Feasibility of evaluating DBT for self-harming adolescents: A small randomised controlled trial
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2 This report summarises the results from the treatment phase of this study. As a 12-month follow-up phase is currently in progress, these results incorporate the first three of a total of seven assessment periods that are planned from pre-treatment to the final follow-up assessment. As Julie Wharewera-Mika is also a study assessor who must remain blind to treatment assignment for the duration of this research, including its entire follow-up period, there have been substantial sections of this report that she has not read in order to protect the integrity of her blind. She is an investigator on the project who has made an important contribution to the research and as such is listed as one of the authors.
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Statement of conflicts of interest

Dr Emily Cooney and Dr Kirsten Davis are both directors of a training company (DBTNZ) that is affiliated with Behavioral Tech LLC, the training organisation mandated by the developer of dialectical behaviour therapy. DBTNZ provides training in this therapy within New Zealand.

Dr Emily Cooney, Dr Kirsten Davis and Pania Thompson are all employed by the Kari Centre child and adolescent mental health service within the Auckland District Health Board. This service provides a DBT programme as a treatment for young people with emotion dysregulation and repeated self-harm.
Executive summary

This report describes the early findings from the treatment phase (the first 6 months of a planned 18-month study) of a small randomised controlled trial, which examined the feasibility of comparing dialectical behaviour therapy (DBT) with treatment as usual in two speciality mental health services for youth in the Waitemata region.

Aims of the study

The study aimed to answer the following questions.

1) Is DBT an acceptable treatment for suicidal adolescents, their families and the clinicians providing DBT in New Zealand child and adolescent mental health services?
2) Is random assignment to one of two treatment conditions acceptable to adolescents, families and the services acting as research sites?
3) Are the assessment measures acceptable and feasible?

Treatment acceptability was assessed through engagement in treatment, dropout rates and responses in focus groups at the end of treatment. This information, coupled with adherence rating data, was designed to clarify whether New Zealand clinicians can provide DBT that is both acceptable to New Zealand youth, and faithful to the treatment model. Acceptability of this treatment to DBT clinicians was assessed by their willingness to provide DBT, their responses to an anonymous survey, and their responses on burnout measures.

To assess whether random assignment to treatment was acceptable to participants and the research sites, we examined recruitment rates during the recruitment phase. We obtained clarification, via feedback from the ethics committee, regarding the ethics of random assignment to treatment for suicidal adolescents.

Finally, we examined the acceptability and feasibility of the assessment and screening measures by establishing the average time it took to administer the assessments, gathering feedback about how the young people found the assessments, and assessing the retention rate of participants.

Methods

Twenty-nine adolescents accepted for treatment in two outpatient general mental health clinics, who had a suicide attempt or history of self-injury in the previous 3 months, were randomly assigned to either uncontrolled treatment as usual (n=15) or 6 months of DBT (n=14). DBT consisted of individual therapy, multi-family group skills training, individual parent or caregiver and family sessions as required, and telephone coaching for the adolescent and family. Sessions were coded for adherence to DBT by expert raters. Suicide attempts, self-injury episodes, suicidal ideation, substance use and ability to regulate emotions were assessed before, during and after treatment by an evaluator who was blind to treatment condition. The young people will ultimately be followed up at 3-monthly intervals for the year and a half following completion of their pre-treatment assessments. Accordingly, this paper presents the preliminary findings of the study, and the first three of seven assessment points.

Results

DBT was acceptable to the adolescents, parents, caregivers and clinicians involved in the treatment. Thirteen of the 14 young people undertaking DBT completed treatment (93 per cent). DBT participants attended, on average, 91 per cent of their scheduled individual therapy sessions, and 88 per cent of their group sessions.
These rates compared favourably with their counterparts receiving treatment as usual, indicating that DBT was at least as acceptable as standard treatment within the services. The results from consumer-facilitated focus groups also indicated that young people and caregivers were satisfied with the programme.

Adherence checks of DBT sessions, conducted by raters within the treatment developer’s clinic, showed that acceptability was not at the expense of treatment fidelity. The mean adherence rating (4.0, range 3.7–4.4, SD=.15) was both adherent and equivalent to that reported by the treatment developer in her most recent published trial (4.0, range 2.5–4.8, SD=.2; Linehan et al., 2006 and Linehan, Wagner et al., 2006). Therapists’ responses to an anonymous survey indicated that they had found the treatment acceptable to provide. Respondents indicated that while providing treatment within a randomised controlled trial held significant challenges, on balance they had found it a positive experience. Assessment of therapist burnout, as measured by an adaptation of the Maslach Burnout Inventory, was hampered by missing data and therefore must be interpreted with caution. However, available Maslach Burnout Inventory data indicated that the emotional well-being of DBT therapists was within the normative range for mental health workers.

Families and treatment-as-usual services accepted randomisation. Recruitment took place for just over 12 months, and 70 per cent of the families referred to the study by their clinicians consented to take part. Ethics approval took six weeks to obtain from the point that the study was reviewed by the committee.

We learnt some important lessons from the parents and young people who took part in the DBT programme for the study. Their main recommendations were the need for an independent family worker to be built into the programme, the need to monitor communication between young people carefully to avoid contagion, and the need to taper treatment endings more gradually.

Owing to high participant co-morbidity, the screens took much longer to administer than had been anticipated. The majority of participants completed the pre-treatment screens and assessments without difficulties. However, initial assessments were long and required substantial time and effort from participants and assessors. We believe that the burden of this on participants is unacceptably high, and is not justified by the research value of the information gathered.

### Limitations of the study

Methodological problems that arose include variations and delays in research assessments and pre-treatment differences between conditions in the rates of self-harm. We also received feedback from one young person, and other treatment outcome researchers, that routinely providing summaries of the research assessment results to healthcare providers was likely to have affected the quality of the information that we received during assessments.

Additional limitations of this research include the low recruitment rate of Māori. No Māori people were randomised to DBT, and therefore we cannot provide information on the acceptability of this treatment to Māori young people and their families. In addition, we have no information regarding young people who were offered the study by their clinicians and declined to meet with the research team. Accordingly, the acceptability of DBT and randomisation to the population of young people accessing child and adolescent mental health services following self-harm remains an open question.

### Strengths of the study

The study was embedded within a naturalistic setting, and treatment was also conducted within that setting. The study was a good example of collaboration across two district health boards to implement a treatment outcome trial at multiple sites.
Rigorous efforts to ensure the integrity of the blind were successful. The study used careful and thorough assessment measures to track the frequency and type of self-harm across the timeframes reported.

Fidelity to DBT was commensurate with other outcome trials that have evaluated the efficacy of this treatment. Consumer advisors were actively involved in the research, and the research offers a systematic investigation of the implementation of DBT within New Zealand child and adolescent mental health services.

**Recommendations for a full-scale study**

1. **Recruitment of Māori and Pacific youth**
   Future research needs to develop recruitment strategies that are a better match for Māori and Pacific youth and families. It may also be useful to consider over-sampling for Māori and Pacific young people to ensure that these families are not minorities of one within therapy groups. In addition, randomisation within these ethnicities would ensure that there are equal numbers of Māori and Pacific people within each condition, allowing separate analysis of treatment engagement and efficacy of DBT for these ethnic groups.

2. **Stratified randomisation**
   Ensuring that treatment arms are sufficiently balanced is essential for a study evaluating treatment outcomes. Future research should consider stratification by history of self-harm at pre-treatment, and possibly by gender. We also recommend that inclusion criteria are narrower, and that future research considers incorporating a criterion related to emotion dysregulation, to increase the power of the research design.

3. **Sufficient resources to fund the involvement of a clinical trials unit**
   Many methodological challenges associated with conducting the research would be solved by ensuring that a large-scale trial is sufficiently resourced and staffed to run smoothly. Conducting this research in tandem with a research institution, which has the infrastructure and staff with expertise in the administration of clinical trials, will be important for future research. Dedicated research positions would minimise the risk of assessment delays and other problems associated with time constraints.

4. **Alternative screens and assessment protocols**
   We recommend identifying an alternative and less burdensome diagnostic screen, or simply screening specifically for diagnoses that are exclusion criteria. We also recommend that in future research, feedback from the assessments is not passed on to treatment providers, as the assessment then becomes part of the treatment, which is not the case in clinical settings for either treatment condition. We recommend instead, that the protocol we used to manage risk following assessments is adapted so that there are clearer (and much narrower) criteria to determine when the assessor must pass on information regarding risk to a third party.

5. **Incorporate the recommendations of families taking part in DBT**
   Clear and regular orientation to the group guidelines about communication between participants, with modelling and support for adhering to these guidelines seems to be particularly important for adolescents. Based on feedback from families and DBT therapists, future evaluations of DBT should include an additional therapist to provide support and coaching to parents in DBT. The issue of ending treatment in a research study is a challenging one, and in this population, it may be that tapering is required. This could be achieved by adding six weeks of fortnightly individual sessions following graduation from group sessions, with a focus on relapse prevention and skills generalisation.
(6) Evaluating the cost-effectiveness of DBT

Given the significant resources invested in DBT, a full-scale study should investigate the cost-effectiveness, as well as the efficacy of this treatment.
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Background

Why conduct a pilot study of DBT for self-harming adolescents in New Zealand?

This report summarises the early findings from the treatment phase of a feasibility study conducted in Auckland, New Zealand. The data from the first three assessments across 6 months (from an ultimate total of seven planned assessments across 18 months) are reported. The study was designed to answer preliminary questions to inform the design and methodology of a larger multi-site randomised controlled trial evaluating the efficacy of dialectical behaviour therapy (DBT) for adolescents and families. The study aimed to get systematic information about: (1) the acceptability of DBT for suicidal adolescents, their families and the clinicians providing DBT in New Zealand child and adolescent mental health services, (2) the acceptability of randomly assigning suicidal adolescents to one of two treatments, and (3) the acceptability and feasibility of the assessment measures.

Research terms

For the purposes of this report, self-injury or non-suicidal self-injury refers to acts that resulted in tissue damage, without the intention to die. Suicide attempt refers to any act in which either physical damage occurred, or there was a risk of damage occurring, in which the intention (whether ambivalent or non-ambivalent) was to die. Suicidal behaviour refers to both attempted and completed suicide. Self-harm is used as an umbrella term encompassing both suicide attempts and non-suicidal self-injury.

Status of youth suicide and self-harm in New Zealand

Recent data indicates that self-injurious and suicidal behaviour remain problems for adolescents in New Zealand. This is despite significant improvements in the rates for both youth suicide and intentional self-harm hospitalisations for this age group since 1995 (Ministry of Health, 2009). In 2007, the 15 to 19-year-old age group had the greatest number of intentional self-harm hospitalisations, with a total of 404 admissions to hospital (105 males and 299 females; Ministry of Health, 2009). This group had the highest age-specific rate for intentional self-harm hospitalisations at 126.3 young people (i.e. both males and females combined) per 100,000, with females having the greatest number and highest rate overall at 190.7 per 100,000 (Ministry of Health, 2009). In addition, 42 adolescents aged 15 to 19 years died by suicide in 2007 (Ministry of Health, 2009). Suicide accounted for almost 20 per cent of female youth (15 to 19 years) deaths, and approximately a quarter of male youth deaths.

Both self-harm and suicide attempts are risks for later suicide (Bongar, 2002). Moreover, epidemiological data indicates that younger people are at greater risk of suicidal ideation, planning and attempts relative to people aged 25 years or more. In addition, Māori and Pacific people are at greater risk for all three suicidal behaviours (Beautrais, 2006) relative to non-Māori and non-Pacific people.

What do we know about effective treatments for self-harm in adolescents?

Despite these problems, there is little evidence available regarding effective treatments for suicidal and self-harm behaviours in adolescents generally (Gould et al., 2003; Hawton et al., 1999), with even less data available that is specific to New Zealand adolescents.

Of the studies that have been conducted to date, only a few randomised controlled trials have compared treatments for adolescents, and specifically targeted their interventions at suicidal and self-injurious behaviour as primary outcome variables. However, these trials have yielded mixed results, in part because suicide and self-harm are statistically rare events, and therefore large sample sizes are needed to power studies adequately enough to generate clear and replicable findings.
A further complicating factor has been that the bulk of previous research on self-harming young people has focussed on evaluating treatments for depression, in which suicidal behaviour is one of many outcome variables. Furthermore, research has been hampered by difficulties with adequate control conditions, and variations in the way in which self-harm has been defined and measured.

Wood et al. (2001) compared self-harm outcomes (as measured by clinical interview) of developmental group psychotherapy and usual care, with outcomes of usual care alone, for adolescents aged 12 to 16 years (n=63) who had a history of repeated self-harm and were referred to a UK child and adolescent mental health service. The group therapy consisted of six acute sessions followed by open-ended weekly longer-term group sessions. The authors reported that the first six sessions focussed on themes that previous research had identified as relevant to self-harming adolescents (school problems, family problems, peer relationships, anger management, depression, self-harm, and hopelessness and feelings about the future), whereas the follow-up sessions were more process-oriented. Where needed, the group intervention was supplemented with individual Cognitive Behavioural Therapy (CBT)-oriented sessions. Adolescents who received this treatment were significantly less likely to self-harm, and had fewer episodes of self-harm than those receiving usual care alone.

However, a recent attempt to replicate this finding in an Australian child and adolescent mental health service was unsuccessful (Hazell et al., 2007). This study reported a tendency for more participants receiving the developmental group therapy to engage in self-harm in the follow-up period than those who received usual care alone. The authors noted that a greater number of participants in the group condition had engaged in overdoses at pre-treatment, and that when this was controlled for, there was no greater risk of self-harm at follow-up for group participants than for the treatment-as-usual participants. Other potential reasons for the failure to replicate the UK finding include differences between the samples (more Australian participants were female, and their method of self-harm was more likely to be cutting, as compared with their British counterparts, who were more likely to overdose), and possible differences in fidelity to the experimental treatment. In addition, there was a difference in the Australian study between conditions in loss to follow-up; three participants from the usual care group, and one participant from the developmental group therapy group were missing at follow-up.

