***	-.31***	--

*$p < .05$. ***$p < .001$.

ANOVA Results

A 2 x 2 mixed ANOVA was performed on the baseline and post-treatment Y-OQ-SR Total Score among graduates and dropouts. The analysis was restricted to patients who had baseline and post-treatment Y-OQ-SR Total Scores ($n = 117$). Time (baseline versus post-treatment) was the within-subjects independent variable; patients' reason for discharge (graduates versus dropouts) was the between-subjects independent variable; and the Y-OQ-SR Total Score at post-treatment was the dependent variable.

There was a significant main effect of Time, $p < .001$ (see Table 3). Patients' Y-OQ-SR Total Scores were significantly lower at post-treatment than at baseline (see Table 4). There was also a significant main effect of reason for discharge, $p < .05$. Graduates' Y-OQ-SR Total Scores were significantly lower than dropouts' total scores. There was a significant interaction between Time and reason for discharge, $p < .001$. As shown in Figure 1, graduates demonstrated a greater improvement in Y-OQ-SR Total Scores (RCI = 41.15) from baseline to post-treatment than dropouts (RCI = 12.89). However, graduates continued to report a Y-OQ-SR Total Sore above the clinical cutoff of 47 at post-treatment.

Additional Analyses

Table 5 shows a detailed description of clinical outcomes according to baseline and post-treatment Y-OQ-SR scores. As noted, most of the graduates (47.1%) were identified as Recovered at post-treatment, while 29.2% were considered as Improved. In comparison, most of the dropouts (57.1%) were classified under the No Change group, and the second largest group of dropouts (25%) was identified as Recovered. A total of

15.7% of graduates were identified under the No change group upon program completion. In addition, a comparable rate of graduates (7.8%) and dropouts (10.7%) were classified under the Deteriorated group from baseline to post-treatment. To support the clinical outcomes by reason for discharge findings, a 2 x 4 chi-square analysis was performed. The analysis indicated significant group differences, $\chi^2(3) = 21.29$, $p < .001$, $\varphi = .43$. There were significantly more dropouts than graduates in the No Change group, $p < .001$.

Further, a one-way ANOVA on the clinical outcomes group examined with the Y-OQ-SR Total Score at baseline indicated significant group differences, $F(3,116)=3.62$, $p < .05$. Post-hoc Bonferroni pairwise comparisons indicated that the Deteriorated group endorsed significantly lower Y-OQ-SR Total Scores at baseline than the Improved group. In addition, the Deteriorated group also reported the lowest Y-OQ-SR Total Score at baseline ($M = 82$, $SD = 17.85$) than the Recovered ($M = 92.61$, $SD = 31.94$), Improved ($M = 111.5$, $SD = 22.91$), or No Change group ($M = 93.03$, $SD = 33.69$).

Table 3. *Analysis of Variance (ANOVA) between Time and reason for discharge*

	$F(1, 115)$	Partial η^2
Time	47.81***	0.29
Reason for Discharge	6.48*	0.05
Interaction	13.07***	0.1

*$p < .05$. ***$p < .001$.

Table 4. *Y-OQ-SR Total Scores (Ms and SDs) for graduates and dropouts at baseline and post-treatment*

