Outpatient Dialectical Behavior Therapy for Adolescents Engaged in Deliberate Self-Harm: Conceptual and Methodological Considerations

Kimberly R. Freeman[1], **Sigrid James**[1], **Keith P. Klein**[1], **Danessa Mayo**[2], and **Susanne Montgomery**[1]

[1] Department of Social Work and Social Ecology, Loma Linda University, 1898 Business Center Drive, San Bernardino, CA 92408, USA

[2] Department of Psychology, Loma Linda University, 11130 Anderson Street, Loma Linda, CA 92350, USA

Abstract

The current review examines conceptual and methodological issues related to the use of dialectical behavior therapy for adolescents (DBT-A) in treating youth who engage in deliberate self-harm. A comprehensive review of the literature identified six studies appropriate for the review. Results indicated several inconsistencies and limitations across studies including the mixing of various forms of self-harm; variations in diagnostic inclusion/exclusion criteria, insufficient use of standardized self-harm outcome measures, variable lengths and intensity of provided treatment, and inadequate attention paid to DBT adherence. Each of these areas is reviewed along with a discussion of ways to improve the quality of future research.

Keywords

Adolescents; Dialectical behavior therapy; Deliberate self-harm; Non-suicidal self-injury; Methodology

Introduction

Growing evidence suggests dialectical behavior therapy for adolescents (DBT-A) is a promising treatment approach for youth engaging in deliberate self-harm (DSH). However, a review of the literature indicates that studies in this area present with notable variation in how self-harm is conceptualized, what outcome measures are utilized, and how DBT is implemented. As such, the purpose of this article is to highlight conceptual and methodological issues related to DBT-A treatment of adolescents engaging in DSH with the

Kimberly R. Freeman, kfreeman@llu.edu.
Sigrid James, ssjames@llu.edu
Keith P. Klein, kpklein@llu.edu
Danessa Mayo, dmayo@llu.edu
Susanne Montgomery, smontgomery@llu.edu

goal of better informing future investigations and thus advancing the body of knowledge in this area.

Deliberate Self-Harm and Related Behaviors

In the research literature, multiple terms have been used to describe self-harming behaviors, such as deliberate selfharm, self-injurious behavior, nonsuicidal self-injury, self-mutilation, etc. Operational definitions vary but most describe self-harm as behaviors that are "intentional, direct, and immediate in terms of bodily image" (Latimer, Meade, & Tennant, 2013, p. 1), have a non-fatal outcome and may include behaviors, such as self-cutting, jumping from a height, ingesting a substance in excess of the recommended dose, ingesting a recreational or illicit drug, or ingesting a non-ingestible substance or object (Hawton, Rodham, & Weatherall, 2002). Distinctions are made between self-harm with or without suicidal intent. Nonsuicidal self-injury (NSSI) is the preferred term in the U.S. and captures self-harming behavior without suicidal intent. The term deliberate self-harm (DSH) is more commonly used in Europe and is more encompassing, describing "self-harm with suicidal intent, nonsuicidal self-harm and self-harm episodes with unclear intent" (Ougrin et al., 2012, p. 337). It is believed that self-harm with or without suicidal intent may differ in respect to etiology and/or course, and the recent inclusion of NSSI as a proposed area of additional research in the DSM-V supports the need for further investigation in this area. For the purpose of this paper DSH will refer to self-injury with and without suicidal intent and NSSI will only refer to self-injury without suicidal intent.

While more studies have begun investigating different types of self-harm (e.g., Jacobson, Muehlenkamp, Miller, & Turner, 2008), disparate conceptualizations and operationalizations have rendered cross-study comparisons about prevalence and correlates difficult. Nonetheless there is agreement that self-harm represents a growing health concern among adolescents (Hawton, Rodham, Evans & Weatherall, 2002; Madge et al., 2008; Muehlenkamp, Claes, Havertape, & Plener, 2012). Existing data suggests adolescents are most likely to begin engaging in DSH between the age of 13–14 (Hawton, Fagg, & Simkin, 1996; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006) with self-harm occurring most often in 15–18 years olds (Sourander et al., 2006). Of the numerous forms of DSH, cutting (59.2 %) and attempted overdose (29.6 %) have been cited as the most common types (DeLeo & Heller, 2004; Laye-Gindhu & Schonert-Reichl, 2005). Accurate prevalence rates for self-harming behavior are unknown, but estimates suggest lifetime self-injury occurs among 16–18 % of individuals within community samples (Madge et al., 2008; Muehlenkamp et al., 2012) and within 36–80 % in clinical samples (DiClemente, Ponton, & Hartley, 1991; Nixon, Cloutier, & Aggarwal, 2002; Nock & Prinstein, 2004; Swenson, Spirito, Dyl, Kittler, & Hunt, 2008). Approximately 50–75 % of those with a history of DSH are predicted to attempt suicide, making prevention and early treatment critical (Guan, Fox, & Prinstein, 2012; Nock & Favazza, 2009).

Multiple studies have investigated risk factors or correlates of DSH and have identified a range of sociodemographic and psychosocial factors (Boxer, 2010; Challis et al., 2013; Evans et al., 2004; Gratz et al., 2012; Madge et al., 2011; Scoliers et al., 2009). For instance, being female (Gratz et al., 2012; Hawton & Harriss, 2007) and between the ages of 15–18

years old (Sourander et al., 2006) have been found to increase the risk of DSH. Some studies have also documented racial/ethnic variation in self-harm most often showing higher prevalence rates among Caucasians (Cooper et al., 2010; Gratz et al., 2012) as well as higher prevalence rates of self-harm and suicidality in youth from more socio-economically disadvantaged backgrounds (Gratz et al., 2012; King & Merchant, 2008).

A range of psychosocial factors has also been associated with DSH (Andover, Pepper, Ryabchenko, Orrico, & Gibb, 2005; Klonsky & Muehlenkamp, 2007; Ross & Heath, 2002). Among psychiatric diagnoses, borderline personality disorder (BPD) is one of the strongest correlates of selfinjury in adults (Klonsky, 2007). Within an adolescent selfharm sample, Nock et al. (2006) found that nearly half of participants met the BPD diagnostic criteria. In addition to BPD symptoms, major depression, anxiety disorders, eating disorders, posttraumatic stress disorder, and schizophrenia have been linked to self-harm (Jacobson & Gould, 2007; Klonsky & Muehlenkamp, 2007). Adolescents who self-harm have also been found to have higher rates of engagement in health-risking behaviors, such as heightened sexual activity and illegal drug use (James, Winmill, Anderson & Alfoadari, 2011).

Other DSH features include impulsivity, feelings of emptiness, unstable relationships, and affective instability (Jacobson et al., 2008). Most notable among these symptoms is the struggle to regulate emotions. Emotional regulation is defined as the "awareness, understanding, and acceptance of emotions; ability to engage in goal-directed behaviors and inhibit impulsive behaviors when experiencing negative emotions; flexible use of situationally appropriate strategies to modulate the intensity and/or duration of emotional responses rather than to eliminate emotions entirely; and willingness to experience negative emotions as part of pursuing meaningful activities in life" (Gratz, 2007, p. 1094). Individuals with DSH often lack proper emotional regulation skills, which frequently results in the development and reinforcement of maladaptive behavior patterns.

Several explanatory models shed light on the function of self-harm (Chapman, Gratz, & Brown, 2006; Lloyd-Richardson, Nock, & Prinstein, 2009; Stanley & Brodsky, 2005). The Affect Regulation Model, one of the most referenced models, is based on psychodynamic and object-relations tenets. It views self-harm as a way to express uncontrollable emotions of anger, anxiety, or pain and alleviate feelings of high arousal or negative affect (Favazza, 1992; Gratz, 2003). Within this model feelings of anger and/or frustration become intolerable and the individual is thought to engage in self-injury as an attempt to regain a sense of internal balance and relief (Klonsky & Muehlenkamp, 2007). Multiple studies provide strong support for the Affect Regulation Model (Briere & Gil, 1998; Klonsky, 2007; Laye-Gindhu & Schonert-Reichl, 2005; Niedtfeld et al., 2010; Nixon et al., 2002).