King et al. (2006) examined the impact of adding a youth-nominated support team to treatment as usual for young people seen at emergency departments after self-harm. Support teams were comprised of up to four people within the young person’s social network (one of the team-members could be a peer), and these people were invited to take part in psycho-education sessions focussing on the young person’s problems and treatment plan, suicide risk factors, communication strategies and emergency contact information. Team-members were asked to maintain weekly supportive contact with the young person, and received regular contact themselves from the young person’s treatment team. There were no significant differences between groups on their primary outcome variables (including suicidal ideation and attempts). However, when girls were analysed separately, those with youth-nominated support teams reported significantly less suicidal ideation, and their parents rated them as being less impaired by their mood problems, than those girls who received usual care alone.

Huey et al. (2004) evaluated the efficacy of multi-systemic therapy, versus usual care, in reducing attempted suicide in rural American youth who were randomly assigned to treatment. Usual care involved admission to the local youth inpatient psychiatric unit, which offered a behaviourally-oriented milieu that focussed on stabilisation, mental health assessment, and the development of an after care plan. As part of discharge, the inpatient team also worked to link the young person with their community mental health centre. Just under half (44 per cent) of the multi-systemic therapy youth also underwent hospitalisation for psychiatric emergencies, and when this occurred, efforts were made to keep these youth separate from the remainder of inpatients, to preserve treatment integrity.
Multi-systemic therapy was found to be significantly more effective in decreasing rates of attempted suicide (as measured by youth self-report on one item on the Child Behavior Checklist, although this difference was not apparent on caregivers’ responses to the same item on the Parent Report Form, at one-year follow-up) and in producing more rapid symptom relief. In both conditions, youths had notable improvements in symptom presentation.

No significant differences were found on measures of suicidal ideation, hopelessness and depressive effect across treatments, and there were significant differences between conditions in suicide attempts at pre-treatment. Accordingly, it is difficult to draw any clear conclusions from this trial, because the differences between conditions in suicidal behaviour were a result of differences between these groups before they began the study treatment.

A number of open trials and non-randomised trials have investigated treatments for adolescents at risk of suicidal behaviour. Vitiello et al. (2009) examined outcomes for adolescents who had made a suicide attempt in the previous 90 days. Participants were offered the option of choice, or random assignment to cognitive behavioural therapy for suicide prevention (Stanley et al. 2009), antidepressant medication, or a combination of both. Interestingly, the investigators began with the intention of conducting a randomised controlled trial, but after 9 months of low recruitment rates across five sites, changed the protocol to allow choice of treatment, i.e. a patient-preference trial. The majority of participants (84 per cent) opted for choice, rather than random assignment to a treatment option, and the majority of these (93 out of 104, or 75 per cent of the entire sample) chose the combination of medication and cognitive behavioural therapy. Those in this group were more likely to have comorbid diagnoses of anxiety or attention-deficit-hyperactivity disorder (ADHD), and were also likely to be more severely depressed. Their rates of recovery from depression paralleled those found in other studies of treatment for depressed adolescents who had a lower risk of suicide (Vitiello et al., 2009).

The trial found that cognitive behavioural therapy for suicide prevention appeared to be a promising treatment for adolescents who have recently attempted suicide. It involved up to 22 sessions, in an acute phase (approximately 12 to 16 weeks of weekly sessions), and a continuation phase in which sessions occurred less frequently. Altogether treatment tended to last up to 6 months. Typically treatment in the acute phase was comprised largely of individual sessions, and began with a careful and detailed assessment (a chain analysis) of the sequence of events (both internal and external to the young person) leading up to and following the suicide attempt that led to treatment. This allowed the therapist and young person to build an understanding of the specific problems and skill deficits that the adolescent experienced, and to develop a collaborative treatment plan that was informed by cognitive-behavioural strategies and principles, to help them to acquire and strengthen skills and prevent a recurrence of suicidal behaviour. Up to six family sessions were provided within this package, and these typically focussed on reducing risk, and targeting family and environmental factors relevant to suicidal behaviour (Stanley et al., 2009).

Brent, Emslie, et al. (2009) identified predictors of self-harm-related adverse events in treatment-resistant, depressed adolescents during the first 12 weeks of treatment (treatment conditions included random assignment to a selective serotonin-reuptake inhibitor (SSRI) or Venlafaxine treatment, with or without cognitive behavioural therapy).

Family conflict, drug and alcohol use, and high baseline suicidal ideation predicted a suicidal event in the first 12 weeks of treatment. Ironically, predictors of adverse suicidal events also predicted poor response to treatment. Non-suicidal adverse events were best predicted by a previous history of non-suicidal adverse events. The authors concluded that treatments that directly target drug use, suicidal ideation, and family conflict, and that increase skills in emotion regulation early on in the course of treatment, may reduce the occurrence of suicidal adverse events.
Brent, Greenhill, et al. (2009) examined the predictors of suicidal behaviour in the open trial discussed earlier, which targeted adolescents aged 12 to 18 years with recent suicide attempts (Vitiello et al., 2009). Youth with a diagnosis of depression and a history of a suicide attempt were at high risk for recurrent suicidal behaviour. The occurrence, earlier time to event and the outcome of attempts was predicted by the following factors: family income, suicidal ideation, higher self-rated depression, lower family cohesion and a history of sexual abuse. Higher family cohesion and adaptability were protective against future suicide events, indicating that focusing on supporting families to develop more adaptive coping styles and positive parenting may be particularly important for these youths. Safety planning and early emphasis on increased therapeutic contact was indicated, as 40 per cent of suicidal events occurred within the first four weeks of intake.

Power et al. (2009) developed an 8-week SPACE (supporting parents and carers) programme supporting parents of young people who had engaged in or expressed thoughts about self-harm. It included topics on parenting adolescents, self-harm in youth, parental self-care and communication. Parents reported lower levels of psychological distress, improvements in their ratings of their own personal difficulties, and higher ratings of parental satisfaction and goal attainment following completion of the programme. These gains were maintained at 6-month follow up (37 per cent of participants were followed up). Parents also reported their young people having lower levels of difficulties. This study had a high rate of attrition (30 per cent at post-treatment, and 60 per cent at follow-up), and parents who reported more personal challenges at pre-treatment were more likely to have remained in the study at post-treatment.

Other clues to effective treatment for suicidal adolescents come from trials evaluating treatments of conditions that are associated with risk of suicidal behaviour. Disorders that include thinking about suicide or self-harm as part of their diagnostic criteria, are clearly conditions that have a higher risk of engaging in this behaviour. These include borderline personality disorder and mood disorders.

The Treatment for Adolescents with Depression Study randomly assigned 439 adolescents (aged 12 to 17 years) with depression to either antidepressant medication, placebo, cognitive behavioural therapy, or a combination of cognitive behavioural therapy and medication (Treatment for Adolescents with Depression Study Team, 2007). The study found that the risk of suicide-related events during the acute phase of treatment was greater for adolescents treated with antidepressant medication alone, than for those treated with placebo (Emslie et al., 2006). However, suicidality was an exclusion criterion, due to ethical concerns about recruiting high-risk youth to a study that included the possibility of assignment to a placebo condition (Treatment for Adolescents with Depression Study, 2003). In addition, the base rate of self-harm was low across a relatively short timeframe, with six episodes occurring across the 12 weeks. These episodes included two suicide attempts in the medication condition, two attempts in the combination condition, one attempt in the cognitive behavioural therapy condition, and one episode of self-injury in which the intent wasn’t clear in the combination condition. Subsequent follow-up data indicated that the risk of suicide-related events was significantly greater for the antidepressant medication condition, than for cognitive behavioural therapy alone (The Treatment for Adolescents with Depression Study Team, 2007). However, the frequency of self-harm episodes across this longer timeframe was not reported. At one-year follow-up, continued benefits were seen on all measures of depression and suicidality.

This finding added new information to the debate regarding the safety of the use of new generation antidepressants (SSRIs) with depressed adolescents. The authors concluded that combining medication with cognitive behavioural therapy offered increased protection from suicidality, relative to medication alone, and that adding medication to cognitive behavioural therapy accelerated symptom reduction (The Treatment for Adolescents with Depression Study Team, 2007).

Taken together, the research described above suggests that intensive outpatient treatment, which is cognitive-behavioural-therapy-oriented, focussed on-the-here-and now, and has an emphasis on skill acquisition, has a good chance of being effective for this population.
Particular elements of successful treatments include a focus on problem-solving, explicit and detailed assessment, solution analysis of suicidal and self-harm behaviour if it occurs, and the integration of components designed to enhance adolescents’ social support (particularly for girls) and to assist parents’ and caregivers’ motivation and capabilities to care for and up-skill the young person.

**DBT shows promise as a treatment for high-risk adolescents**

DBT (Linehan, 1993a, 1993b) is a treatment directed towards creating a life worth living, and has an explicit focus on stopping self-harm by conceptualising this as a behaviour that is incompatible with the end goal of having a life worth living. It has its basis within cognitive behavioural therapy, and was originally developed to treat adult women suffering from borderline personality disorder and chronic suicidality. Several rigorous trials have shown that it is particularly effective in reducing self-injurious behaviour and suicide attempts in this population (Linehan et al., 1991; Linehan, Heard, and Armstrong, 1993; Linehan et al., 1994; Linehan et al., 2006b; Turner, 2000; Koons et al., 2001; Verheul et al., 2003). It is comprised of individual therapy, group skills training, and after-hours telephone consultation from the therapist to facilitate skills generalisation between sessions (for a comprehensive description of the treatment see Linehan 1993a, 1993b).

In addition, the therapists participate in weekly consultation meetings oriented towards enhancing their own capabilities and motivation to treat this client group. Trials to date have suggested that DBT is associated with a reduction in suicide attempts, self-injurious behaviour, emergency room visits, inpatient admissions and treatment dropout (e.g. Linehan et al., 1991; Linehan, Heard, and Armstrong, 1993; Linehan et al., 1994; Linehan et al., 2006b; Turner, 2000; Koons et al., 2001; Verheul et al., 2003).

DBT has been modified for use with adolescents. The main modifications have been the inclusion of parents and caregivers in treatment, and the adaptation of the skills-training component to make the material more accessible to a younger population. For most adaptations for suicidal adolescents, parents and caregivers are expected to attend skills training sessions alongside their young person. In addition, family members attend family therapy sessions with the therapist, intermittently throughout the treatment as required.

Field studies of the impact of DBT on suicidal behaviour in emotionally disturbed adolescents are promising (Goldstein et al., 2007; James et al., 2008; Katz et al., 2004; Miller, 1999; Miller and Glinski, 2000; Miller et al., 2002; Rathus and Miller, 2002; Trupin et al., 2002; Woodberry and Popenoe, 2008).

Rathus and Miller (2002) conducted a field trial in which they compared 12 weeks of twice-weekly DBT (individual sessions, and adolescent and family group skills training sessions) with 12 weeks usual care (or treatment as usual) for outpatient suicidal adolescents with borderline personality features who were in particular emotion dysregulation. Usual care in this setting was comprised of weekly, supportive, psychodynamically-oriented individual therapy, and weekly family sessions.

Assignment to treatment was determined by problem severity. Adolescents who presented with both suicidality (defined as a suicide attempt in the previous 16 weeks or current suicidal ideation), and emotion dysregulation (defined as a minimum of three or more of the diagnostic criteria for borderline personality disorder) were assigned to DBT. Adolescents with fewer difficulties (i.e. either suicidality or emotion dysregulation, but not both) received usual care.

There was a significant difference between the groups in their rates of psychiatric hospitalisation, with 13 per cent of adolescents receiving treatment as usual being hospitalised, as opposed to none of those receiving DBT. Treatment completion rates were 62 per cent for those receiving DBT and 40 per cent for those in the treatment-as-usual condition. There were no significant differences between groups in the very low base rate of suicide attempts. However, those in the DBT condition presented with a higher risk for suicidality at pre-treatment, but were no more suicidal than the control group post-treatment.
Non-suicidal self-injurious behaviour was not formally measured. In the DBT group, the study also found significant reductions in suicidal ideation and psychiatric symptoms from pre to post-treatment.

Goldstein et al. (2007) trialled 12 months of DBT, adapted for a small sample of adolescents with bipolar disorder, with impressive reductions in suicidal ideation, as measured by the Modified Scale for Suicidal Ideation (Miller et al., 1986, cited in Goldstein et al., 2007, p. 826), and no suicide attempts across 12 months of treatment (eight of the 10 participants had attempted suicide prior to taking part in treatment). This approach incorporated both individual sessions with the young person, and skills training sessions, which were attended by both the adolescent and his or her parents. Often individual sessions were followed by brief (5 to 10 minute) check-ins with the parents (Goldstein, 2009, personal communication). The first 6 months of treatment involved fortnightly individual and family skills sessions of an hour each on alternate weeks. The second 6 months focussed on consolidation and skills generalisation, and involved monthly individual therapy and family skills sessions of an hour each on alternate fortnights. Dr. Goldstein provided both components of treatment and she received weekly supervision from an expert in DBT and took part in weekly DBT seminars, rather than participating in weekly consultation team meetings. In addition to significant improvements in clinician-rated adolescent suicidality over the course of treatment, there was clear evidence that DBT was highly acceptable to families.

All but one of the young people completed the 12-month programme (one of the families moved out of the state during the treatment year), with young people and parents attending on average 90 per cent of the scheduled sessions, and reporting high satisfaction ratings for the programme (Goldstein et al., 2007).