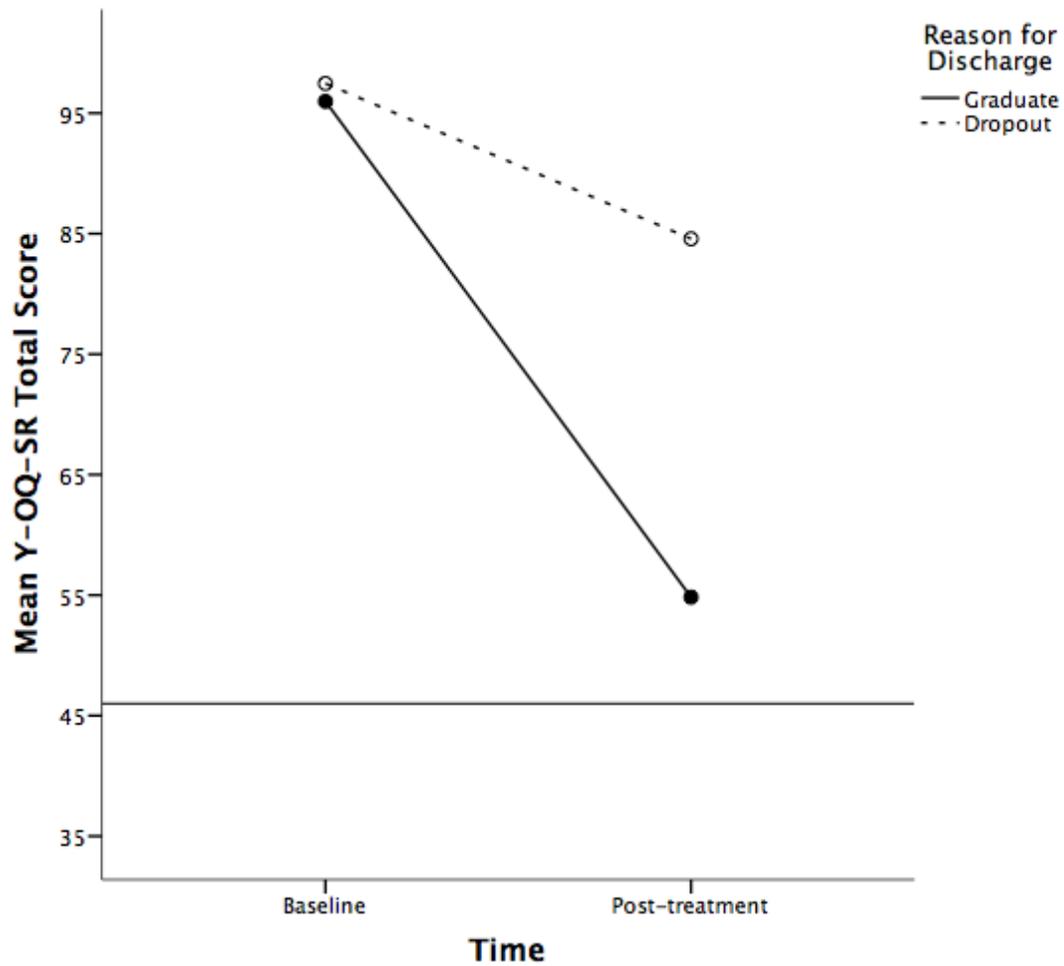|	Baseline		Post-treatment	
Reason for Discharge	*M*	*(SD)*	*M*	*(SD)*
Graduates	95.98	(27.95)	54.83	(32.30)
Dropouts	97.46	(38.32)	84.57	(46.67)

Figure 1. Mean Y-OQ-SR Total Scores from baseline to post-treatment by reason for discharge

Table 5. *Clinical outcomes based on Y-OQ-SR Total scores from baseline to post-treatment*

	Deteriorated	No change	Improved	Recovered
	n (%)	*n* (%)	*n* (%)	*n* (%)
Dropouts (*n* = 28)	3 (10.7)	16 (57.1)	2 (7.1)	7 (25)
Graduates (*n* = 89)	7 (7.8)	14 (15.7)	26 (29.2)	42 (47.1)

Note. (1) Deteriorated (i.e., reliably worse; Y-OQ-SR Total Score worsened from baseline to post-treatment by ≥18 points);
(2) No change (i.e., Y-OQ-SR Total Score +/- by less than 18 points);
(3) Improved (i.e., reliably better; Y-OQ-SR Total Score decreased by ≥18 points but did not score under the clinical cutoff of 47);
(4) Recovered (i.e., clinically significant change; Y-OQ-SR Total Score decreased by ≥18 points and scored under the clinical cutoff of 47).

Since dropouts left treatment at various times, a descriptive analysis was also performed to examine participants' monthly overall distress scores on the Y-OQ-SR Total Score from Week 1 to Week 16 (see Table 6). Patient graduates reported a negative trend in their Y-OQ-SR Total score over time from baseline to Week 16 (RCI = 41.15). For patients who dropped out of the program, their reported Y-OQ-SR Total scores until end of their treatment services had greater variability at each time point. While the patient dropouts reported a general decline in Y-OQ-SR Total score over time from baseline to Week 16 (RCI = 13.96 points), their reported scores also varied from being similar to (Week 1 to 4.5) or greater (Week 13 to16) than the previous time point. As demonstrated in Table 4, patient dropouts' Y-OQ-SR Total score increased by 25.5 points from Week 9 (i.e., 12.5) to Week 13 (i.e., 16).