On the other hand, the Four-Function Model proposed by Lloyd-Richardson et al. (2009) emphasizes that selfharm serves either a positive or negative reinforcement function. The consequences of self-harm directly affect the automatic (i.e., internal) or social (i.e., external) state, resulting in four types of self-harm functions: (1) automatic-negative reinforcement, (2) automatic-positive reinforcement, (3) social-negative reinforcement, and (4) social-positive reinforcement (Miller & Brock, 2010). As an example, an individual might engage in self-harm for automatic-negative reinforcement, which would indicate that

self-harm functions to stop negative feelings. The Four-Function model suggests that reasons for engaging in self-injury could differ by individual, despite using similar methods of self-injury. Compared to the Affect Regulation Model, the Four-Function Model accommodates greater individual differences.

Although there may be multiple co-occurring functions of DSH, most models suggest that reinforcement mechanisms are a driving force in the maintenance of maladaptive behaviors. As such, the most promising treatment interventions for DSH are based on cognitive and behavioral therapy approaches. The symptom characteristics associated with self-harm and frequent inpatient admissions, as often seen in adult individuals diagnosed with BPD, have led to the use of adapted versions of DBT with adolescents who self-harm (Muehlenkamp, 2006; Ougrin et al., 2012).

Standard DBT

DBT was initially developed to treat adults with BPD in outpatient settings and is deeply rooted in cognitive and behavioral therapy, mindfulness drawn from Zen Buddhism, and acceptance-based strategies. Embedded within this framework are the concepts of dialectics (i.e. need for both acceptance and change), validation of the client's perceived experiences, and need for problem-solving strategies (Linehan, 1993a). DBT is based on biosocial theory, assuming a transactional relationship between the individual and the environment. Specifically, an emotionally dysregulated person is biologically predisposed to be overly sensitive to surroundings, engage in highly emotional responses, and take significantly longer to return to homeostatic levels. When combined with an invalidating environment, behavioral dysfunction such as self-harm often occurs and is reinforced by symptom reduction (Miller, Rathus, & Linehan, 2007). This perspective is consistent with current DSH theoretical models, which mostly cite self-harming behaviors as a maladaptive form of coping with high emotional distress.

DBT is highly structured and involves multiple components including individual psychotherapy, group skills training, including mindfulness skills, phone consultation, and a therapist consultation team (Linehan, 1993b). The treatment process includes a pre-treatment phase and four subsequent stages that are addressed over the course of a 1-year treatment protocol. Throughout treatment the therapist maintains a balance of acceptance and change strategies to promote forward movement and adaptive functioning. Core skills and teaching modules include (1) emotion regulation, (2) interpersonal effectiveness, (3) distress tolerance, and (4) mindfulness. Randomized clinical trials have demonstrated the efficacy of DBT in reducing adult DSH when compared to treatment-as-usual controls up to 6-months post-treatment (Koons et al., 2001; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991; Verheul et al., 2003). These positive results in adults have prompted adaptations of DBT for adolescents with serious emotional problems including self-harm (Rathus and Miller 2002).

DBT for Adolescents

Rathus and Miller (2002) adapted standard adult DBT for adolescents (DBT-A), with a primary focus on decreasing maladaptive behaviors and increasing behavioral skills.

Standard DBT principles utilized with adolescents typically include (1) adolescent group skills training teaching core mindfulness, emotion regulation, interpersonal effectiveness, and distress tolerance; (2) individual weekly therapy with a focus on skill application from the training group to real life situations; (3) telephone consultation designed to reduce hospitalization by breaking the link between suicidal behaviors and therapist attention; and (4) a DBT consultation team to enhance therapists' capabilities and motivation. Adolescent DBT adaptions, as recommended by Miller, Rathus and Linehan (2007), include an additional skills module named "Walking the Middle Path," which was developed to improve parent and adolescent communication and minimize power struggles; inclusion of family group skills training; family therapy as needed; an abbreviated treatment length from 12 months to 16 weeks; and rewording of skill handouts and materials for greater relevance to teens.

Purpose of Review

Multiple reviews of DBT studies summarize the effectiveness of DBT in adolescents presenting with different diagnoses within treatment settings (Brausch & Girresch, 2012; Groves, Backer, Bosch, & Miller, 2012; Quinn, 2009). However, none of these reviews have specifically focused on a comparison of DBT-A treatment as originally proposed by Rathus and Miller (2002) and the treatment of DSH. With increasing rates of DSH in adolescents the need to better understand the effectiveness of this treatment and issues impacting our ability to come to conclusions is critical. As such, the goal of this article is to identify conceptual and methodological issues confounding our current understanding of DBT-A implementation and the effectiveness of this approach in treating adolescents with DSH.

Review Method

An electronic search of multiple databases (PsycINFO, Academic Search Premier, GoogleScholar, Web of Science) was conducted between September 2000 to February 2015 using key words "adolescent" and "Dialectical Behavior Therapy" in combination with the following terms: self-harm, deliberate self-harm, nonsuicidal self-in-jury, self-injury, parasuicide, and suicide. Searches were limited to full text papers published in English within academic journals. Chapters and dissertations were excluded. The search resulted in 83 articles reviewed for consideration. Included in this review are quantitative studies on the effectiveness of standard DBT-A treatment involving self-injurious adolescents between the ages of 12–18. Our search was deliberately broad, as we wanted to better understand methodological issues. We excluded studies if they were not outcome studies, included both adolescents and adults without differentiating between the two populations, targeted a behavioral health issue other than DSH, or if the evidenced based DBT-A structure was significantly modified for another treatment setting (i.e. inpatient settings).

This review process resulted in six outcome studies published between 2002 and 2015 that included at least one measure of DSH. Four studies utilized a non-control group preand post-test comparison design; two included extended post-treatment follow-up (Fleischhaker et al., 2011; James et al., 2014; Tørmoen et al., 2014; Woodberry & Popenoe, 2008) and two studies included a comparison group (Mehlum et al., 2014; Rathus & Miller, 2002). Mehlum

et al. (2014) was the only randomized control trial study utilizing a usual care as the control condition. In general, findings demonstrated decreased self-harm with and without suicidal intent, fewer hospitalizations, depression and general psychiatric symptoms reduction, and improved quality of life. All studies utilized the main components of Miller and Rathus' (2002) adapted version of DBT for adolescents.

Given the few number of DBT-A studies identified, it is clear that the evidence in this area remains limited. Further, with the exception of one recently published randomized control trial, what evidence does exist regarding the effectiveness of DBT-A is based on relatively weak designs and not on rigorously designed studies. In order to advance our current understanding about DBT-A and allow us to truly illuminate if it is effective for DSH, we believe that future studies will need to address issues including (1) mixing definitions of self-harm across studies, (2) diagnostic inclusion/exclusion criteria, (3) utilization of outcome measures, (4) treatment length and intensity for therapeutic change, and (5) adherence to core principles of DBT. Each of these issues is discussed in detail below along with a review of study outcomes.