Woodberry and Popenoe (2008) reported on the implementation of DBT in a standard community mental health centre in Maine, and found significant improvements in adolescents’ ratings of low mood, anger and dissociative symptoms from pre to post-treatment, and significant reductions in parents’ symptoms of depression. Importantly, while none of the pre-treatment mean scores on these measures were in the clinically elevated range, mean parent ratings (as measured by the Child Behavior Checklist) of their children’s problems were highly elevated before treatment and were significantly reduced following treatment (Woodberry and Popenoe, 2008).

James et al. (2008) examined the impact of a 12-month DBT programme on 16 adolescent females with a history (of more than 6 months) of repeated and severe self-harm in Oxfordshire. The programme comprised of weekly individual sessions, weekly adolescent-only group skills training, and telephone consultation on depression, hopelessness, general functioning, and frequency of self-harm. Assessments were conducted before starting the programme, after programme completion, and at follow-up (the duration of the follow-up period varied substantially, and was on average about 8 months). Two participants did not complete treatment. The authors found significant improvements in all measures of functioning at treatment completion, and these were maintained at follow-up.

In summary, in addition to pre and post-completion reductions in suicidal behaviour, there are indications that DBT may help enhance relationships with caregivers, improve caregivers’ levels of distress and reduce violent behaviour in adolescents (Katz, et al., 2004; Trupin, et al., 2002). Furthermore, one of the few randomised controlled trials that showed an impact from treatment for suicidal adolescents included DBT-oriented skills training in its intervention (Guthrie et al., 2001). However, to date there have been no randomised controlled trials of this treatment with adolescents (Gould et al., 2003; Miller et al., 2007).

Use of DBT for adolescents in New Zealand

Currently, the Kari Centre (Auckland District Health Board’s child and adolescent mental health service) has been providing the longest-standing DBT programme in Auckland for young people and their families. This programme has been running for approximately 5 years. The Kari Centre’s DBT programme is embedded within a multidisciplinary team milieu and is comprised of nine clinicians with backgrounds in psychology, nursing, occupational therapy and social work.
In 2008, data was compiled comparing use of respite accommodation and respite nursing services before and after programme implementation, and it indicated significant reductions in the use of these services by Kari Centre clients. This data must be interpreted tentatively, as it includes clients from across multiple teams, including the early intervention psychosis service. Data gathered from participants comparing suicidality (as measured by scores on the Beck Scale for Suicidal Ideation; Beck, 1991) before and after participation in the DBT skills group component of treatment (while also receiving weekly individual DBT therapy, as-needed family sessions, and phone coaching during working hours) revealed a significant reduction in Beck Scale for Suicidal Ideation scores, along with increases in reasons for living scores, as measured by the adolescent version of the Reasons For Living Scale (Osman and Gutierrez, 2007), particularly with reference to hope and self-acceptance (Davis et al., 2008).

There are a number of other child and adolescent mental health services across New Zealand that provide partial-DBT programmes. These include services within the MidCentral, Taranaki, Hawkes Bay, Hutt Valley, Capital Coast, Nelson-Marlborough and Canterbury district health boards. It seems that one of the biggest barriers to providing comprehensive DBT treatment may be teams’ reluctance to provide 24-hour telephone coaching. To our knowledge, the DBT programme based at the Whirinaki child and adolescent mental health service within Counties-Manukau District Health Board is the only DBT programme in New Zealand that includes this component in the form prescribed by the treatment developer.

A randomised controlled trial of DBT versus treatment as usual would address a substantial gap in the literature. There is a growing body of evidence to suggest that DBT may well be an effective treatment for suicidal behaviour in adults, and health services in New Zealand are increasingly investing funds in developing skills in DBT for their child and adolescent mental health service workforce. However, although there is substantial anecdotal evidence to suggest that DBT may be effective for suicidal adolescents, no reliable empirical data is available. Therefore, a careful appraisal of this treatment’s application to New Zealand adolescents engaging in suicidal behaviour is timely and valuable.

A full study would aim to replicate Linehan’s first randomised controlled trial of DBT (Linehan et al., 1991; Linehan, Armstrong and Heard, 1993) by comparing outcomes associated with DBT and outcomes associated with treatment as usual for suicidal and emotionally-disturbed NZ adolescents. In particular, the study would assess whether DBT is associated with (1) fewer episodes of suicidal and self-harm behaviour (the primary variable of interest), (2) fewer treatment dropouts, and (3) fewer days in both inpatient psychiatric care and respite care. In addition, it would be useful to evaluate the cost-effectiveness of DBT for this population, and collect data on other important health, economic and quality of life outcomes. Ideally such a study would evaluate the impact of DBT on accessing education, use of physical health services, and use of care and protection and youth justice services.

Finally, the study would aim to assess whether there are differences in burnout for clinicians providing treatment as usual, as compared with clinicians providing DBT. This is important because clinician burnout associated with treating high-risk patients is a general concern both in New Zealand (e.g. Kumar et al., 2007) and internationally (Gaffney et al., 2009; Pompili et al., 2006). In addition, because DBT is a demanding treatment to provide (Perseius et al., 2007), it will be important to assess whether DBT clinicians are at higher risk of burnout than their treatment-as-usual counterparts. Such a study would track outcomes for participants for at least a year following treatment, as previous research has indicated that the benefits of DBT often become more pronounced over time, in terms of long-term reductions in risk of further mental health problems.

This information would contribute significantly to our understanding of effective treatments for suicidal adolescents within New Zealand, as well as having international relevance to treatment outcome research in this area. A multi-centre trial of DBT for suicidal adolescents is currently in progress in Norway, and the proposed full study would build upon the information obtained from that trial, as well as helping identify the outcomes for young people in New Zealand.
Further follow-up data would also identify whether young people receiving DBT show greater emotional resilience in the long-term, as evidenced by less mental health treatment in the follow-up year. This would add to the understanding already provided by New Zealand research on other problem-solving treatments for adults with self-harm (Hatcher et al., 2007). In addition, the full study would add to our understanding of the emotional impact of providing treatment to suicidal youth, and specifically assess whether DBT is associated with greater or lesser burden on treatment providers.

**Feasibility issues affecting the full study**

DBT was developed in North America, and there are many cultural and social differences between that context and that of Aotearoa/New Zealand. Obtaining ongoing cultural consultation and feedback from clients and families, about the aspects of the treatment that require adaptation to fit the environment and needs of New Zealand young people, will be essential prior to embarking on a full-scale study. The present feasibility study was designed to provide the time and opportunity to carefully explore the suitability of this approach, and identify the essential changes required to fit this country’s youth. In particular, the investigators hoped the study would identify any modifications to treatment that were required to avoid violations of tikanga Māori, and might help clarify whether Māori will benefit from working with a treatment team that was comprised of Māori and non-Māori clinicians. The question of whether non-Māori can work effectively with Māori has been raised by Māori research-practitioners (e.g. Huriwai, 2002; Sellman et al., 1997), and a survey of alcohol and drug workers found that 70 per cent of respondents reported referring on to a Māori health service, worker or support group as a way in which they adapted their practice when working with clients of Māori descent (Robertson et al., 2001). Researchers have also noted that this response (referring on to a Māori health service) runs the risk of absolving non-Māori clinicians of the obligation to act in additional ways that are responsive to the cultural needs of tangata whenua (Robertson et al., 2001).

In addition to cultural considerations, DBT involves significant logistical challenges. One challenge is the provision of telephone consultation, and whether this component of treatment is acceptable to therapists working within the New Zealand public health service. A critical question in the delivery of DBT is whether the treatment places a greater burden on treatment providers. The demands on therapists are arguably higher, as provision of out-of-hours telephone consultation to clients by the individual therapist is a core component of the treatment (Linehan, 1993a). Work with multi-problem suicidal clients has traditionally been seen to place clinicians at a greater risk of burnout (e.g. Bongar, 2002; Gregory, 2004; Linehan, 1993a). The consultation team meeting component of DBT explicitly targets burnout risk, because the treatment model assumes that working with this client group will be more stressful for therapists.

However, whether DBT provision affects clinicians’ burnout risk is a question that has not been specifically assessed to date. The closest approximation has been an exploration of burnout experienced by therapy dyads (i.e. individual therapist and client pairs). Therapists and clients engaged in DBT, or non-behavioural treatment for borderline personality disorder, completed a modified form of the Maslach Burnout Inventory with reference to each other. The most reliable predictor of therapist burnout after 4 months of treatment was client burnout with mental healthcare in general at pre-treatment (Linehan, et al., 2000). However, the sample size was small, and there was no comparison of burnout between therapy conditions reported.

Accordingly, the present study was designed to assess whether there are differences in therapist burnout between conditions, as this is an important indication of the treatment’s acceptability to providers. We also wanted to find out whether therapists were able to demonstrate adherence to the treatment model. Establishing treatment adherence is essential before funds are invested in a large-scale trial. Prior to this study, only one of the members of the team (the principal investigator) had had DBT sessions rated to measure their adherence or fidelity to the treatment model.
Finally, there are difficulties associated with conducting two treatments for suicidal behaviour with random assignment to each, in a child and adolescent mental health service. There are significant ethical considerations associated with doing this research, particularly within a public health service. Random assignment runs counter to typical practice, in which treatment decisions are made according to the clinician's or family's preferences. A critical question prior to a full study is whether it is acceptable to participants and clinicians to provide two treatments, with random assignment, within the same community child and adolescent service, i.e. whether it is possible to avoid treatment contamination and whether clinicians and families will tolerate a lack of choice about treatment in practice. Despite the best intentions of supporting research, it is possible that when faced with a very high-risk young person, the service may be tempted to try to persuade the research team to “fit them in” to the DBT condition, without randomisation.

This feasibility study was designed to create the time and space required for a team of Māori and non-Māori clinicians to review and adapt a treatment that has shown promise for suicidal youth in other countries, so that it is responsive to the unique contexts and requirements of Aotearoa/New Zealand.

There were three primary objectives. Firstly, the study aimed to get systematic information about the acceptability of DBT for suicidal adolescents, their families and the clinicians providing DBT in New Zealand child and adolescent mental health services. Treatment acceptability was assessed by families’ engagement in treatment, dropout rates, and responses in focus groups at the end of treatment. This information, coupled with adherence rating data, was designed to clarify whether New Zealand clinicians can provide DBT that is both acceptable to New Zealand youth, and faithful to the treatment model. Acceptability of this treatment to DBT clinicians was assessed by their willingness to provide DBT, their responses to an anonymous survey, and their responses on burnout measures.

Secondly, the study aimed to establish whether using the method of random assignment to one of two treatment conditions was acceptable to ethics committees, child and adolescent mental health services, and the adolescents and families participating in the treatments. Conducting a randomised controlled trial in mental health services is challenging, given that the right to informed choice of treatment is a cornerstone of mental health services in New Zealand. In this study, families were free to choose whether or not to take part in the research. However, if they chose to do so, they would be randomly assigned to one of the two interventions. We examined whether random assignment to treatment was acceptable to participants and the research sites by measuring recruitment rates during the recruitment phase. Clarification regarding the ethics of random assignment to treatment for suicidal adolescents was obtained through feedback from the ethics committee.

Thirdly, the study aimed to assess the feasibility and acceptability of the screening and assessment measures, with specific attention to establishing the average time it would take to administer the assessments, gathering feedback about how the young people found the assessments, and assessing the retention rate of participants.
Method

Participants

Adolescents and their families were recruited from young people accepted for treatment within Marinoto Youth Specialty Services in North and West Auckland. All of the young people, and at least one of each of their parents or guardians, gave written informed consent to take part in the research. The study received ethics approval from the Northern X Regional Ethics Committee, and both the committee and an independent data and safety monitoring board monitored the trial. To be included in the trial, adolescents had to:

- be aged between 13 and 19 years,
- have a history of either at least one suicide attempt or one episode of intentional self-injury within the 3 months preceding the pre-treatment assessment
- have at least one adult who was a consistent presence in their life who was willing to commit to taking part in treatment alongside them (i.e. attending group and family sessions with the young person if they were assigned to DBT)
- have proficiency in English
- not meet criteria for an intellectual disability
- not meet criteria for a psychotic disorder at the time of the screening assessment.

Design

Participants were randomly assigned to either treatment as usual (n=15) or DBT (n=14), via a computerised randomisation procedure. In this procedure, the treatment assignment series was generated by the fifth author (Joanna Stewart) in conjunction with a research assistant who was otherwise entirely independent from the study. Each treatment assignment was placed in a sealed numbered envelope (32 envelopes in total) by the assistant, and once the participant had completed all pre-treatment screening and research assessments, he or she was given the next envelope in the series and opened it to discover what treatment he or she was to receive.

Outcome assessments were conducted before treatment assignment, and scheduled to occur at approximately 3 and 6-month intervals following assignment to treatment. In reality, there were significant delays in the timing of the second and third assessments, and these are discussed in more detail in the results section. The first author (Emily Cooney) completed all pre-treatment screens and assessments, and these occurred at the treatment site, participants’ homes, or their school prior to randomisation. All subsequent assessments were administered by an assessor (the fourth author, Julie Wharewera-Mika) who was also blind to treatment condition. These assessments occurred either at the participants’ homes, their school or at another outpatient clinic, which was separate from the treatment sites for both conditions.

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4 Initially, the inclusion criterion for age was 13 to 17 years. However, this was extended up to 19 years, provided any young people aged 18 years and over were still attending secondary school, and still living at home. This change followed recommendations by an expert in child and adolescent mental health research and by clinicians at the research sites, who noted that their service entry specifications included this criterion for their upper age limit, and thought that the research study should mirror criteria used in practice. This change was approved by the regional ethics board.