Table 6. *Descriptive analysis of Y-OQ-SR Total scores from Weeks 1-16*

Y-OQ-SR Total Score (Week)	Graduates (*N* = 89)			Dropouts (*N* = 28)		
	N	*M*	*(SD)*	*N*	*M*	*(SD)*
Baseline YOQ	89	95.98	27.94	28	97.46	38.32
1 to 4.5 Weeks	--	----	----	10	99.80	48.25
5 to 8.5 Weeks	--	----	----	7	90.00	47.17
9 to 12.5 Weeks	--	----	----	7	58.00	32.28
13 to 16 Weeks	89	54.83	32.30	4	83.50	59.96

Patient Factors Related to Treatment Dropout

A Cox regression survival analysis was conducted to identify the number of treatment days attended by patients until they dropped out from the program, as predicted by several covariates (i.e., age, gender, ethnicity, funding type, number of previous psychiatric hospitalizations, Y-OQ total score, BASC-SR [School Problems], BASC-PRS [Externalizing Problems], and PRQ scores [Communication, Involvement, Relation Frustration]). Male, Caucasians, and grant funding were used as reference groups for the following categorical variables: gender, ethnicity, and funding type. Since no assumptions were made about which of the patient variables were stronger predictors of treatment dropout, the enter method was used. A Cox regression test with three blocks for the sociodemographic variables (block 1), patient-reported scores (block 2), and parent-reported scores (block 3) was used in order to identify covariates that significantly predicted time until treatment dropout.

Of the 141 patients, 45 (31.9%) dropped out from the program during the duration of their treatment. Ninety-six (68.1%) of the adolescent patients did not withdraw from

the program during their treatment. The analysis took three steps (see Table 7). At step one, none of the patient sociodemographic factors were significant predictors of treatment dropout and were removed from further analysis. At step two, neither of the two patient-reported psychosocial factors were significant and were not included in the final model. At step 3, the parent-reported psychosocial factors resulted no significant predictors of treatment dropout.

Table 7. *Cox regression analysis predicting the number of treatment days until dropout*

	B	SE	Wald χ^2 (df)	R^2	HR	HR 95% CI
Block 1				.03		
Age	-.07	.11	.41 (1)		.93	(.75-1.16)
Gender	.58	.37	2.38 (1)		1.78	(.86-3.69)
Ethnicity			1.68 (4)			
Caucasian	-.53	.43	1.55 (1)		.59	(.25-1.26)
African-American	-.26	.70	.13 (1)		.77	(.20-3.06)
Hispanic	-.27	.47	.34 (1)		.76	(.30-1.91)
Asian	-12.45	352.84	.01 (1)		.01	(.01-.001)
Funding Type	.47	.32	2.11 (1)		1.59	(.85-2.99)
Number of Previous Psychiatric Hospitalizations	-.10	.10	.87 (1)		.91	(.74-1.11)
Block 2				.02		
Y-OQ-SR Total Score (baseline)	-.01	.01	.22 (1)		1.00	(.99-1.01)
BASC-SRP School Problems	.03	.02	3.45 (1)		1.03	(1.00-1.05)
Block 3				.02		
BASC-PRS Externalizing Problems	.02	.02	1.15 (1)		1.02	(.99-1.04)
PRQ Communication	-.01	.02	.01 (1)		1.00	(.96-1.04)
PRQ Involvement	-.03	.02	1.93 (1)		.97	(.93-1.01)
PRQ Relational Frustration	-.01	.02	.05 (1)		1.00	(.97-1.03)

CHAPTER FIVE

DISCUSSION

Patient Demographic Findings

The current study examined treatment dropout in adolescents with DSH in an intensive outpatient facility, and determined factors that predict attrition. In general, the study reported similar patient demographic findings from previous research on DSH. For instance, the study's larger female sample size than males was previously noted in other studies (James et al., 2014; Mehlum et al., 2014; Rathus & Miller, 2002). The findings also support previous studies that Caucasian youth are more likely to endorse and seek treatment for DSH than other ethnic groups (Barrocas et al., 2012; Mehlum et al., 2014). However, an earlier study by McGibben et al. (1992) has shown similar rates of DSH among Asian and Caucasian youth. It may be of interest to explore differences in help seeking behaviors for DSH in youth among various ethnic groups, and determine how that influences referrals to mental health treatment. Additionally, a closer examination of minority youth with DSH who seek treatment but are unable to receive the intervention would be another important distinction to explore in future studies. Such an undertaking would provide additional key information on how to improve community outreach toward ethnic minority groups and increase treatment referral.