Self-Harm Constructs

Most studies using DBT-A did not distinguish between different types of self-harm, including self-injurious behaviors with or without suicidality. The few studies, which specifically examined various aspects of self-harm, found that adolescents who engaged in self-harm without suicidality present with less severe symptomology, specifically in regard to depression (Brausch & Gutierrez, 2010; Csorba, Dinya, Plener, Nagy & Páli, 2009; Guertin, Lloyd-Richardson, Spirito, Donaldson & Boergers, 2001). Further, Guertin et al. (2001) found that adolescents who self-mutilate and attempt suicide are significantly more likely to be diagnosed with oppositional defiant disorder, major depression, and dysthymia compared to suicidal adolescents who do not self-mutilate. Suicidal adolescents who self-harm also demonstrated higher scores of hopelessness, loneliness, anger, risk taking, reckless behavior, and alcohol use compared to suicidal adolescents who did not self-mutilate. Although more research is needed, growing evidence suggests that standardized conceptualizations and definitions of self-harm constructs are needed to further develop diagnostic and treatment approaches for self-harm with and without suicidal ideation.

A review of the six outcome studies utilizing DBT-A to treat self-harm indicates all studies allowed for the inclusion of different types of self-harm without adapting the program accordingly or conducting differential analyses (see Table 1). Further, none of the studies controlled for symptom severity or assessed different treatment effects across types of self-harm. Far greater attention should be paid to assessing and controlling for these issues.

Diagnostic Inclusion Criteria

Another methodological concern relates to using BPD diagnosis or symptoms as a study inclusion criterion. This trend was observed in four of the reviewed studies (Fleischhaker et al., 2011; Mehlum et al., 2014; Rathus & Miller, 2002; Tørmoen et al., 2014). The two additional studies (James et al., 2014; Woodberry & Popenoe, 2008) noted that subjects demonstrated symptoms consistent with BPD (i.e. emotional dysregulation and self-harm)

but did not specifically require this as an inclusion criterion. Adopting this inclusion criteria approach for treatment with adolescents who engage in DSH presents a twofold problem: (1) BPD diagnosis/symptoms may only be appropriate for the most severe cases; and (2) controversy exists about diagnosing personality disorders during adolescence when personality is still developing (Meijer, Goedhart & Treffers, 1998).

To determine the appropriateness of a BPD diagnosis for individuals engaged in self-harm, Nock et al. (2006) examined diagnostic characteristics of adolescents with a recent history of NSSI. Results indicated a complex presentation of comorbid disorders. Diagnostic correlates of NSSI included 51.7 % with an internalizing diagnosis, 62.9 % with an externalizing disorder, 59.6 % with a substance use disorder, and 51.7 % with a personality disorder, with BPD and antisocial personality disorder being the most prominent. Overall 70 % of adolescents with a history of self-injury reported a history of at least one suicide attempt with 55 % reporting more than one. This last point is significant, since Nock et al. (2006) did not control for these factors and it is therefore unknown if the presentation of diagnostic categories, including BPD, are different in adolescents with a history of NSSI *only*, compared to those with a history of *both* nonsuicidal self-injury and suicide attempts.

Muehlenkamp, Ertelt, Miller and Claes (2011) further examined the relationship between BPD and DSH in adolescents by investigating whether BPD symptoms significantly differentiated adolescents reporting three variations in DSH: self-harm only, suicide attempts only, and both self-harm and suicide attempts. Those who met the full BPD diagnostic criteria was highest in the group that experienced self-harm plus suicidality and lowest in the self-harm only group. However, the mean number of BPD criteria met for either group was below the diagnostic threshold. There were no differences in the mean number of BPD symptoms between the self-harm only and suicidality only groups, with both groups showing low levels of BPD symptoms. The authors concluded that evaluating variations in DSH presentation is key to understanding the relationship between self-harm and BPD symptoms, as evidence suggests independently occurring self-harm or suicide attempts are not strongly associated with BPD features. Thus, using BPD symptoms as an inclusion criterion may not be appropriate when self-harm or suicidal behaviors do not co-occur.

In addition, on a more conceptual level, Wilkinson and Goodyer (2011) argue that it is generally inappropriate to diagnose personality disorders in children and younger adolescents, and instead proposed a new DSM-V category for NSSI. The latest addition of the DSM-V manual now includes NSSI as an area for further study supporting the notion that self-injury may be conceptualized independently from BPD symptoms. It is believed that further research in this area will enable researchers and clinicians to approach these behaviors with a more cohesive conceptualization (comparing "apples to apples") thereby improving communication about the condition and enabling more specific treatments to be developed (In-Albon, Ruf, & Schmid, 2013; Muehlenkamp, 2006; Wilkinson & Goodyer, 2011).

In summary, we found that it is important to examine DSH subtypes as individuals with nonsuicidal self-injury or suicidality alone may vary diagnostically from individuals with

self-harm and a suicidality history. Researchers are also cautioned about using the BPD diagnosis as a study inclusion criterion for adolescents both for reasons related to labeling and because of its variable relationship with self-harm and/or suicidal behaviors. Clearly, using the "same" definitions of nonsuicidal self-injury and/or DSH would need to occur for further study.

Outcome Measures

In evaluating treatments related to DSH it is critical to consider how self-harm is measured. Assessment measures for the reviewed articles fell into two categories: standardized measures and behavioral observations. Standardized measures included semi-structured diagnostic interviews and measures of depression, suicidality, self-harm, general psychological functioning, emotional and behavioral functioning, and miscellaneous scales such as attachment and trauma. Some of the more consistent measures across studies included the Structured Clinical Interview for DSM-IV (SCID-II: First, Gibbon, Spitzer, Williams & Benjamin, 1997), the Beck Depression Inventory Second Edition (BDI-II: Beck, Steer, & Brown, 1996), and the Symptom Checklist 90-Revised (SCL-90: Derogatis, 1977). Behavioral observation measures included number of hospitalizations, number of suicide attempts during treatment, attendance, and number of episodes of self-harm per week, among others.

Although the measures listed above provide relevant information about the participants' state, the lack of standardization directly related to self-harm appears to be an obvious oversight. A number of measures related to self-harm and suicidality have been developed and validated over the last two decades and should ideally be used across studies investigating the effectiveness of DSH. These include standardized interviews, such as the Suicide Attempt Self-Injury Interview (SASII: Linehan, Comtois, Brown & Heard, 2006), the Self Injurious Thoughts and Behavior Interview (SITBI: Nock, Holmberg, Photos, & Michel, 2007), and the Lifetime Parasuicide Count (LPC: Linehan & Comtois, 1996) as well as self-report evaluations, such as Functional Assessment of Self-Mutilation (FASM: Lloyd, Kelley, & Hope, 1997), Deliberate Self-Harm Inventory (DSHI: Gratz, 2001), and the Self-Injury Questionnaire (SIQ: Santa Mina et al., 2006). At least two of these measures include versions of both lifetime prevalence and a specified timeframe to allow pre- post-measurements of DSH (DSHI: Gratz, 2001; SASII: Linehan et al., 2006).

Recognizing the difficulty within the DSH literature in defining constructs related to self-harm and variability in the presentation of self-injury, it is important to select a battery with two purposes: (1) identify all potential behavioral concerns within the spectrum of self-harm, and (2) develop a specific profile for individual participants to ensure proper patient care. With these goals in mind, standardized interviews serve as a good starting point for assessment. Having demonstrated consistent reliability and validity, both the SASII and the SITBI offer comprehensive modules aimed at evaluating many facets of self-in-jurious behavior (Linehan et al., 2006; Nock et al., 2007; Walsh, 2007). The SASII evaluates DSH with respect to topography, context, and intent of behaviors. The SITBI assesses DSH's function, frequency, topography, and characteristics.