5 This criterion was at the recommendation of one of our Pacific clinical consultants, as well as of a service user. Both noted that the presence of interpreters can have a complicated impact on treatment delivery and families’ experience of therapy, particularly in a group setting, thereby confounding the feasibility of the treatment with the feasibility of the presence of an interpreter. The service user also noted that for small communities of an ethnic minority, the presence of interpreters can make families more concerned about privacy and confidentiality.
Families were instructed not to disclose their treatment, state the names of their therapists or refer to identifying details of their treatment during these interviews to ensure the integrity of this blind. The results of a check on the blind at the conclusion of the 6-month assessments indicated that this was intact. When asked which treatment had been given to which adolescent, the assessor’s responses were correct for only 10 of the 29 young people, which is within the probability expected by chance.

**Interventions**

Treatment as usual was provided by clinicians within the Marinoto Youth Specialty Services. Treatment depended on the family context, the nature of the presenting problems accompanying suicidal or self-injurious behaviour, diagnosis, and the formulation of the clinicians involved. Treatment was conducted within the context of a multidisciplinary team milieu, and was variously comprised of individual and family sessions, medication management, and hospitalisation and respite care as required. Both the type and frequency of sessions (neither of which were controlled) are reported in the results section. Based on file notes, sessions tended to be 50 to 60 minutes in duration.

DBT was provided by clinicians employed at the Kari Centre with experience in the provision of this treatment. All individual therapists had received intensive training in this approach. DBT was comprised of weekly individual therapy sessions lasting 50 to 60 minutes, weekly group skills training (sessions ran for 110 minutes with a 5 to 10 minute break in the middle), and telephone consultation as needed. The DBT programme was of approximately 26 weeks duration for each family. The group was open and ran continuously for 15 months. (For one module during that time, an additional group ran for 8 weeks to accommodate three new families when there were no spaces in the main group. After families graduated from the main group, the three families joined the main group). The full skills curriculum was taught over 26 weeks. However, new families could enter a group within the first 4 weeks of a new module. Accordingly group sessions took place for 23 to 26 weeks, depending on a family’s entry point to group. We used the revised version of the Linehan (1993b) skills training manual, with a few very minor changes (e.g. removing or modifying some items, such as sex and gambling from the pleasant events schedule) to make the content more age-appropriate for adolescents. We also added Miller, Rathus and Linehan’s (2007) Middle Path module to this curriculum. Family sessions were scheduled on an as-needed basis, according to the recommendations of the therapists involved, and the willingness of the family to take part in sessions.

Within the first 4 weeks of providing treatment, difficulties emerged with having only one DBT therapist allocated to a family. Examples of these problems (across the entire cohort of DBT participants) included role conflict in attempting to coach both parents and the young person when the family members had competing goals, coaching the parents to restrict access to means and to manage risk effectively at home in high-risk situations (where there was little evidence that prolonged admissions reduced self-harm behaviour), and motivating the caregivers to stay engaged in treatment and continue caring for their child when the parent was experiencing high distress and burnout. The challenges associated with this are described in more detail in the discussion.

Accordingly, it was agreed that we would trial an approach where the group skills leader (Emily Cooney) would also act as the DBT therapist and coach for parents and caregivers in families that had another clinician providing individual DBT for the young person. Owing to funding restrictions, it wasn’t possible to obtain further therapist time for an independent clinician for the families of young people with whom the group leader was also working individually. This approach continued for the remainder of the trial, as the clinicians involved reported a strong preference for having an independent family worker available to them.

Initially, owing to funding restrictions, we had planned to limit the number of participants in group sessions to two per family (i.e. the young person and one parent or caregiver).
Approximately 12 weeks into group sessions, we extended this to three family members per group session, on the advice of our supervisor, and based on our own clinical observations about the likely benefits of including an additional adult.

The therapists also participated in weekly consultation meetings. The focus of these meetings was on enhancing their own capabilities (including problem-solving adherence issues) and motivation to treat this client group.

DBT therapy sessions (group, family and individual) were video-recorded for adherence rating and reviewing in consultation meetings, although only individual sessions and group sessions were coded for adherence, owing to funding limitations. The only exceptions to recording were sessions that took place in a setting where it wasn’t practical to record (e.g. when the therapist and young person went for a walk), or when equipment was missing or malfunctioning. The mean percentage of individual sessions not recorded was 23 per cent, and the percentage of group sessions not recorded was just under 13 per cent.

The first DBT participant waited 3 weeks after randomisation to begin DBT individual therapy, owing to multiple contextual factors, and group sessions didn’t begin until 9.5 weeks after that person had been randomised. The next two DBT participants began individual therapy within a week of being randomised, but didn’t begin group therapy until 5 weeks after their pre-treatment date. Three further participants waited 3 or more weeks to begin group sessions, owing to delays in their schedules, and all other DBT participants began group sessions within 2 weeks of being randomised.

For both conditions, treatment included risk assessment and management, and access to crisis services, medication, respite and hospital admissions as required.

**Measures**

**Diagnostic and screening instruments**

The Structured Clinical Interview for Affective Disorders and Schizophrenia for School-Aged Children: Present and Lifetime Version, (K-SADS-PL; Kaufman et al., 1996) was used to screen for a psychotic disorder, and to establish diagnoses at pre-treatment. This semi-structured interview screens for affective and psychotic disorders, and was designed to be used with children and adolescents. After assessing four young people, a decision was made to screen only for current rather than past episodes of disorders, to reduce the assessment burden on participants. Accordingly, diagnoses of ADHD were omitted from analyses, because information about the lifetime history of attention and activity problems is required in order to make a diagnosis, and this was not systematically collected for all participants. Clinically, when individuals’ responses on questions assessing the current presence of ADHD symptoms indicated that further assessment of ADHD may be warranted, we informed the young person’s treatment team. However, this did not affect their inclusion in the trial. We interviewed both the young person and their caregivers using this screen for all but two of the young people in the study (whose parents were not available during the assessment). The decision about which parent to interview was made by the family.

The Block Design and Vocabulary Subtests of the fourth edition of the Wechsler Intelligence Scale for Children Australian Standardised Edition (WISC-IV Australian; Wechsler, 2003) were used as a brief screen for intellectual disability and lack of proficiency in English. In order to minimise the screening burden on participants, we chose to use these subtests as a screen for both exclusion criteria, rather than add an additional test of proficiency in English.

**Outcome measures**

The primary outcome variable was the occurrence and frequency of self-harm (i.e. suicide attempts and non-suicidal self-injuries) for each time period. To measure this, we used the Suicide Attempt-Self-Injury Interview (SASII; Linehan, Wagner et al., 2006), which we adapted for use with adolescents.
These adaptations were minor modifications to the language to make the questions more accessible to young people. For example, question 4, “Was the initiation of your action to (cut) deliberate, accidental, or somewhere in between?”, was replaced with, “Did you start to (cut) on purpose, accidentally, or somewhere in between?”

As secondary measures of suicidality, we also asked adolescents to complete the Reasons For Living Inventory for Adolescents (RFL-A; Osman et al., 1998; Osman and Gutierrez, 2007) and the Beck Scale for Suicide Ideation (BSS; Beck, 1991). The RFL-A is a 32-item self-report instrument that was originally designed for use with adolescents aged 14 to 18 years. It has strong psychometric properties, and is sensitive to change. In addition, it is negatively and uniquely related to suicidal behaviour, independent of depression and hopelessness (Miller et al., 2007), and identifies protective factors against suicide, as well as risk. The BSS is a 21-item self-report questionnaire designed to assess suicidal ideation and history indicative of suicide risk. It has strong psychometric properties, and although originally developed for adult populations, it has subsequently been shown to have good reliability and validity for adolescent psychiatric inpatients. It is sensitive to change, and discriminates between adolescent ideators and non-ideators (Steer, Kumar and Beck, 1993).

To examine skills in emotion regulation across time, we asked young people to complete the Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer, 2004), which is a 39–item self-report questionnaire designed to measure clinically relevant difficulties in emotion regulation. Preliminary analyses on an adult sample (mean age of 23 years) indicate that it has good internal consistency and test–retest reliability, and reasonable construct and predictive validity. Preliminary norms for adolescents indicate that it has reasonable reliability and validity, and its sensitivity to change and its specificity indicate that it shows promise for evaluating treatments for emotion dysregulation in this population (Gratz and Gunderson, 2006; Weinberg and Klonsky, 2009). Finally, in order to measure levels of substance use, the adolescents completed the Substances and Choices Scale (SACS; Christie et al., 2007).

Treatment participation and burden

We asked both DBT and treatment-as-usual therapists to complete a modified version of the Maslach Burnout Inventory (Maslach and Jackson, 1984). This questionnaire was originally developed to assess burnout of counsellors, and has subsequently been used to assess burnout in therapy dyads (Linehan et al., 2000). It has acceptable reliability and validity (Maslach and Jackson, 1986).

We also examined the numbers of missed sessions, sessions attended, and treatment dropouts for each condition.

Treatment fidelity

Adherence to DBT was measured using the DBT Global Rating Scale. The scale has been developed within the DBT treatment developer’s clinics (the Behavior Research and Therapy Clinics). It is completed by coders that have been trained by the clinics, based on their viewing of a DBT session. Approximately one session from every six consecutive session recordings, for each therapy dyad and each group, was randomly selected for coding. Exceptions to the random selection process were two sessions that had been tagged as particularly difficult, and sent for coding at the requests of the therapists concerned, so that they could receive consultation and clinical feedback, as well as coding.

We also had hour-long monthly teleconference calls with a consultant with expertise in the adaptation of DBT to adolescents and families (Dr Alec Miller, Psy.D.). These monthly calls occurred for the duration of the treatment phase of this project and were used to discuss specific clinical issues. Dr Miller is a DBT trainer and consultant with Behavioral Tech, the organisation mandated by the treatment developer to provide training in DBT, and is also the first author on a manual describing the adaptations of DBT for suicidal adolescents. He divides his time between his private practice in White Plains, New York and his
role as chief of child and adolescent psychology, and director of the Adolescent Depression and Suicide Program at Montefiore Medical Center/Albert Einstein College of Medicine, in the Bronx, New York.

**Treatment acceptability**

During the course of the treatment phase of this project, focus groups were held with cohorts of families graduating from the DBT programme, with one interviewer meeting with young people, and another interviewer meeting with parents and caregivers in a separate room. The first of these groups was facilitated by the two group leaders. Subsequently, we realised that the quality of the feedback would be contaminated by the fact that families were providing information directly to treatment providers. Subsequently we engaged three consumer advisors (two based at the Kari Centre and one based at Marinoto Youth Specialty Services) to conduct the focus groups, de-identify information, and provide it to the research team. The advisors didn’t record sessions, but rather gave written summaries of the feedback that participants had given to them.

We also conducted an anonymous survey with the clinicians who provided DBT on this project, in order to gather qualitative information about their experience of being on the trial, the advantages and disadvantages of providing this type of treatment, and their feedback and recommendations regarding the implementation of the various treatment components. The survey was devised in consultation with the DBT therapists, who generated questions by emailing them to an independent research assistant, who then collated them into the survey. The survey was then sent to all DBT therapists, and the responses were de-identified and collated by the research assistant. A copy of the survey is available from the first author (Emily Cooney).

**Data entry and analysis**

Data was double-entered into SPSS for Windows by the first author (Emily Cooney) and a research assistant (Amy Rosso) who was blind to the research conditions, and then checked for errors using the SPSS duplicate cases command. Discrepancies were individually reviewed and, where necessary, checked with the assessor concerned. Systematic discrepancies were reviewed with the statistician after clarification with the assessor.

Data was analysed using SPSS 15.0 for Windows, and scales were scored according to syntax based on the authors’ scoring templates. As this is a feasibility study, and only the first three assessment periods are available, no statistical analyses were planned or conducted.
Results

Ethics approval took 6 weeks to obtain from the point that the investigators (and the clinical director of the two research sites) attended the committee meeting. The primary concerns raised by the committee were: (1) clarifying plans for monitoring and managing crises and adverse events, access to after-hours services, and contingencies should a participant become psychotic during the course of the study, and plans for managing workloads and providing treatment should study clinicians become ill; (2) clarification regarding the payment schedule and whether this was sufficient to run the study safely; and (3) the need to consider means of monitoring and minimising treatment contamination between the two arms, given that they were both being provided at the same sites.

Figure 1 shows the participant flow through the recruitment and screening process. Recruitment took place over 12.5 months. Of the 50 families who were referred by Marinoto clinicians, 15 families declined to take part after an orientation meeting. Of those declining to take part, one of the young people identified as Māori, three identified as UK European, one identified as South African, ethnicity data was not collected on three, and the remainder identified as New Zealand European (NZE). Reasons provided for not taking part were typically associated with concerns about engaging in DBT. These included not wanting to attend a group, particularly when parents were required to attend as well (n=4), not wanting to change therapists (n=2), DBT being time-consuming and too much work, not seeing their problems as being severe enough to require such intensive therapy (n=6), and parents not wanting to take part in group (n=1). In addition, one young person was afraid of failing in DBT, and one decided to go into residential alcohol and drug treatment, rather than pursue outpatient treatment for her problems.

**Figure 1: Recruitment and screening flow**

- **15** declined to take part (30%). 4 were recent immigrants (3 from the UK, 1 from South Africa), 1 identified as Māori, the ethnicity of 3 were undetermined, and the remainder identified as NZE.
- **50** young people and families had an orientation meeting.
- **Screening assessment – N=35**
- **2** were not eligible (both identified as NZE).
- **Pre-treatment assessment**
  - **TAU = 15**
  - **DBT = 14**
- **N= 29**
Of the 35 young people who consented to take part in the study, two were no longer eligible as they hadn’t self-harmed in the previous 3 months (both identified as New Zealand European).

Of the remaining 33 young people, three completed the screening assessments only, and one discontinued midway through the screens. Of the first three, one young person moved to another region during the assessment process but before randomisation. Tragically, this young person died a few weeks later by suicide.