The current program accounted for limited opportunities in accessing treatment for DSH in low-income youth by providing them treatment through grant funding. Thus, the current study may have identified a solution to the problem identified by Pelkonen et al. (2000), who found that patients' SES might be closely associated with treatment dropout especially at the early (first two sessions) stages of the intervention. However,

the Pelkonen et al. (2000) study was based on a group of patients with equal access of mental health services in Finland, so a direct comparison of their findings with the current study is not feasible at this time. Although the above results are promising, it should be noted that the funding variable in the current study was not a direct measure of SES and was confounded by the inclusion of a few individuals who had insurance but the specific type was not accepted by the clinic. At best, the current results provide a general indication that funding type is not related to treatment dropout as long as everyone has an ability to pay for treatment. With the implementation of the Affordable Care Act, it is hoped that more patients will be able to access treatment for DSH. In addition, the study highlights the need for additional confirmation of this finding through the use of more informative and specific measures of SES (e.g., SES-specific factors such as family income, parents' occupation, parents' highest level of education, etc.). Since the current study showed that funding type, (although identified as an important variable in examining DSH youth) was not a strong predictor of treatment dropout, perhaps its influence is more indirectly associated. With the availability of SES variables, a follow-up research study that explores the possible mediating or moderating influence of SES on treatment dropout might provide a more comprehensive picture of program attrition in youth.

Parental Involvement

Another important finding in the study was focused on the influence of higher parental involvement at baseline, and its significant association with graduates than dropouts. The study showed that parental involvement is important in determining group

membership, as dropouts demonstrated less parental involvement than the graduates. In an effort to better understand the possible influence of parental involvement on the current study, it is important to consider the content of the individual PRQ scale items. Specific examples of PRQ Involvement items posed to parents were, "My child and I take walks together;" "My child and I plan to do things together;" and "I teach my child how to play new games." From these statements, it is suggested that if it is atypical for the parents and their children to spend regular quality time together, their "forced" time together in a weekly therapy setting may be a big commitment hurdle that directly impacts reason for discharge.

While it is believed that adolescence is a time period for independence and increased responsibility, the role of parents becomes more important than ever. Studies have consistently shown that parental involvement is a key ingredient for treatment success in youth with academic, medical, or mental health problems (Anderson, Ho, Brackett, Finkelstein, & Laffel, 1997; Rotheram-Borus et al., 1996; Steinberg, Lamborn, Dornbusch, & Darling, 1992). Parents are pivotal in modeling appropriate behaviors and demonstrating adaptive ways of coping with daily life stressors. In addition, students with highly involved parents are more likely to do better in school than students with less-involved parents (Steinberg et al., 1992).

Although parental involvement did not predict time to dropout in the current study, the current findings suggest that the parent-child relationship is still an important area to consider among youth with DSH. Perhaps it is worthwhile to continue to assess the impact of parental involvement on treatment dropout for youth with DSH through a more exploratory manner, and using other measures that tap into the quality, frequency,

and different types of parental involvement. Previous studies have indicated that high

parental criticism was associated with DSH among adolescents (Asarnow, Tompson,

Woo, & Cantwell, 2001; Wedig & Nock, 2007). This supports the idea that parents are an

integral part of treatment success for adolescents with DSH; however, it is important to

note that some types of parental involvement may negatively influence youth's

propensity toward engaging in DSH. Since high parental criticism is associated with

clinical dysfunction in adolescents with DSH, it is likely that it plays a role into youth's

level of treatment engagement and attrition. Moving forward, a suggested future study for

the current program would be to explore the quality of parent-child communication (i.e.,

parental criticism) in the home environment and how it influences adolescent treatment

dropout. Although the study did not identify any of the selected PRQ variables (i.e.,

Communication, Involvement, and Relational Frustration) as significant predictors of

treatment dropout, perhaps using a different measure that examines the overall parent-

child relationship and more specific areas (i.e., parent-child communication quality)

would be more effective. Thus, additional research is needed to examine the influence of

parental involvement on treatment attrition in youth with DSH. Future studies should also

continue explore other possible variables that predict time to dropout in youth with DSH.