Although structured interviews offer revealing information about self-injury engagement (Nock et al., 2007), administration is lengthy and impractical for frequent evaluation of the status of participants over time (Walsh, 2007). Once a baseline understanding of self-harm history has been assessed via comprehensive interviews, shorter standardized measures such as the DSHI and SASII as mentioned above and/or behavioral observations may be more feasible. Behavioral observation measures may include the collection of weekly DBT Diary Cards and/or other tracking forms that allow the researcher to determine the number of psychiatric hospitalizations during treatment, suicide attempts, treatment completion rate, attendance, weekly self-injury episodes, treatment history, and clinical global impression. Observational assessments provide a concrete representation of type, frequency, and severity of self-injury influencing treatment evaluation. Additionally, behavioral measures can be paired with standardized scales to develop a robust profile of participants' self-harm behaviors. Another area of outcome closely related to DSH is the presence of suicidal ideations. The measure used most consistently used in the adolescent literature is the Suicidal Ideation Questionnaire (SIQ-JR: Reynolds & Mazza, 1999). The SIQ has two versions based on grade level and has well-established validity and reliability with reliability coefficients ranging from .93 to .97 (Pinto, Whisman, & McCoy, 1997).

In conclusion, a number of assessment methods are useful when collecting complex behavior information such as DSH. Using an array of methods, ranging from an initial detailed intake assessment and followed by ongoing monitoring of relevant events as described would enhance the ability to identify and investigate DSH-related factors and improve client care. However, in selecting a schedule of assessments to monitor outcomes we need to be cognizant of the conceptual and operational definitions on which the assessments are based. Variations have been shown to obscure past results, causing disparity (Muehlenkamp et al., 2012). Of the six studies in this review, three relied on behavioral counts of DSH episodes per week or across sessions (Mehlum et al., 2014; Rathus & Miller, 2002; Tørmoen et al., 2014). Although the LPC was used in three studies, only Fleischhaker et al. (2011) used this measure as a pre-test post-test outcome measure. Finally, the Woodberry and Popenoe (2008) study used items from the Trauma Symptom Checklist for Children (TSCC: Briere, 1996), and the James et al. study (2014) relied on items from the Youth Outcome Questionnaire-Self-Report 2.0 (Y-OQ-SR; Wells, Burlingame, & Rose, 2003). With more standardized measures emerging, researchers are encouraged to explore more reliable, consistent and valid methods for assessing DSH across the treatment spectrum (from intake to ongoing monitoring) such as the LPC and SASII (Gratz, 2001; Linehan et al., 2006) in combination with weekly behavioral counts.

Treatment Length

Review of the six studies suggests considerable variability in length of DBT-A treatment provided to adolescents with DSH behaviors with a range of 12–24 weeks. Miller, Wyman, Huppert, Glassman, and Rathus (2000) were the first to shorten the standard DBT treatment length from 1 year to 12 weeks. Rathus and Miller (2002) provided a justification for a shorter treatment length based on the work of Trautman, Stewart and Morishima (1993) who had found that many suicidal adolescent clients failed to attend or complete therapy. As such, Rathus and Miller (2002) argued that a shorter treatment length would assist

adolescents to view therapy completion as an achievable goal. Given that their study included a treatment as usual group and that they demonstrated positive outcomes (i.e. fewer psychiatric hospitalizations, overall reduction in suicidal ideations, general psychiatric symptoms, symptoms of BPD) research support for a reduced treatment length was indicated and other researchers followed.

The other five outcome studies addressing DSH and DBT-A also utilized a shortened treatment format. Specifically, Woodberry and Popenoe (2008) utilized a 15-week treatment structure, Fleischhaker et al. (2011) a 16- to 24-week format, James et al. (2014) a 16-week 32 sessions format, Tørmoen et al. (2014) a standard once a week for 16 weeks format, and Mehlum et al. (2014) used a 19-week adaption. Overall results were positive, supporting this shortened approach with significantly reduced adolescent depression, anger, dissociative symptoms, overall symptoms, functional difficulties, desire to self-harm, and suicidality. Parents reported similar findings. In the Fleischhaker et al. (2011) study, although the sample size was small ($N = 12$) the results indicated significant improvement in the areas of suicidality, self-harm, emotional dysregulation, and depression both at the end of treatment and at one-year follow-up. The more recent studies by James et al. (2014), Tørmoen et al. (2014), and Mehlum et al. (2014) also utilized Rathus and Miller's shortened adolescent DBT program with similar positive outcomes in regards to reduced self-harm at post-treatment and at 1 year follow-up in the case of the Tørmoen study. Of note is that the James study included intensified services similar to the original Rathus and Miller (2002) study. Adolescents attended treatment two times per week for a weekly total of 6 h of treatment.

Adolescents attending these six DBT programs significantly improved frequency of self-harm and associated psychological variables despite the variations in treatment length or intensity. However, some ongoing treatment concerns were identified. For instance, Fleischhaker et al. (2011) indicated that although self-harm significantly decreased after 16–24 weeks of treatment, in the month following discharge 33 % of adolescents continued to self-harm and after 1 year 58 % of adolescents showed ongoing self-injurious behavior. Similarly, Woodberry and Popenoe (2008) found that although there was a significant decrease in suicidal and life-threatening behaviors after 16 weeks of treatment, 21 % of the 50 % of adolescents that at pretreatment had endorsed wanting to hurt themselves "a lot" or "almost all the time" maintained this thought at post-treatment. Also in the James et al. (2014) study, despite significant and notable improvement in overall distress outcomes, adolescents' scores were still in the clinical range at the end of treatment. A recent trajectory analysis of the same study showed that distress scores for those adolescents who continued treatment beyond the 16-week mark continued to drop and eventually fell below the clinical cut-off (James, Smith, Mayo, Morgan, & Freeman, 2013). These results suggest that many individuals are in need of additional and/or more intense treatment than 16 weeks and highlight the need for longitudinal studies. Further, researchers need to move beyond statistical significance and report more detailed information related to clinical significance, as it is this information that is most useful to clinicians. As such, this highlights the need to report mean pre- and post-treatment scores along with clinical cut-off scores, which were often not provided in the current studies.

In considering length of treatment from a theoretical perspective, it is also important to consider the function of the DBT-A stages. Rathus and Miller (2002) originally created an adaptation of DBT for adolescents (DBT-A) that focused primarily on Stage 1 DBT targets —decreasing maladaptive behaviors and increasing behavioral skills. Since the Stage 1 DBT overall goal is to reduce therapy interfering behaviors (e.g. self-harm, suicide attempts, and treatment non-compliance) adolescents may not be in the non-clinical range in all areas of functioning at the end of Stage 1. As such, the above results may be suggestive of the need for a Stage 2 group following the achievement of Stage 1 targets rather than an indication that treatment was not lasting or effective for some.

Based on these published studies there appears to be research-based support for using a shorter treatment length for adolescents. However, it should be noted that no dosage or long-term studies have been conducted leaving the necessary length of treatment for lasting change unanswered. Clearly more research is needed but given these preliminary results it appears that a slightly longer treatment length may be indicated for some. Furthermore, some adolescents may benefit from treatment that would address goals related to the later stages of DBT. Perhaps the issue of effectiveness is not one of number of sessions but one calling for a Stage 2 program with a deciding factor of moving individuals once they achieve DBT Stage 1 goals, especially given that some individuals continue to demonstrate clinical symptoms.

Treatment Components and Assessment of Treatment Adherence

As described earlier, DBT-A has five core treatment components, which includes individual therapy, multifamily skills group training, team consultation, family therapy as needed, and client phone consultation. Additional suggested modifications include developmentally appropriate adaptations to DBT terminology and the "Walking the Middle Path" skill. Of the six studies reviewed, only Mehlum et al. (2014) and Tørmoen et al. (2014) included all components, while the Woodberry and Popenoe (2008) study incorporated all but the family-oriented components and the James et al. (2014) included all but the client phone consultation. All reviewed studies provided weekly individual therapy with the exception of Rathus and Miller (2002) who provided individual therapy twice a week. Furthermore, all studies provided skills group training, but only five studies provided multifamily skills group training (Fleischhaker et al., 2011; James et al., 2014; Mehlum et al., 2014; Rathus & Miller, 2002; Woodberry & Popenoe, 2008). Of note, Rathus and Miller (2002) and James et al. (2014) provided twice-weekly group treatment and conducted a more intense treatment overall. Only two studies explicitly stated the inclusion of the adolescent-specific "Walking the Middle Path" module (Fleischhaker et al., 2011; James et al., 2014). Also, five studies indicated having DBT Consultation Team meetings (James et al., 2014; Mehlum et al., 2014; Rathus & Miller, 2002; Tørmoen et al., 2014; Woodberry & Popenoe, 2008). Four studies utilized phone consultation (Fleischhaker et al., 2011; Mehlum et al., 2014; Tørmoen et al., 2014; Woodberry & Popenoe, 2008). Given the increased demands for evidence-based interventions and the need for adherence to standard program components, the above variability is problematic from a research and outcome perspective. As research of DBT-A expands, there is a growing need to ensure that those who claim to use evidence based DBT

meet required standards. Our review suggests that considerable variability regarding use of treatment components and intensity of services provided exists.