Of the remaining three participants who did not proceed beyond the screens:

- one participant wanted to take part in the assessment, while being uncertain about proceeding with the research beyond this point, as she was unsure her problems were severe enough to warrant a commitment to 6 months of intensive outpatient treatment. On the basis of the assessment feedback, she opted not to continue.
- one participant was eager to take part in the study and completed the screens, but their parents subsequently decided that it wasn’t feasible to continue, owing to the time commitment associated with DBT. Several months later, the family revisited this decision, and the parents were keen to proceed. However, the young person ultimately decided not to continue. This decision seemed to be associated with concerns about stopping working with their current therapy team.
- one participant decided not to continue with the assessment when they were two-thirds of the way through. This appeared to be associated with transport problems. (The young person couldn’t get a ride to their second assessment and the assessor was unwilling to pick the youth up for this appointment without an undertaking that the young person would refrain from engaging in problematic behaviour, which had disrupted transport home from the earlier appointment. The young person was unwilling to provide that undertaking, and decided that they didn’t want to proceed with the assessment.) However, the young person later complained that the assessment involved too many questions, indicating that their decision not to proceed was also associated with disliking the assessment process.

Participant demographics

Table 1 shows the demographic characteristics of participants at pre-treatment. The mean age of participants at their first assessment was 15.9 years (range = 14 to 17.8 years). The majority of participants were girls (76 per cent), and 10 of 22 girls were randomised to DBT. Eighteen participants (65 per cent) were attending school, and two were working full-time (two others had part-time jobs while attending school). Eight participants (four in each condition) were engaged in no form of structured activity during the day, and one participant, having been absent from school for several weeks, was making a graduated return to classes. Over 80 per cent (25 of the 29 families) were receiving services in North Auckland, and of the remaining four participants from West Auckland, three were assigned to DBT.
Table 1: Pre-treatment characteristics of DBT and treatment-as-usual participants

<table>
<thead>
<tr>
<th>Treatment condition</th>
<th>DBT (N=14)</th>
<th>Treatment as usual (N=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender – female – n (%)</td>
<td>10 (71%)</td>
<td>12 (80%)</td>
</tr>
<tr>
<td>Number of self-harm acts – median (SD)</td>
<td>7.5 (17.6)</td>
<td>4 (10.1)</td>
</tr>
<tr>
<td>Age – mean (SD)</td>
<td>16.2 (.98)</td>
<td>15.7 (1.1)</td>
</tr>
<tr>
<td>At school – n (%)</td>
<td>9 (64%)</td>
<td>10 (67%)</td>
</tr>
<tr>
<td>At work – n (%)</td>
<td>1 (7%)</td>
<td>3 (20%)</td>
</tr>
<tr>
<td>Structured activity – n (%)</td>
<td>10 (71%)</td>
<td>11 (73%)</td>
</tr>
<tr>
<td>Site – North – n (%)</td>
<td>11 (79%)</td>
<td>14 (93%)</td>
</tr>
</tbody>
</table>

Data regarding ethnicity was collected during face-to-face interviews early on in the assessment process, while the interviewer completed the demographic section of the K-SADS. The opening question asked was, “What cultural groups or ethnicities do you identify with?” Figure 2 shows the ethnicities reported by young people in response to this question, for the young people who ultimately took part in the study. As can be seen, the majority of participants identified as New Zealand European, and a substantial minority were recent immigrants from either South Africa, or the United Kingdom. All of the New Zealand-born participants identified as New Zealand European (one treatment-as-usual participant identified as being both New Zealand European and Māori).

![Figure 2: Ethnicities as defined by young people](image)

We examined the ethnicities (as recorded in their medical records) of adolescents aged 13 to 19 years who were referred to and accepted by the two services across the recruitment period. The majority (64 per cent) identified as New Zealand European, while Māori comprised 14 per cent of accepted adolescent referrals, other European comprised 10 per cent, Asian comprised 5 per cent, and Pacific adolescents comprised 4 per cent. The remaining young people were of Indian, African, Middle Eastern or unknown ethnicity.
Obviously, this data doesn’t provide a direct indication of the ethnicity breakdowns for the population who were potentially eligible for this study, because information regarding self-harm history isn’t available. Looking at the latest data on hospitalisations for self-harm for young people aged 10 to 19 years from across New Zealand (in 2007), 23 per cent of these young people were classified as Māori, 4 per cent as Pacific, 6 per cent as Asian, and 68 per cent as other (Ministry of Health, 2009).

**Feasibility of assessments**

On average, the time taken to administer the K-SADS and the two WISC subtests was approximately 2.5 hours, as the majority of participants tripped the threshold for supplementary screening for multiple disorders (and met criteria for these). The time taken to administer the K-SADS to parents was approximately 2 hours. Adolescents reported finding the length of these assessments arduous and most met twice with the assessor to complete screening. During the assessment phase, parents of four young people noted that their child had been calmer across the time that the assessment occurred, and attributed this to the assessment meetings.

The pre-treatment administration of the SASII screened for self-harm events across the entire pre-treatment year, and took a further 1 to 2 hours to complete. In response to feedback provided by the first cohort of participants in the focus groups, great care was taken to ensure that the SASII assessor maintained a focus on open-ended questioning regarding methods of self-injury, rather than asking or checking whether the young person had engaged in a specific method of self-harm (unless the young person had referred earlier to a method of self-harm, which they didn’t spontaneously identify later in response to open-ended questions in the interview). Subsequent 3-month SASII administrations took between 10 and 60 minutes.

Assessments began with a review of activities and strategies that the young people could use to distract themselves and to manage distress if they found the assessment painful, and ended with a check-in regarding their mood, and readiness to continue with planned events for the remainder of the day. DBT participants were coached when scheduling assessments not to use DBT skill names or terms when they were discussing activities to manage distress with the assessor. As noted, four of 33 young people discontinued assessments during or after pre-treatment, suggesting that with sufficient coaching and support, the majority of participants were able to tolerate the pre-treatment screens and assessments. During focus group feedback, a participant described finding the assessment screen very stressful.

Figure 3 shows the percentage of participants in each condition meeting diagnostic criteria for DSM-IV categories, as measured by the K-SADS. As can be seen, the majority of participants were suffering from depression at the time of the screen, and the next most common diagnosis was generalised anxiety disorder, for which 45 per cent of the total sample met criteria. The majority of participants (all but one in each treatment condition) met criteria for multiple disorders (mean number of diagnoses in DBT=3, and in treatment as usual=2.6). Excluding specific phobia, over two-thirds (20/29) of the sample met criteria for some form of anxiety disorder. The eating disorder diagnoses were all either bulimia nervosa, or eating disorder not otherwise specified diagnoses.
Figure 3: Percentage of participants meeting criteria for diagnostic categories as measured by K-SADS

GAD = generalised anxiety disorder, panic = panic disorder, MDD = major depressive disorder, SoAD = social anxiety disorder, phobia = specific phobia, OCD = obsessive compulsive disorder, SeAD = separation anxiety disorder, SUD = substance use disorder, ED = eating disorder, PTSD = post-traumatic stress disorder.

Delays in assessment timing

Although assessments were planned to take place every 3 months, in reality this didn’t occur. Owing to delays in recruiting and training the follow-up assessor, and subsequent challenges in scheduling young people for assessments, there were significant delays in arranging the first cohort of second assessments. Table 2 summarises this information, which is relevant to the questionnaire administration.

The mean time between the first assessment and the second one was 137 days for treatment-as-usual participants and 143 days for DBT participants, with high variability between participants (SDs = 38 and 37 respectively). The mean time between the second and third assessment was 98 days for treatment-as-usual participants (SD = 62) and 75 days for DBT participants (SD = 20). These are the timeframes for completion of questionnaire data. For DBT participants, all third assessments occurred after the DBT programme’s completion.

Table 2: Mean duration (in days) and standard deviations of time between assessments for each condition

<table>
<thead>
<tr>
<th>Treatment condition</th>
<th>DBT (N=14)</th>
<th>Treatment as usual (N=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean time between pre-treatment assessment and second assessment</td>
<td>143 days (SD = 37)</td>
<td>137 days (SD = 38)</td>
</tr>
<tr>
<td>Mean time between second and third assessment</td>
<td>75 days (SD = 20)</td>
<td>98 days (SD = 62)</td>
</tr>
</tbody>
</table>

To take account of these variable timeframes, when measuring the occurrence and frequency of suicide attempts and self-injury over time, the dates that the young person provided during the SASII were used to determine which assessment period each event fell into. Rather than being defined by the dates that assessments occurred, the assessment periods for self-harm data were determined by time for treatment-as-usual participants, and by the treatment end date for DBT participants. The treatment end date for DBT participants was defined as the end of the week following their graduation from the group. The treatment midpoint was defined as the point halfway between their treatment end date, and the date of their pre-treatment assessment.
For treatment-as-usual participants, the second and third assessment periods were defined as 3 months (i.e. 13 weeks) and 6 months plus one week (i.e. 27 weeks) respectively following their pre-treatment assessment date.

This meant that the overall time that self-harm and treatment attendance were measured across was both longer and much more variable for DBT participants, because of delays in starting treatment for some participants in this condition. For DBT participants, the occurrence and frequency of self-harm was measured across a mean of 104 days for assessment points two and three (SD = 12), whereas for treatment-as-usual participants, self-harm events were measured across 94 (SD = .7) and 95 (SD = .5) days respectively. Data is available for all 15 treatment-as-usual participants across assessments, and for 13 of the 14 DBT participants for assessments 2 and 3. For treatment engagement, attendance at sessions is measured across an average of 189 days (SD = 1) for treatment-as-usual participants, and 206 days (SD = 24) for DBT participants. Table 3 summarises this information.

Table 3: Mean number of days that self-harm was measured for each assessment period and each condition

<table>
<thead>
<tr>
<th>Assessment 1 (pre-treatment)</th>
<th>DBT (N=14) 91 days (SD = 1)</th>
<th>Treatment as usual (N=15) 91 days (SD = 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment 2 (mid-treatment for DBT participants)</td>
<td>104 days (SD = 12)</td>
<td>94 days (SD = .7)</td>
</tr>
<tr>
<td>Assessment 3 (post-treatment for DBT participants)</td>
<td>104 days (SD = 12)</td>
<td>95 days (SD = .5)</td>
</tr>
</tbody>
</table>

Treatment engagement

Comparison of dropouts between conditions was a challenge, owing to the significant differences between treatment approaches, and the absence of a clear definition of treatment dropout in treatment as usual. In DBT, a person drops out of the treatment at the point that they miss four scheduled sessions in a row of any one treatment modality (e.g. either individual therapy or group sessions). One of the 14 participants in DBT dropped out, with the rest all completing treatment and attending their final (graduation) group session, and a closing session with their individual therapist.

We had to develop a dropout criterion for treatment-as-usual participants after the fact, and were therefore careful to develop a relatively conservative threshold for this. Accordingly, we defined dropout from treatment as usual as a unilateral discontinuation of treatment, as evidenced by a sequence of appointments not attended by the young person or their family, followed by file closure, coupled with no evidence of a collaborative decision to close. Using this yardstick, file review indicated that four young people dropped out of treatment. File review showed three other instances in which a sequence of appointments was not attended, followed by a telephone discussion in which it was agreed that the young person would stop treatment. These were not counted as treatment dropouts, as there was evidence of a collaborative decision to close.
Table 4: Means, standard deviations and ranges for sessions across approximately 6 months following pre-treatment assessment

<table>
<thead>
<tr>
<th>Treatment condition</th>
<th>DBT (N=14)</th>
<th>Treatment as usual (N=15)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Individual sessions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>attended</td>
<td>22.6</td>
<td>6.4</td>
</tr>
<tr>
<td>Individual sessions</td>
<td>1.9</td>
<td>1.8</td>
</tr>
<tr>
<td>not attended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group sessions</td>
<td>20.3</td>
<td>5.3</td>
</tr>
<tr>
<td>attended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group sessions</td>
<td>2.6</td>
<td>3.1</td>
</tr>
<tr>
<td>not attended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family sessions</td>
<td>8</td>
<td>3.1</td>
</tr>
<tr>
<td>attended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Med reviews</td>
<td>2.4</td>
<td>2.2</td>
</tr>
<tr>
<td>attended</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent sessions</td>
<td>3.9</td>
<td>4.1</td>
</tr>
</tbody>
</table>

Table 4 shows means, standard deviations, and ranges of appointments attended and not attended for the most frequent treatment session categories for the two groups across the (approximately) 6 months following their pre-treatment assessment, based on electronic file review. Appointments not attended (DNAs) are shown for the two most common types of appointments (individual and group sessions). For individual sessions in DBT, these were defined as sessions that were either no-shows or ones that were cancelled on the day of the appointment. This is also the official definition of appointments classified as DNAs by the electronic file database used within the child and adolescent mental health services concerned. However, in practice clinicians do not always use this definition, and logging of such appointments can be inconsistent. Any group session that the young person did not attend, from the point at which they were scheduled to begin group sessions, until they graduated or dropped out of treatment, was counted as a missed group session. As can be seen from this, participants in DBT attended substantially more sessions overall. The mean percentage of individual sessions not attended from all scheduled individual sessions was 9 per cent for young people receiving DBT, and 29 per cent for young people receiving usual care.

The mean number of scheduled individual sessions was 24 (SD = 5.8) for DBT participants, and 9 (SD = 6.5) for treatment-as-usual participants. The mean percentage of group sessions not attended was 12 per cent for young people in DBT (SD=15).

**Characteristics of treatment as usual**

Treatment as usual was provided by clinical psychologists, occupational therapists, social workers, family therapists, community alcohol and drug counsellors, and child and adolescent psychiatrists. Based on file review, four participants received both an individual and a family worker.
Based on file review and therapists’ descriptions of the treatment that they provided, five young people received cognitive-behaviourally-oriented individual sessions, two received motivational interviewing focussed on substance use, one received supportive counselling focussing on the young person’s strengths, and the remainder received narrative-oriented family therapy and case management. None of the participants in treatment as usual received a group-based intervention.