DBT-A and Attrition Rates

The 31.90% treatment dropout rate in the current study indirectly confirms the

program's comparability to other DBT-A programs that have been featured in previous

research (Mehlum et al., 2014; Rathus & Miller, 2002). The consistently low dropout rate

in DBT-A studies also supports the claim that such programs are associated with more

patient engagement in comparison to other psychotherapy interventions that report dropout rates from 30-60% (Trautman et al., 1993). The current study's dropout rate likely could have been further improved if the DBT-A program included a pre-treatment stage as required in standard DBT-A treatment (Miller et al., 2007).

Prior to starting a DBT-A program, a pre-treatment stage is considered to be one of the most important steps of the treatment process, as it lays the groundwork for effective and successful patient outcomes (Miller et al., 2007). The DBT pre-treatment stage consists of both the patient and therapist working together and developing a mutual agreement on individualized treatment goals. The patient and therapist strive to form a collaborative relationship to work together and openly address patients' expectancies or inaccurate beliefs about therapy. In addition, the patient and therapist also spend a distinct amount of time on treatment orientation and discussion of DBT. The pre-treatment stage can take place for more than one session, and depends on the patient's ability to successfully understand and commit to treatment.

Given the detailed emphasis on gaining the patient and family's commitment to treatment, it may be important for future studies to require the implementation of DBT-A pre-treatment stage. The lack of a DBT-A pre-treatment stage for youth in the current study may be a crucial aspect of patients' commitment to change, and it may explain in part the number of dropouts (26.7%) who only attended 1-2 weeks (i.e., up to 4 sessions) prior to treatment dropout. A low patient commitment level that is endorsed prior to treatment may affect adolescents' view of mental health treatment effectiveness and/or their future help-seeking behaviors. In addition, this may be an opportune moment for parents to become more engaged in their child's treatment process and goals. Getting

parents to recognize their unique and essential role in their child's mental health treatment may be empowering and show how they can gain better management of their family's well being. Thus, it is highly recommended that the current program consider the enforcement of a pre-treatment stage prior to starting DBT-A treatment. A comparison in clinical outcomes can be made between the two different time periods or randomized patient groups (i.e., did versus did not utilize the pre-treatment stage) to further determine its influence.

Nevertheless, critical considerations need to be made when adding engagement enhancement interventions to existing treatment programs. Spirito et al. (2002) attempted to address such issues with treatment attrition in adolescents with DSH through randomly assigning participants to TAU versus a compliance enhancement intervention. While the study reinforced the importance of addressing service barriers to treatment, the additional module (i.e., pre-treatment engagement session, series of problem-solving telephone follow-up time points after discharge) did not result in increased attendance. A closer examination of a treatment program's patient community may be a better way of specifically targeting unique areas of need and providing more individualized care.

Changes in Baseline and Post-treatment Functioning

Although both groups showed improvements in their overall distress scores from baseline to post-treatment, only the graduate group demonstrated both a statistical and clinically significant change over the course of treatment. Notable gains were identified for adolescents with DSH in a DBT-A program despite group membership at discharge, but the improvements were even more enhanced for those who successfully completed

treatment. A similar finding was indicated in another study, which reported similar baseline overall psychosocial functioning for patient graduates and dropouts (Pelkonen et al., 2000). It should be noted that while improved, the post-treatment scores for the graduates were still above the clinical cutoff of 47. This suggests the need for ongoing treatment in the graduates beyond the 16-week program.

Given the structure and goals of DBT at Stage I of treatment, the study's findings regarding the need for additional intervention after the 16-week program is not unanticipated. Specifically, DBT considers self-harm and suicidality as part of its Stage I level of treatment goals for intervention, and is able to offer a more precise and focused approach on the presenting problems of self-harm and suicidality than other treatment approaches. During Stage I of DBT, the following treatment targets are aggressively addressed (Miller et al., 2007): (1) decrease life-threatening behaviors (e.g., DSH, suicidal behavior, gang activity, homicidal ideation and behaviors, medication adherence issues); (2) decrease therapy-interfering behaviors (e.g., motivation for treatment, attendance/tardiness, noncompliance, schedule conflict, reluctance to participate); (3) decrease behaviors that interfere with the patient's quality of life (e.g., substance or alcohol use, impulsive behaviors, problematic interpersonal relationships, role functioning dysfunctional behaviors); and (4) increase behavioral skills (i.e., DBT-A skills [Interpersonal Effectiveness, Distress Tolerance, Emotion Regulation, Core Mindfulness, and Walking the Middle Path]).