In all evidence-based treatments, adherence is often a major challenge. Preliminary adherence studies have emphasized the need for supervision and feedback beyond intensive training, suggesting some DBT studies may have neglected to meet necessary adherence standards (Landes et al., 2011) and can therefore not ensure that the full compliment of what constitutes DBT-A as developed was actually administered. The studies examined in this article report varying attempts at adherence assessments. Of the six studies, only one did not address adherence (Fleischhaker et al., 2011). The five remaining studies addressed adherence at various levels through a combination of intensive trainings of team members, treatment manual review, ongoing team consultation, regular supervision, and/or protocol checklists. Tørmoen et al. (2014) provides the most comprehensive model for addressing adherence. Specifically, all therapists in the study were trained by Behavioral Tech, LLC trainers and were coded to adherence prior to participation in the study. During the study all individual and group session were recorded and a random subset was selected for adherence coding using the DBT Global Rating Scale (Linehan & Korslund, 2003). A coder trained to reliability by the Linehan Research and Therapy Clinic conducted the adherence coding, and adherence data was presented as part of the results. This approach represents an excellent model for future DBT-A studies. Unless DBT-A is delivered to clients as designed with certainty, treatment effectiveness cannot be established.

Although adherence measures are available to assess fidelity to basic DBT principles (DBT Global Rating Scale: Linehan, unpublished work, 2003), they are only recently being readily adapted and used with adolescent models (Linehan & Korslund, 2003). According to Landes et al. (2011), there are two adherence measures: a piloted program accreditation measure and a 66-item in-session measure used only for research purposes at this time. The University of Washington, Seattle, is working to further develop these measures for dissemination and is moving toward overall certification for all DBT based interventions that would include and support ongoing adherence monitoring (Landes et al., 2011; Wheelis, 2009).

Conclusions

This review article examined key conceptual and methodological issues in studies utilizing DBT-A to treat adolescents who deliberately self-harm (DSH). Although growing evidence supports DBT-A as a likely viable treatment intervention for adolescents who self-harm, several challenges remain. Most notably, an operational definition of self-harm across studies is needed to clearly determine the diagnostic and symptom profile most appropriate for this treatment approach. Future studies should also assure the inclusion of all adolescent specific DBT-A treatment components and seek to examine treatment intensity and length (possibly aligned with type of diagnoses). This in turn calls for the consistent use of adherence measures as well as the ongoing validation of self-harm measures that can be used across practice and research. Finally, although studies have demonstrated promising results in reducing self-harm and associated symptoms up to 1 year post-treatment, longitudinal studies are clearly needed to determine sustainability and functional

improvements across the lifespan. If the above issues can be addressed, future studies will be able to more fully assess the effectiveness of DBT-A.

Acknowledgments

References

Andover MS, Pepper CM, Ryabchenko KA, Orrico EG, Gibb BE. Self-mutilation and symptoms of depression, anxiety, and borderline personality disorder. Suicide and Life-Threatening Behavior. 2005; 35:581–591. doi:10.1521/suli.2005.35.5.581. [PubMed: 16268774]

Beck, AT.; Steer, RA.; Brown, GK. Manual for the beck depression inventory-II. Psychological Corporation; San Antonio, TX: 1996.

Boxer P. Variations in risk and treatment factors among adolescents engaging in different types of deliberate self-harm in an inpatient sample. Journal of Clinical Child & Adolescent Psychology. 2010; 39:470–480. [PubMed: 20589559]

Brausch A, Girresch SK. A review of empirical treatment studies for adolescent nonsuicidal self-injury. Journal of Cognitive Psychotherapy. 2012; 26:3–18. doi:10.1891/0889-8391. 26.1.3.

Brausch A, Gutierrez P. Differences in non-suicidal self-injury and suicide attempts in adolescents. Journal of Youth and Adolescence. 2010; 39:233–242. doi:10.1007/s10964-009-9482-0. [PubMed: 19941045]

Briere, J. Trauma symptom checklist for children: Professional manual. Psychological Assessment Resources Inc; Florida: 1996.

Briere J, Gil E. Self-mutilation in clinical and general population samples: Prevalence, correlates, and functions. American Journal of Orthopsychiatry. 1998; 68:609–620. [PubMed: 9809120]

Challis SS, Nielssen OO, Harris AA, Large MM. Systematic meta-analysis of the risk factors for deliberate selfharm before and after treatment for first-episode psychosis. Acta Psychiatrica Scandinavica. 2013; 127:442–454. [PubMed: 23298325]

Chapman AL, Gratz KL, Brown MZ. Solving the puzzle of deliverate self-harm: The experiential avoicance model. Behavior Research and Therapy. 2006; 44:371–394.

Cooper J, Murphy E, Webb R, Hawton K, Bergen H, Waters K, et al. Ethnic differences in self-harm, rates, characteristics, and service provision: three-city cohort study. British Journal of Psychiatry. 2010; 197:212–218. [PubMed: 20807966]

Csorba J, Dinya E, Plener P, Nagy E, Páli E. Clinical diagnoses, characteristics of risk behaviour, differences between suicidal and non-suicidal subgroups of Hungarian adolescent outpatients practising self-injury. European Child and Adolescent Psychiatry. 2009; 18:309–320. doi:10.1007/s00787-008-0733-5. [PubMed: 19165533]

DeLeo D, Heller TS. Who are the kids who self-harm? An Australian self-report school survey. Medical Journal of Australia. 2004; 181:140–144. [PubMed: 15287831]

Derogatis, LR. Administration, scoring and procedure manual for the R (revised) version. Johns Hopkins Universti School of Medicine; Baltimmore: 1977. SCL-90

DiClemente RJ, Ponton LE, Hartley D. Prevalence and correlates of cutting behavior: Risk for HIV transmission. Journal of the American Academy of Child and Adolescent Psychiatry. 1991; 30:735–739. doi:10.1016/S0890-8567(10)80007-3. [PubMed: 1938787]

Evans E, Hawton K, Rodham K. Factors associated with suicidal phenomena in adolescents: A systematic review of population-based studies. Clinical Psychology Review. 2004; 24:957–979. [PubMed: 15533280]

Favazza A. Repetitive self-mutilation. Psychiatric Annals. 1992; 22:60–63.

First, MB.; Gibbon, M.; Spitzer, RL.; Williams, JBW.; Benjamin, LS. Structured clinical interview for DSM-IV Axis II Personality Disorders (SCID-II). American Psychiatric Press Inc; Washington, DC: 1997.

Fleischhaker C, Böhme R, Sixt B, Brück C, Schneider C, Schulz E. Dialectical behavioral therapy for adolescents (DBT-A): A clinical trial for patients with suicidal and self-injurious behavior and borderline symptoms with a one-year follow-up. Child and Adolescent Psychiatry and Mental Health. 2011 doi:10.1186/1753-2000-5-3.