**Psychiatric inpatient admissions and respite care**

In the 3 months prior to entering the study, three participants had been admitted to an inpatient unit for psychiatric care, with all of these admissions associated with concerns regarding safety. All three were assigned to DBT. No young people assigned to treatment as usual were admitted to hospital for psychiatric treatment during pre-treatment, or subsequent assessment periods. Table 5 shows the number of nights spent in a psychiatric unit for each participant who underwent an admission for each assessment period. As can be seen from this, only one young person underwent further admissions to a psychiatric unit during the treatment phase. As part of this young person’s discharge plan from hospital during pre-treatment, there was an arrangement whereby the young person or their family could contact the unit and request respite any time that they felt it was needed.

**Table 5: Nights in a psychiatric inpatient unit for participants who underwent psychiatric admissions**

<table>
<thead>
<tr>
<th>Treatment condition</th>
<th>Pre-treatment</th>
<th>Mid-treatment</th>
<th>Post-treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant A</td>
<td>37</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>Participant B</td>
<td>45</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Participant C</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Three participants stayed in respite care during the course of the three assessment periods. One treatment-as-usual participant stayed 7 nights in respite care during the 3 months prior to entering the study. Another treatment-as-usual participant stayed 22 nights in respite care during the second assessment period. Finally, the first DBT participant was transferred from hospital to respite care, and stayed there for 15 nights before beginning DBT.

**Self-harm**

Figure 4 shows the percentage of participants attempting suicide in each condition for each assessment period. As can be seen from this figure, the proportions of young people attempting suicide dropped over time for both conditions, and smaller numbers of young people in the treatment-as-usual condition reported attempting suicide at assessment periods 2 and 3. Nine young people in each condition reported attempting suicide one or more times in the 3 months before treatment. Across the following 3 to 4 month period, three of the young people in the DBT condition reported suicide attempts, and young people in the treatment-as-usual condition reported making no attempts. Across the next 3 to 4 months, two young people in DBT reported making further attempts, and one young person in treatment as usual reported making a further attempt.
Figure 4: Percent of participants attempting suicide for each condition and assessment period

![Figure 4: Percent of participants attempting suicide for each condition and assessment period](image)

Figure 5 shows the box plots for non-suicidal self-injury frequencies for each assessment period, by condition. As can be seen from this figure, there is substantial variation in the number of times young people reported hurting themselves on purpose without suicidal intent, and this is most pronounced for the first 3 months, particularly for participants who were subsequently assigned to DBT. In general, the median frequencies of self-injury acts drop over time for both conditions, and there is considerable overlap between conditions.

![Figure 5: Box plots for non-suicidal self-injury acts across each assessment period by condition. For treatment as usual, n = 15 for all assessments, and for dialectical behaviour therapy, n = 14 for assessment 1, and n = 13 for subsequent assessments.](image)
Emergency admissions for self-harm

Five participants in treatment as usual, and four participants in DBT were medically treated in an emergency department for self-harm in the 3 months prior to entering the study. Of these, two underwent multiple admissions to ED during this phase, both of whom were assigned to DBT. In the second assessment phase, one client in DBT and one in treatment as usual underwent medical treatment in an emergency department for self-harm. In the third phase, one client in DBT and none in treatment as usual underwent medical treatment in an emergency department for self-harm.

Questionnaire results – suicidality

![Box plots of questionnaire results](image)

Figure 6: Reasons for Living for Adolescents total scores (left panel) and Beck Scale of Suicidal Ideation total scores (right panel) for each condition and time period

Because the total scores, for both domains of the Substance and Choices Scale and the Beck Scale of Suicidal Ideation, were not normally distributed, we have presented box plots rather than means and confidence intervals for the questionnaire results. The left-hand panel of Figure 6 shows the Reasons for Living for Adolescents (RFL-A), and the right-hand panel the Beck Scale of Suicidal Ideation (BSS), for each condition and time period. For the RFL-A, higher scores are equivalent to lower suicidality (i.e. greater importance attached to reasons for staying alive and refraining from suicide), and these scores show a steady increase over time for both conditions, albeit with high variability between participants. Likewise, BSS total scores drop over time for both conditions, with substantial overlap between conditions.
Figure 7 shows the total scores from Part A (left panel) and Part B (right panel) of the Substances and Choices Scale. Part A of this instrument surveys the breadth and frequency of substance use, whereas Part B is an index of the extent to which substance use interferes with functioning (via items that are linked to DSM-IV criteria for substance abuse). These figures show little evidence of any systematic change over time, or between conditions, for substance use or substance-related problems.

Figure 7: Substance and Choices Scale (SACS) scores for each assessment period and condition. Part A (left panel) shows substance use over time and Part B (right panel) shows extent of substance difficulties over time.

![SACS Scores Graph](image)

Emotion regulation

![DERS Score Graph](image)

Figure 8: Mean total scores for Difficulty with Emotion Regulation Scale (DERS) for each condition over time.
Figure 8 shows the means for the total DERS score of each participant by condition over time, with 95 per cent confidence intervals. Higher scores indicate greater difficulty in regulating emotions. This figure suggests that over time participants in both conditions were reporting fewer problems in regulating emotions.

**DBT therapist characteristics and adherence**

A total of six clinicians provided DBT. One was an occupational therapist, one was a nurse, and the remainder were clinical psychologists. Experience in DBT varied significantly, from 12 years to less than a year (mean = 4.5 years). Years of experience in mental health ranged between 3 and 20 years.

To date, 42 sessions have been coded, and the mean adherence rating is 4.0 (SD = .15, range = 3.7 to 4.4). This mean and variation compares favourably with the most recent randomised controlled DBT trial published by the treatment developer, in which adherence scores ranged between 2.5 and 4.8, with a mean of 4.0 and standard deviations (SDs) of .2 (Linehan et al., 2006b). Just under three-quarters (29/42) of sessions were rated as adherent (a rating of 4 or above is required to reach adherence). Two of the sessions that were rated as non-adherent (both received ratings of 3.9) were earmarked as difficult sessions by the therapists concerned, and were sent through for the purposes of consultation, as well as for adherence coding. To date, analyses have revealed no systematic areas of weakness across therapists, with the exception of one issue highlighted by the coder regarding a recurring problem (to a greater or lesser degree) with first sessions. She noted that the therapists appeared to act as if it were a forgone conclusion that the clients were all already committed to DBT, and in initial sessions that were down-coded, there was often insufficient orientation and commitment to the treatment. She acknowledged that the research orientation and assessment process may well have accomplished some of these tasks already. However, she noted that in DBT the therapist must apply complete orienting and commitment strategies in the first sessions, and refrain from allowing pre-existing knowledge or expectations to taint treatment delivery. There were no indications that adherence ratings varied systematically across treatment sites.

**DBT therapist burnout scores**

Unfortunately, DBT therapists didn’t complete the Maslach Burnout Inventory consistently, and treatment-as-usual therapists, while voicing an interest in participating in this aspect of the research, didn’t respond to invitations to complete the informed consent process and the questionnaires within the requisite assessment timeframes.

Accordingly, we only have data for DBT therapists, and this is incomplete. In total, five Maslach Burnout Inventory forms were filled out prior to treatment, and five forms were filled out at the end of treatment. There were only two participants who completed both the pre and post-treatment Maslach Burnout Inventory forms. The adapted form of the Maslach Burnout Inventory generates indices of burnout across three domains: emotional exhaustion, depersonalisation, and personal accomplishment. For the first two subscales, high scores indicate greater burnout, while for the last subscale, low scores indicate increased burnout.

Table 3 shows the mean scores and standard deviations on each of the three burnout domains for DBT therapists, before beginning treatment with specific clients and on completing treatment with specific clients. At pre-treatment, therapists completed a general form of the burnout measure, and at post-treatment they completed a form that was specific to the client with whom they were finishing treatment.
Table 6: Mean Maslach Burnout Inventory subscale scores for DBT therapists before and on completing treatment with specific clients

<table>
<thead>
<tr>
<th>Treatment condition</th>
<th>Emotional exhaustion</th>
<th>Depersonalisation</th>
<th>Personal accomplishment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-treatment (N = 5)</td>
<td>19.2 (SD = 5.6)</td>
<td>7 (SD = 5.1)</td>
<td>33.4 (SD = 6.1)</td>
</tr>
<tr>
<td>Post-treatment (N = 5)</td>
<td>12.8 (SD = 6.9)</td>
<td>2 (SD = 2.3)</td>
<td>32.6 (SD = 6.1)</td>
</tr>
</tbody>
</table>

Taking normative data for mental health workers as a reference (using the general form of the Maslach Burnout Inventory Human Services Survey), the mean scores were within the average range for this profession at pre-treatment. The mean scores for emotional exhaustion and depersonalisation were within the low range at post-treatment, whereas the personal accomplishment score remained within the average range.

**DBT therapist survey responses**

Therapists were asked to comment on the duration of treatment, the skills manual that was used, the costs and benefits of after-hours phone coaching, the role of family sessions in adolescent and family DBT, and the costs and benefits of having a separate DBT therapist available to coach parents and co-lead family sessions.

A further incentive for taking part in this study was access to adherence coding. Feedback from therapists was unanimous regarding the value of this resource, both for their own skills as a therapist and (when feedback was received in a timely manner) for their clients. Delays in getting coding completed (currently there is only one person based at the treatment developer’s clinic who is in a position to provide adherence rating for this study) and logistical challenges in getting recordings to the US, indicate future research would benefit from having a New Zealand-based coder, who is independent from the therapy team, to provide ratings.

**Family therapy**

Therapists unanimously reported that family sessions made a significant difference in enhancing therapeutic outcomes. Many therapists found that attention to problem-solving, and directly targeting behaviours in their natural environment, facilitated behavioural change for many family members. Family members could receive direct coaching in sessions to be more skilful and effective in their responses to each other. Sessions facilitated skills generalisation, by allowing family members to see the relevance of particular skills to their lives.

Having a separate family therapist was thought to increase the likelihood that accurate information was shared in sessions. There was seen to be less risk of inadvertently environmentally intervening, rather than consulting to the client. When parent–adolescent dialectics arose, there was more freedom for each therapist to attend to coaching their clients’ goals, without fear of being seen as taking sides (this was seen as particularly important when there was high conflict in this relationship). Therapists described feeling less burnt out, as they shared the care of the family and only provided after-hours phone coaching to either the adolescent or the parents. This led to therapists feeling more motivation and compassion when working with the young person, and being more effective in advocating and pushing for change. The primary disadvantages of having two therapists for the family were that this was more resource-intensive, and generated more difficulties in matching appointments with all involved.

The general consensus was that the adolescent, their parents or caregivers, and the individual and family therapist should attend family sessions.
Other sessions may involve parents only, or the whole family including siblings (the caveat in this circumstance was that siblings should not be involved in discussions about self-harm). Deciding who is present in these sessions was done in consultation with the family from the start of therapy.

**After-hours phone coaching**

All therapists found phone coaching to be a necessary and beneficial part of the treatment, which assisted with engagement, problem assessment and solving, and skills generalisation, and provided opportunities to drag out new behaviours. It also increased their feelings of therapeutic effectiveness. Therapists were able to attend to requests for help in the moment and coach participants to engage in more skilful behaviours to solve the problems they were facing. They felt that at times this prevented escalation of behaviours and increased help-seeking behaviour. It supported adolescents in making decisions to deal with difficult situations, and not to act on urges to engage in self-harm or suicidal behaviour, and to do this without the use of respite or hospital admission. It was great to hear good news and to be time efficient with organising appointments. Therapists reported less anxiety about the weekend as they knew that they could have contact.

Being on call was at times difficult. It impacted on decisions therapists made in their social lives (e.g., going places they may not be reached easily), affected family time, and could be tiring. It was difficult to take the time in lieu. The logistics of carrying a phone and being available for calls was at times challenging. Anxiety was common around anticipating contact from clients, and then worrying about client risk and whether at times you had made the right decisions around managing risk.

Not all adolescents and family members used phone coaching. Phone coaching for families was found to improve the relationship, if you were the family therapist. Some commented it had an adverse effect on the individual therapy relationship, if you were the only therapist for a family, as conflict arose around loyalty and whose point of view was most valid. Therapists agreed that phone coaching was sometimes arduous, and that support from the therapy consultation team was essential to help the therapist tolerate challenges when they occurred, and stay focussed and motivated at these times.

**Acceptability of aspects of the treatment**

There were varied opinions about the acceptability of the skills manual. Most therapists found it enhanced treatment effectiveness, as it covered the skills in detail, whereas one described it as “heavy going” (the material was complex for the client group) and suggested a briefer manual with some of the new skills included.

We surveyed opinions about the appropriateness of the length of treatment. For many of the families, particularly those with more complex issues, the treatment was found to be too short and it was suggested that another 6-month round of skills may have been useful. Therapists generally agreed that the end of treatment after 6 months was sudden and arbitrary, and that a gradual reduction in the frequency of sessions was preferred.

The majority of therapists did not feel burnt out during treatment. Factors contributing to feeling overwhelmed at times included travel time, managing the research in addition to other work commitments, and the pressure to get good clinical outcomes within a limited timeframe. The following things were suggested to decrease the experience of burnout: decreased travel time and working from a familiar clinic, having feedback from adherence coding contiguous with the provision of therapy, increased funding for research tasks and therapist time, separate family and individual therapists, and regularly taking time in lieu.
All therapists found taking part in the research beneficial in enhancing their therapeutic effectiveness and confidence. Respondents identified adherence feedback, and supervision from the consultation team and from Dr Alec Miller, as particularly important sources of support and skill development. One of the concluding comments by a respondent noted that: “this research project has been an amazing experience with many challenges, but just as many, if not more benefits…it has made me a more confident and skilled clinician”.