The comprehensive list of treatment targets under Stage I of DBT-A suggests that adolescent patients with DSH are difficult to sustain in outpatient mental health treatment. Stage I covers the most high-risk presenting problems that are often reported in

mental health care settings. DBT-A's ability to address such high-risk and often complex presenting problems in youth with DSH with markedly improved rates of treatment attrition is thought to be a key strength of the intervention. While it is noted that patients' overall distress scores are still above the clinical cutoff at post-treatment, it is expected that less intense but ongoing treatment will be required following the achievement of Stage I goals. In many cases, youth are transitioned into a DBT-A Stage II program where they can further address their emotional experiences and trauma symptoms. Within this context, the positive change in graduates over the course of treatment despite clinically elevated scores post-treatment is still encouraging. In future studies, it may be important to go beyond treatment length as a sole discharge criterion and instead consider the achievement of Stage I goals, which may or may not require additional weeks of treatment. Currently, an ongoing RCT study by Ballinger, Freeman, James, and colleagues is being conducted to explore the differences in Stage II treatment outcomes for adolescents in either a weekly CBT or DBT outpatient group. Further exploration with a comparison group of controls (e.g., CBT) or waitlisted patients will determine the degree of change that can be more precisely attributed to the passage of time or being in a type of outpatient treatment.

The Y-OQ-SR classifications (see Table 5) indicated that most graduates were classified as Recovered in their scores at post-treatment and reported clinically significant change in their overall functioning. However, it is also noted that 25% of dropouts were classified as Recovered based on their Y-OQ-SR Total Distress Score prior to leaving the program. Perhaps some of the Recovered dropouts did not report high levels of overall distress at baseline, which resulted in their success in meeting the cutoff score and RCI at

post-treatment. It is also possible that these individuals attended more treatment sessions. A number of graduates (29.2%) and dropouts (7.1%) were identified as Improved at post-treatment. This analysis shows that, treatment is helpful in decreasing patients' overall distress levels even if graduates' average Y-OQ-SR Total Score at post-treatment did not decrease below the clinical cutoff. In addition, while treatment may have been able to address most of the Improved group's presenting distress symptoms, these patients have yet to reach a more stable level of symptom management. For the Improved group, an additional referral to a Stage II DBT-A program should be highly considered, as it may provide them with the ability to further reduce their overall distress given the extra reinforcement to utilize their DBT skills.

Notably, a majority of the dropouts were identified under the No change group (57.1%) compared to the graduates (15.7%). One reason for treatment attrition may be that patients drop out when they do not see any notable change in their overall functioning. For such patients in the No change group, their responses on the Y-OQ-SR may also indirectly tap into their satisfaction with treatment services. As suggested by Strauss et al. (2010), when patients are unsatisfied with the type or level treatment they are receiving, their adherence to successfully completing the program may be reduced. Clinicians are urged to pay greater attention to the No change group in their weekly evaluation of patient outcomes, as they may be able to prevent a majority of the dropouts from discontinuing treatment (e.g., by exerting efforts to re-engage in treatment, re-examining patients' treatment goals and motivation).

Furthermore, a closely similar rate of graduates and dropouts (8-11%) were classified under the Deteriorated group at post-treatment. It is possible that the

Deteriorated group became influenced over time by the varying degrees of more severe DSH patients in the group and resulted in a contagion effect (Taiminen, Kaillo-Soukainen, Nokso-Koivisto, Kaljonen & Helenius, 1998). Additional efforts by DBT-A clinicians should focus on decreasing the possibility of promoting the DSH contagion (e.g., minimizing discussions on specific steps/ways that patients engage in DSH, carefully consider types of information shared with group members surrounding patients' DSH). As a whole, the Y-OQ-SR clinical change classification is able to provide a broader understanding of the possible reasons for premature treatment dropout in youth, and should be utilized as a regular part of weekly DBT-A treatment in the current program.