Gratz KL. Measurement of deliberate self-harm: Preliminary data on the Deliberate Self-Harm Inventory. Journal of Psychopathology and Behavioral Assessment. 2001; 23:253–263. doi:10.1023/A:1012779403943.

Gratz KL. Risk factors for and functions of deliberate self harm: An empirical and conceptual review. Clinical Psychology: Science and Practice. 2003; 10:192–205. doi:10.1093/clipsy.bpg022.

Gratz KL. Targeting emotion dysregulation in the treatment of self-injury. Journal of Clinical Psychology. 2007; 63:1091–1104. doi:10.1002/jclp.20417. [PubMed: 17932982]

Gratz KL, Latzman RD, Young J, Heiden LJ, Damon J, Hight T, et al. Deliberate self-harm among underserved adolescents: The moderating roles of gender, race, and school-level and association with borderline personality features. Personality Disorders: Theory, Research, And Treatment. 2012; 3:39–54.

Groves S, Backer HS, van den Bosch W, Miller A. Dialectical behaviour therapy with adolescents. Child and Adolescent Mental Health. 2012; 17:65–75. doi:10.1111/j.1475-3588. 2011.00611.x.

Guan K, Fox KR, Prinstein MJ. Nonsuicidal self-injury as a time-invariant predictor of adolescent suicide ideation and attempts in a diverse community sample. Journal of Consulting and Clinical Psychology. 2012; 80:842–849. doi:10.1037/a0029429. [PubMed: 22845782]

Guertin T, Lloyd-Richardson E, Spirito A, Donaldson D, Boergers J. Self-mutilative behavior in adolescents who attempt suicide by overdose. Journal of the American Academy of Child and Adolescent Psychiatry. 2001; 40:1062–1069. doi:10. 1097/00004583-200109000-00015. [PubMed: 11556630]

Hawton K, Fagg J, Simkin S. Deliberate self-poisoning and self-injury in children and adolescents under 16 years of age in Oxford, 1976–1993. The British Journal of Psychiatry. 1996; 169:202–208. doi:10.1192/bjp.169.2.202. [PubMed: 8871797]

Hawton K, Harriss L. Deliberate self-harm in adolescents: Characteristics and subsequent mortality in a 20-year cohort of patients presenting to hospital. Journal of Clinical Psychiatry. 2007; 68:1574–1583. [PubMed: 17960975]

Hawton K, Rodham K, Evans E, Weatherall R. Deliberate self harm in adolescents: Self report survey in schools in England. British Medical Journal. 2002; 325:1207–1211. doi:10. 1136/bmj. 325.7374.1207. [PubMed: 12446536]

In-Albon T, Ruf C, Schmid M. Proposed diagnostic criteria for the DSM-5 of nonsuicidal self-injury in female adolescents: Diagnostic and clinical correlates. Psychiatry Journal. 2013 doi:10.1155/2013/159208.

Jacobson CM, Gould M. The epidemiology and phenomenology of non-suicidal self-injurious behavior among adolescents: A critical review of the literature. Archives of Suicide Research. 2007; 11:129–147. doi:10.1080/13811110701247602. [PubMed: 17453692]

Jacobson CM, Muehlenkamp JJ, Miller AL, Turner JB. Psychiatric impairment among adolescents engaging in different types of deliberate self-harm. Journal of Clinical Child & Adolescent Psychology. 2008; 37:363–375. [PubMed: 18470773]

James S, Freeman K, Mayo D, Riggs M, Morgan J, Schaepper MA, Montgomery SB. Does insurance matter? Implementing dialectical behavior therapy with two groups of youth engaged in deliberate self-harm. Administration and Policy in Mental Health and Mental Health Services Research. 2014 doi:10.1007/s10488-014-0588-7.

James, S.; Smith, A.; Mayo, D.; Morgan, JP.; Freeman, KR. Changes in clinical functioning among adolescents with nonsuicidal self-injury in DBT. Paper presented at the Annual Convention of the American Psychological Association; Honolulu, Hawaii: 2013.

James AC, Winmill L, Anderson C, Alfoadari K. A preliminary study of an extension of a community dialectic behaviour therapy (DBT) programme to adolescents in the looked after care system. Child and Adolescent Mental Health. 2011; 16:9–13. doi:10.1111/j.1475-3588.2010.00571.x.

King CA, Merchant CR. Social and interpersonal factors relating to adolescent suicidality: A review of the literature. Archives of Suicide Research. 2008; 12:181–196. [PubMed: 18576200]

Klonsky ED. The functions of deliberate self-injury: A review of the evidence. Clinical Psychology Review. 2007; 27:226–239. [PubMed: 17014942]

Klonsky ED, Muehlenkamp JJ. Self-injury: A research review for the practitioner. Journal of Clinical Psychology. 2007; 63:1045–1056. [PubMed: 17932985]

Koons CR, Robins CJ, Lindsey Tweed J, Lynch TR, Gonzalez AM, Morse JQ, Bastian LA. Efficacy of dialectical behavior therapy in women veterans with borderline personality disorder. Behavior Therapy. 2001; 32:371–390. doi:10.1016/S0005-7894(01)80009-5.

Landes, SJ.; Linehan, MM.; DuBose, AP.; Comtois, KA. Presentation at the Seattle Implementation Research Conference; Seattle, WA: Oct. 2011 Dialectical behavior therapy intensive training model and initial data.

Latimer S, Meade T, Tennant A. Measuring engagement in deliberate self-harm behaviours: Psychometric evaluation of six scales. BMC Psychiatry. 2013 doi:10.1186/1471-244X-13-4.

Laye-Gindhu A, Schonert-Reichl KA. Nonsuicidal self-harm among community adolescents: Understanding the "whats" and "whys" of self-harm. Journal of Youth and Adolescence. 2005; 34:447–457. doi:10.1007/s10964-005-7262-z.

Linehan, MM. Cognitive-behavioral treatment of borderline personality disorder. Guilford Press; New York: 1993a.

Linehan, MM. Skills training manual for treating borderline personality disorder. Guilford Press; New York: 1993b.

Linehan MM, Armstrong HE, Suarez A, Allmon D, Heard HL. Cognitive-behavioral treatment of chronically parasuicidal borderline patients. Archives of General Psychiatry. 1991; 48:1060–1064. doi:10.1001/archpsyc.1991.01810360024003. [PubMed: 1845222]

Linehan, MM.; Comtois, KA. University of Washington; Seattle: 1996. Lifetime parasuicide lifetime parasuicide count.

Linehan MM, Comtois KA, Brown MZ, Heard HL, Wagner A. Suicide attempt self-injury interview (SASII): Development, reliability, and validity of a scale to assess suicide attempts and intentional self-injury. Psychological Assessment. 2006; 18:303–311. doi:10.1037/1040-3590.18.3.303. [PubMed: 16953733]

Linehan, MM.; Korslund, KE. Dialectical behavior therapy adherence manual. University of Washington; Seattle, WA: 2003.

Lloyd, EE.; Kelley, ML.; Hope, T. Self-mutilation in a community sample of adolescents: Descriptive characteristics and provisional prevalence rates. Vol. 1997. Poster session presented at the annual meeting of the Society for Behavioral Medicine; New Orleans, LA: Apr.

Lloyd-Richardson, EE.; Nock, MK.; Prinstein, MJ. Self-injury in youth: The essential guide to assessment and intervention. Wiley; Hoboken, NJ: 2009. Functions of adolescent nonsuicidal self-injury; p. 29-41.