**DBT participants’ focus group feedback about treatment**

This information was collated from the written reports that the consumer advisors provided to the research team, following focus group interviews with participants. As the focus groups were not audio-recorded, it wasn’t possible to conduct any qualitative analyses on this information.

**Skills group**

Overall both the adolescents and their families found participation in the skills group an enjoyable, helpful and positive experience. Joining the group at the start was difficult for many, as sharing information and experiences with people one doesn’t know was reported as challenging. Role-plays were found to be a helpful way to facilitate building relationships within the group.

Parents commented that as time went on they felt more able to share information about their experiences, hear others’ stories and reflect upon them, apply someone else’s common sense to what they were facing, and practice the skills together. They felt less isolated and more supported by the other parents. They appreciated the value of doing the group with their children, and found that following the programme they were all able to communicate more effectively, were more open in discussing their issues and had more insight into their child’s experience. As one person said, “the skills provided us with a common language”, to communicate with their child.

Parents identified reality acceptance, mindfulness and relationship skills as most helpful. Parents touched on how personally helpful taking part in their child’s treatment had been for them.

The young people valued the friendships they made in group sessions, and found that this contributed to their motivation to attend. They experienced feeling accepted and not judged. Participation in group sessions had changed them in some way (although perhaps not as much as they were told would happen at the start of the group). Benefits included becoming more observant, thinking twice before doing something negative, and feeling as though the skills were always in the “back of their heads”, even if they did not always use them. They often found themselves asking what the group facilitator would do in situations. Having fellow participants teaching the skills was particularly effective in helping them retain the information and see how the skills could be generalised for use in their lives. Overall, they found group more useful as time went on.

Skills used most often by young people included breathing, relationship skills, pleasant events scheduling, mindfulness, dialectics, problem-solving, opposite action, use of “and” instead of “but”, distraction and radical acceptance (especially in situations where they were looking forward to something and it couldn’t happen). Having parents in group sessions was particularly difficult for some young people, especially when personal information was discussed by the parent. At times, they felt more time should be spent with their age group instead of with parents.

In general, adolescents and their families were happy with the structure and process of the group. The timing of the group (at 5pm) and length (2 hours) was just right. They enjoyed the clear structure of the group sessions, with the focus on particular topics each week, the food, and the attention to positive reinforcement and praise. Some parents commented that more time for role plays and applying the skills they had learnt would have been beneficial. They all liked the manual.
Participants unanimously commented that homework was the part of group they liked the least. Comments were that it was too long or too boring; that it was frustrating when time was spent on others who had not completed their homework, or when others did not want to share information; and that the attention they received when they did not complete their homework was negative. Both adolescents and their parents found sharing homework difficult, and at times felt restricted in being able to share details. We asked for suggestions as to what may make the homework section easier. Some suggested the word homework be changed so that it didn’t remind them so much of school. All agreed that the time spent on homework review could be shortened, and some suggested breaking into groups to review homework. One idea from the young people was to review homework in individual therapy, as they felt that this would make them more likely to complete it and then explore it in more detail, especially when the issues were too difficult to share in the group setting. They thought this would then leave more time in group sessions for teaching.

The adolescents suggested the following improvements could be made to the skills group: reviewing the skills they would be learning at the start of the programme; teaching crisis survival skills first; and having more freedom to talk openly about strategies to deal with thoughts of suicide and self-harm, as they felt it was like an “elephant in the room” that wasn’t talked about. One person suggested that more emphasis on ways of “liking themselves”, rather than always “changing themselves” would be appreciated.

**Individual therapy**

Young people thought individual therapy was really important and vital to treatment. They liked seeing their therapist, felt understood, and appreciated the openness of sharing information about session changes. Overall, parents found these sessions were very helpful for the adolescents.

**Family involvement**

Adolescents found family sessions mostly helpful, but felt the frequency didn’t need to be once a week, and commented that at times these sessions were opportunities for family members to criticise each other. They liked that parents were made aware that the treatment was for them too.

Parents liked having a mediator (the therapist) in these sessions. Some young people suggested that there be more emphasis placed on fathers being involved. Parents in the early cohort noted that they would have much preferred to have the option of bringing their child’s other parent along to the group sessions from the outset, and noted that while they agreed with extending the family unit from dyads to triads, they thought it subtly reduced the cohesion of the group. About half the parents who didn’t have access to an independent family worker noted that this was something that they really needed. Families in which there was high conflict between the parents and the child were more likely to identify the need for an independent family worker.

**Ending treatment**

We were interested in finding out how adolescents and their families felt about the end of treatment. The general consensus was that ending treatment after the last group session was too sudden. Suggestions were made around individualising plans for gradually phasing out treatment, with sessions dropping in frequency to every two weeks, then three weeks, then monthly or six-weekly before ending. They found it difficult having someone outside the family being so closely involved and then they were gone. Adolescents particularly commented that gradually reducing the frequency of attending group sessions would help them to keep the skills they learnt going in their lives.
Contact between young people outside treatment

One of the primary concerns that has emerged regarding contact between suicidal adolescents is the issue of contagion. Researchers investigating group treatments for self-harming adolescents have asked whether treatment modalities that involve contact with other troubled teens can have mutually negative influences on young people (e.g. Hazell et al., 2009).

DBT has explicit rules governing the nature of contact between group members that are designed to reduce the risk of contagion. These include rules that, “Group members shall not lead each other into temptation”, and, “Group members do not talk about suicidal and self-harm behaviours with each other”. The consumer advisors specifically asked for participants’ views on this, and their recommendations about what should happen if the rules were violated. Responses included pulling individuals aside after group sessions to discuss this, when there were concerns, providing a more in-depth explanation of the risks, and regularly reviewing the group rules with young people. Parents felt that friendships outside of group sessions were supportive and if adolescents behaved inappropriately then this could be addressed individually. Adolescents said that they made some good friends in the group and that this increased their motivation to attend. They reported that they could understand each other and help each other out. They said they were aware of the importance of confidentiality. They agreed that not talking about self-harm was important both in and outside of group, and said that the clearer these guidelines were, the better. Parents suggested that adolescents should be given specific solutions as to what to say if someone else violated this rule.
Discussion

This study set out to examine the feasibility of conducting a full-scale randomised controlled trial comparing DBT with treatment as usual for suicidal New Zealand adolescents and their families. With the treatment phase completed, we have learnt some valuable early lessons about this process, which will contribute significantly to the planning and design of a larger trial.

Acceptability of DBT

Our first objective was to examine the acceptability of DBT for suicidal adolescents, families and clinicians who are providing this treatment in New Zealand. We now have both quantitative and qualitative information about the acceptability of DBT to families and clinicians. Of critical importance is that DBT seemed acceptable to study participants who received this treatment. At 7 per cent, the dropout rate was low, and families attended the majority of scheduled sessions. Across participants, young people attended on average 91 per cent of their scheduled individual sessions, and 88 per cent of group sessions. These dropout and attendance rates compared favourably with those obtained from participants in usual care, indicating that for those who chose to take part in the study, DBT was at least as acceptable as usual care.

The results of focus group feedback indicated that families found the treatment helpful, and were satisfied with what they received. An aspect of the treatment that was particularly attractive to both parents and young people was the opportunities afforded by multi-family group sessions to spend time learning skills with other people with similar experiences. Participants reported that they enjoyed doing shared activities and role plays, and both parents and young people placed a strong value on individual therapy. The aspect of DBT that they liked the least was homework review. However, based on their feedback, this can easily be remedied in ways that would still retain the integrity of the treatment.

DBT also seemed acceptable to clinicians providing the treatment. Therapists were uniformly positive when describing their experiences with the study, and enthusiastic about the benefits of working on the trial, while giving clear and specific descriptions of the challenges. All therapists who provided telephone consultation saw it as being effective for clients, and a necessary component of treatment for this population. All agreed that it was a demanding treatment modality to provide, and that support from the therapy consultation team was essential to help the therapist avoid burnout, to maintain motivation to treat families in the midst of crises, and to enhance therapy skills and capabilities. Unfortunately, due to the large amount of missing data, no conclusions can be drawn from therapists’ burnout scores. However, the data that we do have suggests that levels of burnout were no greater than what would typically be expected for mental health practitioners. One therapist noted that the manual could benefit from being modified for adolescents and families, particularly given that the treatment duration for adults is 12 months, which means that the skills are reviewed twice, whereas adolescents in this study only received one opportunity to absorb a large amount of detailed information in a form that was originally developed for adults.

Therapists identified access to adherence coding as a significant incentive for taking part in this study. Feedback was unanimous regarding the value of this resource, both for their own skills as a therapist and (when feedback was received in a timely manner) for their clients. The discovery that the mean rating and variation compared favourably with adherence data from a major randomised controlled trial was an enormous confidence boost to the clinicians involved. This result also indicates that DBT can be provided to New Zealand adolescents and families in a way that remains faithful to the treatment model, and acceptable to both participants and therapists.

The acceptability of DBT to the general population of young people presenting with self-harm to child and adolescent mental health services remains an open question.
Almost a third of the families (30 per cent) who were oriented to the research project declined to take part. The majority of these (24 per cent of the families who attended an orientation meeting) chose not to participate owing to concerns about the intensity, duration and workload associated with DBT. This is an important issue that affects the how generalisable any findings will be that might emerge from a larger study. The logistical challenges connected with taking part in a DBT programme, for young people with low resources, include finding a means to get to treatment twice a week, having a supportive adult in their life who is willing and able to attend treatment with them, having access to a phone for coaching, and having the time to invest 3 hours or more per week in therapy. As deprivation and low family support are both risk factors for suicide, these are important factors to consider, if we are to make the treatment more available to young people who could benefit from intensive outpatient treatment, but are likely to struggle to access it.

A related problem is the absence of information about the families who declined contact with the research team, after being invited by their Marinoto clinicians to meet with the researchers. It wasn’t possible to collect accurate and specific data on these young people for a variety of reasons. Critical unanswered questions about these young people include how many fell into this category, their demographic characteristics, and their reasons for declining contact. There are two options for solving this problem for future research in this area. One is to develop a protocol that allows members of the research team to make the initial approach to potential participants directly. Another option is to find a means of reducing the barriers and increasing incentives for busy triage clinicians to document this information systematically and accurately.

A comparison of the ethnicity breakdowns for our study, with those of adolescents accepted by the service during the recruitment period, suggest that we under-recruited Māori to the study. Just under 14 per cent of adolescents seen within the services during this time identified as Māori, whereas only one of our participants (3 per cent of our sample) identified as Māori. In total, we saw three young people who identified as Māori for an orientation meeting (6 per cent of the total number of young people referred to the study). Of these, one declined to take part, and another didn’t proceed through recruitment, with the remaining young person consenting and receiving treatment as usual.

Given this small number, and the fact that we didn’t collect data on families who declined contact before seeing the research team, we don’t know whether the low recruitment rate was because Māori families were declining contact when offered this option by their clinicians, or whether they weren’t being offered this option. A further challenge that the services have noted is that Māori are under-represented in their access rates. Certainly, across the country as a whole, the proportion of youth undergoing hospitalisation for self-harm who identified as Māori (23 per cent; Ministry of Health, 2009), was greater than both the proportion of study participants who identified as Māori, and the proportion of adolescents accepted by the Marinoto youth services during recruitment who identified as Māori.

This finding highlights the need to develop recruitment strategies for a larger study that will reduce barriers to participation for specific ethnic groups. One option may be to modify inclusion criteria, so that recruitment can occur in other community contexts, rather than solely from child and adolescent mental health services. This may facilitate recruitment, and also enhance access to the research, and to treatment.

Unfortunately, because none of the DBT participants identified as Māori, it wasn’t possible to obtain feedback from Māori participants about the match between their needs and this treatment. We obtained cultural consultation from researchers with expertise in treating Māori families prior to and during the implementation of DBT. We were advised that ideally such families should not be treated within a mainstream treatment programme. Rather, they should have access to a kaupapa service.
However, if no appropriate service is available, then our programme may be an option, provided that families didn’t end up being the only Māori people in group sessions, i.e. the minimum number of Māori families in the programme at any given time should be two, rather than one, to avoid contributing further to the sense of marginalisation that these families will have experienced (T. Cargo, personal communication, 23rd February 2009).

This suggests that future research should consider over-sampling for Māori (and possibly other ethnic minorities, given that this principle may well apply to other ethnic groups as well), to ensure that group treatments have minority memberships of two rather than one. However, this study doesn’t shed any further light on the issue of the acceptability of DBT to Māori adolescents and families.

Acceptability of randomisation

Our second objective was to establish whether using the method of random assignment to one of two treatment conditions was acceptable within New Zealand child and adolescent mental health services. The Ethics Committee’s response to our study application suggested that the method was acceptable to committee members, provided there was clear evidence that the sites were in support of the study, there was enough information for families to give informed consent to the research, and sufficient planning had been invested in managing possible problems that might occur during the course of the trial.

Putting the issue of whether our findings are generalisable aside, our recruitment rate of 70 per cent compares favourably with other research on suicidal adolescents. The recruitment rate for a recent open trial that targeted adolescents with a recent history of suicide attempts was 82 per cent of all participants who were initially screened, and 67 per cent of all participants who were eligible for the study (Brent, Greenhill, et al., 2009). It’s not clear what the recruitment rate for that study was before its protocol change from a randomised controlled trial to a patient-preference one, but given that the change was prompted by slow recruitment, we can assume it was low. The recruitment rate for the Hazell et al. (2009) randomised trial of Australian self-harming adolescents was just over 52 per cent (45 per cent declined to participate, while the remainder weren’t eligible for the study). Therefore, given the inevitable challenges associated with recruiting suicidal adolescents to treatment outcome research, it seems that the recruitment rate for this study is relatively high. However, given that it took 12.5 months to recruit the 29 participants, across two services, with relatively lenient inclusion criteria, a trial would require multiple sites in order to be sufficiently powered to generate clear findings within a reasonable timeframe.