Factors Associated with Treatment Dropout in Adolescents with DSH

None of the variables examined in the current study were able to predict treatment dropout. This outcome is unexpected, given the number of possible factors (i.e., sociodemographic, patient-related factors, parent-related factors, symptom severity, etc.) that have been suggested in previous studies with treatment dropout for adolescents with DSH. As previously discussed, the identified factors varied in association with treatment dropout from one study to another, resulting in no conclusive determination regarding their predictive ability with treatment attrition in youth with DSH. (Pelkonen et al., 2000; Spirito et al., 2011; Trautman et al., 1993). It may be that the heterogeneity of adolescent DSH presentation makes it particularly difficult to predict why patients drop out from one group to the next. Given the mixed findings on sociodemographic and psychosocial factors in previous studies, it is likely that identifying the different types of DSH (i.e.,

with or without the intent to die) matter considerably in the attempt to understand factors that predict treatment dropout in youth. By acknowledging the heterogeneity of DSH presentation in youth during clinical intake procedures, it is hoped that we can improve our understanding of patients' and families' commitment level to treatment. In addition, it should be noted that previous studies have not examined all the identified factors together in the same analysis, which may have been a reason why the current study did not result in any significant predictors. Perhaps by looking at each individual predictor after controlling for the other variables, the identified factors as suggested in other studies do not hold as expected.

As mentioned earlier in the study's background information, there is currently limited and preliminary information on the factors that may predict treatment dropout on youth with DSH. While the study did not result in any significant factors to predict treatment dropout using the variables identified (i.e., age, gender, ethnicity, number of previous psychiatric hospitalizations, symptom severity at baseline, patient role functioning, parent-child relationship factors), other factors that were not available in the current sample have been noted for further exploration (Rotheram-Borus et al., 1996; Spirito et al., 2002; Spirito et al., 2011; Trautman et al., 1993). Specifically, the future availability of SES–related variables for research in the current program may provide a greater understanding of its possible influence on treatment dropout. Other factors of interest include patients' diagnosis at treatment admission. This can help identify the complexity of patients' presenting problems, and what specific presenting symptoms may be contributing to higher risk of treatment dropout (e.g., poor coping skills, higher emotional dysregulation).

Exploring the implications of medication management may be another factor to consider in treatment dropout, especially among patients who were classified under the No change and the Deteriorated groups. Perhaps for such patients, the combination of DBT-A and medication management is more likely to engender clinically significant change at post-treatment. Finally, there may be other parent-related factors that contribute to treatment dropout in adolescents with DSH. The influence of parents' emotional functioning and overall distress levels are other possible factors to consider in future studies, since the DBT-A program relies on the commitment of both parents/caregivers and the adolescents (Rotheram-Borus et al., 1996; Spirito et al., 2002). It may be more effective to look beyond the adolescent patient in terms of identifying factors that predict treatment dropout in future studies, and more closely examine how parents' or caregivers' overall functioning can more accurately explain DSH youths' program attrition.

As a whole, the current study indicates that the predictive factors of treatment dropout in youth with DSH may not be directly similar to those typically associated with general adolescent mental health treatment. Given the study's outcomes, it is highly plausible that the previously identified factors are more indirectly related to attrition, and that different factors from the general adolescent mental health population are more strongly associated with treatment dropout in youth with DSH.

Study Limitations

This study had several limitations. The current sample was moderately sized ($n = 141$) and met the suggested sample size based on the power analyses. While we had an

initial total of 242 eligible patients for the study, the amount of missing information [i.e., due incomplete baseline responses ($n = 85$), addition of study measures administered after Year 2, and loss of contact with patients who dropped out after 1-2 weeks ($n = 45$)] was comparably large. This may have led to some biased results in the study's outcomes. An improvement in the implementation and collection of complete baseline and post-treatment measures from patients included in the research study would remedy the amount of missing data and thus improve sample size. In addition, we also do not know how the dropouts who did not complete a post-treatment measure compared to those who did. An important future direction for the current program would be to do a follow-up phone call to all dropouts at post-treatment (during specific time-points, such as every six months for three years after program participation) to track their overall functioning.