Madge N, Hawton K, McMahon EM, Corcoran P, De Leo D, Arensman E. Psychological characteristics, stressful life events and deliberate self-harm: Findings from the Child & Adolescent Self-harm in Europe (CASE) Study. European Child and Adolescent Psychiatry. 2011; 20:499–508. [PubMed: 21847620]

Madge N, Hewitt A, Hawton K, de Wilde EJ, Corcoran P, Fekete S, Ystgaard M. Deliberate self-harm within an international community sample of young people: Comparative findings from the Child & Adolescent Self-harm in Europe (CASE) Study. Journal of Child Psychology and Psychiatry. 2008; 49:667–677. doi:10.1111/j.1469-7610.2008.01879.x. [PubMed: 18341543]

Mehlum L, Tørmoen AJ, Ramberg M, Haga E, Diep LM, Laberg S, et al. Dialectical Behavior Therapy for adolescents with repeated suicidal and self-harming behavior: A randomized trial.

Journal of the American Academy of Child and Adolescent Psychiatry. 2014; 53:1082–1091. doi: 10.1016/j.jaac.2014.07.003. [PubMed: 25245352]

Meijer M, Goedhart AW, Treffers PD. The persistence of borderline personality disorder in adolescence. Journal of Personality Disorders. 1998; 12:13–22. doi:10.1521/pedi.1998.12.1.13. [PubMed: 9573516]

Miller, DN.; Brock, SE. Identifying, assessing, and treating self-injury at school. Springer; New York: 2010. Causes (with Richard Lieberman); p. 9-21.

Miller, AL.; Rathus, J.; Linehan, MM. Dialectical behavior therapy with suicidal adolescents. The Guilford Press; New York: 2007.

Miller AL, Wyman SE, Huppert JD, Glassman SL, Rathus JH. Analysis of behavioral skills utilized by suicidal adolescents receiving dialectical behavior therapy. Cognitive and Behavioral Practice. 2000; 7:183–187. doi:10.1016/ S1077-7229(00)80029-2.

Muehlenkamp JJ. Empirically supported treatments and general therapy guidelines for non-suicidal self-injury. Journal of Mental Health Counseling. 2006; 28:166–185.

Muehlenkamp JJ, Claes L, Havertape L, Plener PL. International prevalence of adolescent non-suicidal self-injury and deliberate self-harm. Child and Adolescent Psychiatry and Mental Health, 2012 doi:10.1186/1753-2000-6-10.

Muehlenkamp JJ, Ertelt TW, Miller AL, Claes L. Borderline personality symptoms differentiate non-suicidal and suicidal self-injury in ethnically diverse adolescent outpatients. Journal of Child Psychology and Psychiatry. 2011; 52:148–155. doi:10.1111/j.1469-7610.2010.02305.x. [PubMed: 20735511]

Niedtfeld I, Schulze L, Kirsch P, Herpertz SC, Bohus M, Schmahl C. Affect regulation and pain in borderline personality disorder: A possible link to the understanding of self-injury. Biological Psychiatry. 2010; 68:383–391. doi:10.1016/j.biopsych.2010.04.015. [PubMed: 20537612]

Nixon MK, Cloutier PF, Aggarwal S. Affect regulation and addictive aspects of repetitive self-injury in hospitalized adolescents. Journal of the American Academy of Child and Adolescent Psychiatry. 2002; 41:1333–1341. doi:10.1097/00004583-200211000-00015. [PubMed: 12410076]

Nock, MK.; Favazza, AR. Nonsuicidal self-injury: Definition and classification. In: Nock, MK., editor. Understanding nonsuicidal self-injury: Origins, assessment, and treatment. American Psychological Association; Washington, DC: 2009. p. 9-18.

Nock MK, Holmberg EB, Photos VI, Michel BD. Self-injurious thoughts and behaviors interview: Development, reliability, and validity in an adolescent sample. Psychological Assessment. 2007; 19:309–317. doi:10.1037/1040-3590.19.3.309. [PubMed: 17845122]

Nock MK, Joiner TE, Gordon KH, Lloyd-Richardson EE, Prinstein MJ. Non-suicidal self-injury among adolescents: Diagnostic correlates and relation to suicide attempts. Psychiatry Research. 2006; 144:65–72. doi:10.1016/j.psychres.2006.05.010. [PubMed: 16887199]

Nock MK, Prinstein MJ. A functional approach to the assessment of self-mutilative behavior. Journal of Consulting and Clinical Psychology. 2004; 72:885–890. doi:10.1037/0022-006X.72.5.885. [PubMed: 15482046]

Ougrin D, Zundel T, Kyriakopoulos M, Banarsee R, Stahl D, Taylor E. Adolescents with suicidal and nonsuicidal self-harm: Clinical characteristics and response to therapeutic assessment. Psychological Assessment. 2012; 24:11–20. doi:10.1037/a0025043. [PubMed: 21859219]

Pinto A, Whisman MA, McCoy KJM. Suicidal ideation in adolescents: psychometric properties of the suicidal ideation questionnaire in a clinical sample. Psychological Assessment. 1997; 9:63–66.

Quinn CR. Efficacy of dialectical behaviour therapy foradolescents. Australian Journal of Psychology. 2009; 61:156–166. doi:10.1080/00049530802315084.

Rathus JH, Miller AL. Dialectical behavior therapy adapted for suicidal adolescents. Suicide and Life Threatening Behavior. 2002; 32:146–157. doi:10.1521/suli.32.2.146.24399. [PubMed: 12079031]

Reynolds WM, Mazza JJ. Assessment of suicidal ideation in inner-city children and young adolescents: Reliability and validity of the suicidal ideation questionnaire. Journal of School Psychology Review. 1999; 28:17–30.

Ross S, Heath N. A study of the frequency of selfmutilation in a community sample of adolescents. Journal of Youth and Adolescence. 2002; 31:67–77. doi:10.1023/A:1014089117419.

Santa Mina EE, Gallop R, Links P, Heslegrave R, Pringle D, Wekerle C, Grewal P. The Self-Injury Questionnaire: Evaluation of the psychometric properties in a clinical population. Journal of Psychiatric and Mental Health Nursing. 2006; 13:221–227. [PubMed: 16608478]

Scoliers G, Portzky G, Madge N, Hewitt A, Hawton K, de Wilde E, et al. Reasons for adolescent deliberate selfharm: A cry of pain and/or a cry for help? Findings from the child and adolescent self-harm in Europe (CASE) study. Social Psychiatry and Psychiatric Epidemiology. 2009; 44:601–607. [PubMed: 19023507]

Sourander A, Aromaa M, Pihlakoski L, Haavisto A, Rautava P, Helenius H, Sillanpää M. Early predictors of deliberate self-harm among adolescents. A prospective followup study from age 3 to age 15. Journal of Affective Disorders. 2006; 93:87–96. doi:10.1016/j.jad.2006.02.015. [PubMed: 16563519]

Stanley, B.; Brodsky, BS. Suicidal and self-injurious behavior in borderline personality disorder: A self-regulation model. In: Gunderson, JG.; Hoffman, PD., editors. Understanding and treating borderline personality disorder: A guide for professionals and families. American Psychiatric Publishing Inc; Arlington, VA: 2005. p. 43-63.

Swenson L, Spirito A, Dyl J, Kittler J, Hunt J. Psychiatric correlates of nonsuicidal cutting behaviors in an adolescent inpatient sample. Child Psychiatry and Human Development. 2008; 39:427–438. doi:10.1007/s10578-008-0100-2. [PubMed: 18360771]

Tørmoen AJ, Grøholt B, Haga E, Brager-Larsen A, Miller A, Walby F, Mehlum L. Feasibility of dialectical behavior therapy with suicidal and self-harming adolescents with multi-problems: Training, adherence, and retention. Archives of Suicide Research. 2014; 18:432–444. doi: 10.1080/13811118.2013.826156. [PubMed: 24842553]

Trautman PD, Stewart N, Morishima A. Are adolescent suicide attempters noncompliant with outpatient care? Journal of the American Academy of Child and Adolescent Psychiatry. 1993; 32:89–94. doi:10.1097/00004583-199301000-00013. [PubMed: 8428890]

Verheul R, van den Bosch LM, Koeter MWJ, de Ridder MAJ, Stijnen T, van den Brink W. Dialectical behaviour therapy for women with borderline personality disorder 12-month, randomised clinical trial in The Netherlands. The British Journal of Psychiatry. 2003; 182:135–140. doi:10.1192/bjp. 02.184. [PubMed: 12562741]

Walsh B. Clinical assessment of self-injury: A practical guide. Journal of Clinical Psychology. 2007; 63:1057–1068. [PubMed: 17932980]

Wells, M.; Burlingame, G.; Rose, P. Youth outcome questionnaire self report. American Professional Credentialing Services; Wilmington, DE: 2003.

Wheelis, J. Theory and practice of dialectical behavioral therapy. In: Gabbard, GO., editor. Textbook of psychotherapeutic treatments. American Psychiatric Publishing Inc; Arlington, VA: 2009. p. 727-756.

Wilkinson P, Goodyer I. Non-suicidal self-injury. European Child and Adolescent Psychiatry. 2011; 20:103–108. doi:10.1007/s00787-010-0156-y. [PubMed: 21222215]

Woodberry KA, Popenoe EJ. Implementing dialectical behavior therapy with adolescents and their families in a community outpatient clinic. Cognitive and Behavioral Practice. 2008; 15:277–286. doi:10.1016/j.cbpra.2007.08.0.

Table 1

DBT-A treatments for DSH

Author	Study description	Inclusion criteria	Adherence	DBT-A treatment components	DSH measures	Main outcomes
Rathus and Miller (2002)	12 week program 89 adolescents Mean age for the TAU was 15; DBT was 16 38 % dropout rate	Suicide attempt within the last 16 weeks or current suicidal ideation Diagnosis of borderline personality disorder or a minimum of three borderline personality features	Therapists had 2-day training in DBT and consultation Groups were videotaped and Tx sessions audiotaped Predoctoral therapist had supervision	Twice weekly individual/family DBT therapy Twice weekly multifamily skills training with core DBT skills Consultation team meetings	Harkavy-Asnis Suicide Survey Scale for Suicidal Ideation Number of hospitalizations during Tx Number of Suicide Attempts during Tx	DBT group had fewer hospitalizations during Tx and higher Tx completion rates No differences in suicide attempts Significant reductions in suicidal ideation, psychiatric symptoms and BPD symptoms in the DBT group
Woodberry and Popenoe (2008)	16 week program 46 adolescents with BPD characteristics and their caregivers Adolescent age 13–18 with a mean of 16 37 % dropout rate	History of suicide attempts, self-injury, and/or intense and unstable affect or relationships in the past 3–6 mo. Commitment to the entire 15 week Tx program Unless inappropriate, one caregiver willing to participate	Five clinicians had intensive DBT training and several attended 1 to 2 day trainings 11 clinicians did a DBT manual review Adherence process was weekly consultation team and DBT checklists	Consultation team meetings Weekly individual/family therapy Weekly DBT core skills training group (multifamily year 2) Pharmacotherapy as indicated Phone consultation and simplified materials for youth	Items from the Trauma Symptom Checklist for Children (i.e. "wanting to hurt myself")	Decrease in "wanting to hurt self" and "wanting to kill self" Parent report decrease in "deliberately harms self/ attempts suicide" and total problems Improved adolescent reported behavioral functioning (e.g. anger, depression, anxiety) Decreased parent depression
Fleischhaker et al. (2011)	16–24 week program depending on the school holidays 12 adolescent females Age range 13–19 25 % dropout rate	Age at the beginning of therapy between 13 and 19 years Nonsuicidal self-injurious and/or suicidal behavior in the past 16 weeks Diagnosis of BPD or existence of at least three DSM-IV criteria for BPD.	Not indicated	Individual therapy Multifamily skills training group (2 h). DBT core skills plus family skills and walking the middle path Phone consultation	Lifetime Parasuicide Count (suicidal attempts and NSSI)	Lowered NSSI and no suicidal attempts at 1-year follow-up At 1 year 7 out of 12 had no axis one diagnoses; number of DBT diagnostic criteria decreased Improved quality of life, GAF and CGI scores at 1 year follow-up Improved depression, anxiety, somatization, interpersonal skills withdrawal, schizoid-obsessive, attention & aggressive behaviors at 1 year follow-up
Mehlum et al. (2014)	19 week program 38 adolescents assigned to the EUC group; 39 assigned to DBT group Mean age for the EUC was 15.3 (1.6) and mean age for the DBT	Patients currently demonstrating self-harming behaviors Patients were screened for (1) a history of at least 2 episodes of self-harm, with 1 within the last 16 weeks,	Doctoral level therapists and psychiatrists received 80-hour seminar plus 12 months of supervision	Consultation team meetings Weekly Individual Therapy Family therapy as needed Weekly multifamily skills training	The Lifetime Parasuicide Count Suicide Intent Scale Suicidal Ideation Questionnaire Self-harm was also	There was no difference in retention rate for DBT compared to EUC. DBT was superior to EUC in reducing frequency of self-harm, severity of suicidal ideation, and depression

Author	Study description	Inclusion criteria	Adherence	DBT-A treatment components	DSH measures	Main outcomes
	was 15.9 (1.4) 0 % dropout rate	(2) at least 2 criteria of BPD or at least one criterion of BPD plus two sub-threshold level criteria, and 3) speak Norwegian	Selected therapists showed a consistent adherent level maintained through reviews of videotaped sessions	Therapist-to-client phone consultation as needed	assessed by clinical interview based on the number of self-reported self-harm episodes	DBT patients had continued improvement in the last third of treatment, where EUC patients' plateaued at 12 weeks
James et al. (2014)	16 Weeks 99 adolescent patients. 54 clients had private insurance; 45 utilized grant funding Mean age was 14.9 (1.3). 7 % dropout rate	Between ages 12 and 18, having current or recent (within the last 12-months) history of self-harming behavior with or without suicidal intent Participants agreed to participate in all program components with parents/guardians as necessary	Treatment was provided by DBT-trained clinicians Most licensed clinicians received a 2-week intensive training by Behavioral Tech. Pre-licensed staff received clinical training and supervision	Two 3-hour sessions, broken up into a peer group (skills training) and multi family time (multifamily skills group) Parent education group Weekly Individual Therapy Family therapy as needed	Youth Outcome Questionnaire – Self Report (YOQ-SR) – Item 21 "I have hurt myself on purpose", (e.g. cutting or scratching self, attempting suicide)	Reduced rates of self-reported self-injury. Improved interpersonal distress, somatic symptoms, interpersonal relations, social problems, behavioral dysfunction, and distress Consistent findings for both groups regardless of funding type but the grant group was at higher risk for dropout
Tørmoen et al. (2014)	16 week program 27 adolescents Mean age was 15.7 (1.4) 22 % dropout rate	Age between 12 and 18 years of age More than one lifetime episode of self-harm with one of the episodes within the last 4 months Three or more criteria of DSM-IV Borderline Personality disorder Willingness to receive DBT Ability to speak Norwegian	Therapists were trained prior to the study by Behavioral Tech, LLC Therapists attended weekly DBT consultation team meetings throughout the course of the study Therapists recorded all sessions, which were randomly selected for adherence coding	1 h of individual therapy per week 2 h of family skills training per week Family therapy sessions as needed Phone consultation as needed Consultation Team meetings	Lifetime Parasuicide Count Weekly DBT Diary Card	The mean adherence score for coded DBT-A sessions was 4.0 (0.2), which is adherent. Nearly 60 % of coded sessions were adherent 78 % of adolescent participants completed the 16-week treatment Only 14 % of participants reported engaging in NSSI during the last two weeks compared to 43 % at baseline 7 of 10 participants contacted at 1-year post treatment reported no self-harm in the prior year