One of the important differences between the current program and standard DBT-A was the lack of patient-therapist phone consultations when the current program first began. Due to the clinic's initial limitations, therapists were not available to provide weekend or after-hours telephone coaching to patients or their parents/primary caregivers during distressing times. It may be that some of the patients who dropped out of treatment were those who dropped out following times of crises (e.g., were admitted to psychiatric inpatient facility or ER, sent to residential treatment, etc.). It is possible that some patients and their families felt that the unavailability of telephone coaching for crisis support during off-clinic hours was a crucial missing component in the intensive outpatient program. However, the program also implemented support groups for youth and their caregivers, which was another modification from the standard DBT-A approach. The availability of the support groups may have been more amenable to the

adolescents and their parents than the telephone coaching, since it allows for them to engage in a social setting with other patients/families and engage in collaborative problem-solving. Nonetheless, the current program has no supporting information to clarify patients' preference for either having a support group or telephone coaching; it is a recommended future direction that they inquire such information in order to learn more about how to best serve the needs of their patients and families. As previously stated, it is suggested that DBT-A programs for youth with DSH should carefully consider any modifications to the standard treatment model due to the possible implications it may have on effectiveness.

The current study was also limited due to the self-reported information gathered from youth with DSH on key variables (i.e., Y-OQ-SR Total Score at baseline and post-treatment). Patients' responses were interpreted with caution, as their self-report of overall and academic functioning may not have been accurately presented due to varying levels of insight and judgment of their presenting problems. This limitation can be addressed in future studies with the utilization and side-by-side comparison of the Y-OQ-SR with its parent-reported version (i.e., Y-OQ 2.01). It is hoped that the use of both parent- and self-report overall functioning scores will provide a more accurate picture of patients' treatment outcomes. It may also be interesting to examine parent-reported Y-OQ scores at baseline and how it is associated with adolescent treatment dropout. In regards to other measures used in the current study, the PRQ scales indicated a low reliability level for the current sample, which suggests that any relationships with these variables may be attenuated. Consideration for the use of a different measure to examine parent-child relationships may be an important future direction for the current clinical program.

The current sample reflected real-world clinical outcomes by adolescents with DSH, which is both a strength and limitation of the study. A study limitation was that three patients were included in the analysis who presented with greater levels of overall distress than the overall group. However, it was determined that the inclusion of the three outliers in the current sample was also strength in the study, as it would be more representative of the elevated overall distress levels among adolescents with DSH in outpatient treatment. Additionally, the decision to include the three outliers presented the opportunity for a more clinically-relevant outcomes analysis that would be more informative for non-research oriented outpatient and community treatment settings working with youth with DSH. However, as a result, the study's findings are deemed to be interpreted with caution and are not meant to be applicable to all DBT-A outpatient treatment settings for adolescents with DSH.

It is hoped that the current findings will incite increased interest in identifying reasons for treatment dropout among youth with DSH. By further exploring the unique factors that predict treatment dropout for youth with DSH, we may facilitate the improvement of case management and individualized treatment for patients and their families. A greater examination of patients' family SES, primary diagnosis at baseline, caregivers' parental stress, and medication management may be areas of interest for more specific identification of how to improve treatment attrition rates in adolescents with DSH.

Concluding Remarks

Based on the study's findings, we found support the first hypothesis. There was a

significant interaction effect between Time and Reason for Discharge. Both groups showed improvements in their overall distress scores from baseline to post-treatment. However, only the graduates demonstrated both a statistical and clinically significant change over the course of treatment. This suggests that exposure to some amount of treatment was helpful, but not enough to bring overall distress level down to a more clinically significant degree. This provides support for the notion that successful completion of the 16-week, 32-session program is important in addressing adolescent patients' DSH and other presenting problems. However, additional mental health care is needed in order to facilitate greater improvements in overall distress.

Suggestions for improved clinical outcomes have been noted. Clinical staff can take a more proactive stance on addressing patients' clinical change over time by providing weekly summaries of their overall treatment progress, and gaining regular feedback about difficulties that prevent them from experiencing greater symptom management. More importantly, patients' level of commitment to change should be examined prior to beginning treatment, as it provides the foundation for a higher likelihood of treatment success. In addition, while parental involvement is important in determining patient group membership (graduates versus dropouts), it did not predict time to dropout. This indicates that parental involvement may be an important factor to that can help identify whether patients are more likely to successfully complete treatment, but not how many sessions they will participate in during treatment. Finally, we were unable to support previously identified factors of treatment dropout in general adolescent mental health for our current sample of youth with DSH. The lack of identified factors for attrition highlights a serious concern for adolescent patients with DSH and their families,

and further presents the increased need for identifying ways to ameliorate treatment

dropout.

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