The services and the families involved seemed to accept randomisation reasonably well. Adolescents and families were willing to consent to this process, the referral rate from clinicians remained steady regardless of the randomisation assignments that had occurred most recently, and no participants withdrew from the study on discovering their treatment assignment. When asked whether they had a preference for one treatment over another, adolescents typically stated either that they didn’t care which treatment they got, or that they wanted DBT. This participant treatment bias may be somewhat unavoidable in a trial that compares a novel treatment with usual care. Arguably, people may be more likely to sign up if they view the novel treatment as an incentive to take part in the research. This bias could be circumvented by comparing two novel treatments, rather than comparing DBT with treatment as usual.

Interestingly, the process of randomisation was personally very painful for the research team. Researchers were acutely aware of the need to communicate strong support for both treatments, and to express, both before and after randomisation, the sincere expectation that the person would do well regardless of which treatment they received, given the influence that expectancies have on health outcomes (Goosens et al., 2005). However, as this was a small trial with low resources, members of the research team had multiple roles.
For some situations, the same person who oriented the family to the study also conducted the assessment screenings, then provided the family with the envelope that informed the young person which treatment they were to receive, and also provided treatment within the DBT condition (which families were made aware of at the point they were oriented to the study).

Inevitably, members of the research team who had extended contact with families prior to randomisation were likely to develop an attachment to the families and a hope that they would be the clinicians who would get to provide that family with treatment. Subsequently, the first author has spoken to other researchers about the challenges of randomisation, in small trials embedded within clinics where there is strong allegiance to a particular treatment. Other clinical researchers have described similar problems, particularly in trials where there are few staff, and therefore the chances that workers who are responsible for randomisation either know, or are in close contact with colleagues who know, participants in either an assessment or treatment context. These dual roles could not have had an impact on randomisation in this study, as the person responsible for randomisation had absolutely no contact with participants, and was based at a university removed from both the treatment sites and the other researchers’ place of work. In addition, randomisation was pre-determined before anyone was screened, with no stratification or other contextual factors affecting treatment allocation.

However, researchers had to manage their responses carefully when treatment assignment was discovered, and this process was an unexpected challenge. This issue highlights the necessity for treatment outcome research to be adequately costed and funded, so that research based within district health boards can occur in partnership with a research organisation, such as a clinical trials unit, with the requisite resources and expertise to ensure that roles are kept separate. At a minimum, the person or people responsible for initial recruitment and screening should not hold treatment roles.

There is some indication that the treatment arms may have been unbalanced (although the numbers are so small and variable that this is not clear). To avoid pre-treatment differences between conditions in a large trial, it may be useful to consider stratification by one or two variables. We had originally thought that involvement with care and protection services should be one of these factors, as in clinical practice we have found this an important mediator of outcome. However, one of our reviewers pointed out that this often raises the chances that a young person will be ineligible for research, as they have insufficient family involvement to take part. This reviewer strongly recommended that randomisation be stratified by gender, as survival analyses have shown that the self-harm repetition rates are far higher for young men, than for young women (Fortune, personal communication, 2010). Accordingly, we recommend that future research stratify randomisation by previous self-harm history and gender.

Acceptability of the assessments

Our third objective was to assess the acceptability of the screening and assessment measures. We wanted to establish how long administration took, and to get information from participants about their experience of the assessment process and how acceptable this was to them. Finally, we wanted to obtain an indication of the retention rate we could expect for a large scale trial.

The whole of the pre-treatment assessment process, from the completion of screens until completion of the initial SASII, took an average of 4.5 hours face-to-face contact with the young person, and a further average of 2 hours with the young person’s parents or caregivers. The feedback that we received from families during the trial was essentially that the assessment was an arduous process that had its benefits, but that it was burdensome for families to complete.

We worked hard to ensure that this screening process could occur at times that were convenient to families, and to ensure that it took place as quickly as possible (given that young people were in treatment limbo from the time they consented to the research, until they were randomised).
Although the diagnostic screen afforded a raft of valuable information, we suspect that the length of the assessment is likely to be unwieldy and ultimately impracticable for a full-scale trial with large numbers of participants. Furthermore, we don’t believe that the assessment burden to participants is worth the information that the screen affords.

Accordingly, we recommend that further research identifies a shorter and less comprehensive diagnostic screen or, if the K-SADS is retained, that consideration be given to administering only the mood and psychotic disorder screens, with a decision tree that states that if the person is endorsing psychotic phenomena, then further screens occur (such as the post-traumatic stress schedule to differentially diagnose hallucinations indicative of emerging psychosis from flashbacks).

Feedback from adolescents and their families, and the relatively low rate of participants who discontinued during the assessment phase (4/33, i.e. 12 per cent), indicated that most were willing to tolerate a lengthy and demanding assessment process at pre-treatment. The majority of participants have consistently attended follow-up interviews. To date, the proportion of participants lost to follow-up is 10 per cent, although, as those young people haven’t officially withdrawn from the study, we hope to maintain contact with them. The services and clinicians at the research sites were supportive of the research, and willing to collaborate with the research team, suggesting that the study itself, and the way it was carried out was acceptable to them.

**Methodological problems that may inform the protocol of a large trial**

Several methodological problems and limitations of the study design provide important information for further treatment outcome research in this area.

There were some indications that DBT participants may have been more accurate during assessments in their reports of self-harm, and this requires further exploration. Any suicide attempts noted in medical or psychiatric reports by DBT participants were matched by their self-report during research assessments. There was one known instance where this wasn’t the case, for a treatment-as-usual participant who presented to the emergency department following an overdose, which was described as a suicide attempt in her medical records, but subsequently denied having made any suicide attempt or self-injury in her following research assessment.

As DBT clients are required to maintain daily logs of therapy targets during treatment, including any incidents of self-harm, their recall of these events is likely to be more accurate than recall without such a requirement. If the self-report of DBT adolescents were more accurate, this would be consistent with research on DBT for adults with opiate dependence, which found that self-reported use by clients in DBT was far more consistent with urinalysis results than the self-reported use by clients in the control condition (Linehan et al., 2002).

A comparison of clinical records with young people’s self-reports may not completely circumvent this problem. Because DBT clinicians are required to enquire about self-harm in each session, and sessions occur weekly while clients are engaged in high-risk behaviours, their notes regarding the occurrence and frequency of self-harm are likely to be more accurate than treatment approaches that don’t maintain a direct focus on these behaviours. Further treatment outcome research on self-harm in adolescents may benefit from supplementing retrospective self-report with assessment tools in real-time, such as Personal Digital Assistants (PDAs) to record these events across shorter timeframes (Nock, Prinstein and Sterba, 2009).

These concerns may have been ameliorated if the assessments had occurred on time. For a sizeable proportion of participants in both conditions, the time between the first assessment and their second was up to 5 months. Delays in assessments almost undoubtedly contributed to difficulties (and potential differences) in recall.
If DBT participants were more likely to remember self-harm, because they had already logged it on a form and discussed it in therapy before reporting it in their research assessment, this effect would be more pronounced with longer times between assessments.

A further problem with the assessments that limits the quality of the findings is the confound between the first and subsequent assessments, with the change in assessors from the principal investigator to another assessor. As noted earlier, the principal investigator conducted all the initial screens and pre-treatment assessments. The primary reason for this was expediency. The time required to complete assessments was much longer than we had originally anticipated and costed for, and we couldn’t afford to fund an assessor for all the time it would take to complete the screens. Furthermore, we needed a person who could be flexible about the timing of assessment appointments, as we wanted to minimise the time that young people at risk of suicide were waiting for treatment assignment. For adolescents who were in school, parents were also understandably concerned about having long appointments scheduled during school time.

Sourcing a clinician with the requisite skills, who would be willing to spend a lot of time outside of working hours for little recompense, and with little notice, was a staffing challenge. In the short-term, it was easier and faster for the one of the investigators to undertake this work. It also offered the benefit of a first-hand perspective on the administration of the screening and assessment measures, and allowed direct observation of the impact of these on participants. Subsequent assessments couldn’t be completed by the principal investigator because once randomisation occurred she was no longer blind to treatment condition. Accordingly, changes in functioning between pre-treatment and the second assessment may be due to time, the change in the assessor, or some other variable that we didn’t observe.

A further concern about the assessments is the risk that providing feedback letters (which summarised the results of the SASII) to the young person and their caseworker after assessments may have influenced participants’ willingness to report self-harm to the assessor. We included this feedback mechanism in the protocol because we were concerned about the ethics of gathering information relevant to risk for young people and not relaying it to their treatment provider. Several parents queried what would happen to information that was gathered and were reassured that the information was passed on to healthcare providers. However we received clear feedback from at least one young person that it wasn’t fair (and in fact was “stupid”) for the assessor to pass this information on to a caseworker, because it meant that the person wouldn’t want to tell the truth in assessments.

This issue requires careful thought, and we have consulted widely. The advice we have been given by several prominent treatment outcome researchers is that it is unusual to communicate assessment results to the treatment team within randomised controlled trials. The collective opinion was that this is a departure from established protocols, which focus on keeping research assessments and research treatments separate. In addition to potentially affecting adolescents’ reports in assessments, these letters may have had an influence on treatment providers’ behaviour. If this occurred, it would limit the generalisability of the findings, because we would be examining not just the impact of the treatments, but also the therapeutic impact of the assessment feedback.

Many of these methodological problems were related to difficulties with funding and staffing. This underlines the point made earlier about the need for any full-scale study to be costed adequately, with funding allocated to dedicated roles for project development and management. The primary areas where we didn’t anticipate costs, and which were therefore underfunded, were the pre-treatment assessments, a clinician available to work with families, and project coordination.
Lessons learned during the course of treatment

Parental feedback regarding parents’ own needs for support, and their experience of family sessions, provides an importance source for reflection. To date, little research has focused specifically on supporting parents, or on the impact of family sessions in DBT, and there are few empirically-based guidelines for the content, process and frequency of such sessions. Discussions in practice papers on this issue tend to focus on one of two approaches to this question.

One involves augmenting DBT with techniques and theory from other therapeutic orientations in family sessions (e.g. Fruzetti et al., 2007). The other involves a careful consideration of the targets in DBT, and an inductive process to identify the effectiveness of DBT skills and therapist strategies in supporting the family to help the adolescent reach their targets and to collectively manage dilemmas that are maintaining high-risk behaviours (e.g. Miller et al., 2007).

Early on, we identified the importance of having an additional therapist for the family to work alongside the individual therapist. We realised that at times it was important to see parents and caregivers independently, to assess and problem-solve issues related to risk, to barriers to helping their child achieve therapy targets, and to the behaviour of the parents that might be interfering with therapy. In particular, individual therapists stated that having an independent clinician available to provide skills coaching to help parents to manage their own distress and burnout, and to provide assistance with decisions in parenting, was invaluable.

It wasn’t possible to provide a separate family therapist for all participants in the DBT condition. In general, individual therapists reported less stress and a greater sense of accomplishment with families for whom they had an additional family worker providing support to parents and directing family sessions. Parent–child conflict was much more difficult to resolve when there was only one therapist working with both the young person and the parents within a family. Trying to target these problems in family sessions without preliminary individual coaching often led to intense distress and few solutions. On the other hand, having the individual therapist meet with the caregivers on their own was typically associated with deterioration in the relationship between the young person and the individual therapist.

Furthermore, it also ran the risk of violating an important principle in DBT that is the “consult to client” principle. This is the notion that, wherever possible, the therapist teaches the client to do tasks for themselves, rather than the therapist doing the task for the client. The tenet is balanced by the acknowledgement that in some (very specific) situations it is necessary or more effective for the therapist to intervene on the client’s behalf in the person’s environment. Even when this is the case, the individual therapist is required to search for opportunities to involve the client in solving their own problems in some way. It is much more difficult (if not impossible) for individual therapists to honour this principle when meeting with other people, without the client present, when the focus of the discussion is the client.

This dilemma runs the risk of either leaving overwhelmed and desperate parents with little support, or a young person feeling sidelined and resentful. Importantly, the family who dropped out of DBT was one for whom there was no independent worker.

These findings suggest that the proposed future study should make provision for an independent family worker for parents of young people in DBT. However, an important intermediate step is required first. Currently, there is little empirical information on specific DBT strategies that are effective in DBT-oriented parent and family sessions. Nor do we have a clear understanding of which behaviours of therapists in these sessions would be classed as adherent and non-adherent to DBT. As we recorded both family and parent sessions in this study, we hope that we can collect adherence data on these. This may illuminate the style and content of strategies that are particularly effective for helping families achieve necessary therapeutic tasks, as well as identify the behaviours that are prescribed and proscribed in DBT family and parent coaching sessions.
This would be an important contribution to the body of information about the adaptation of DBT to adolescents and families, and could contribute to the treatment manual for a larger trial. Given the resource-intensive nature of DBT, it will be important for future research to include an analysis of the cost-effectiveness of this approach.

A major challenge involved managing the end of treatment, and the transition to follow-up care or discharge from service. This is an issue that has serious implications for future research with this population, as trials evaluating a treatment typically involve interventions with arbitrary end-points.

The DBT treatment condition involved 6 months of weekly treatment, with the final session being the week following the end of the skills group. Many clients found this ending of treatment sudden and difficult, despite clear strategies to prepare for ending used by therapists early on in therapy.

Ending was often unpredictably difficult (i.e. clients who didn’t seem to have a particularly strong attachment to the therapy relationship, and voiced pleasure and excitement about ending therapy, were just as likely to experience difficulties associated with treatment ending as those with a demonstrably warm and affectionate relationship with their therapist). After two of our first cohort of participants experienced significant difficulties shortly after completing DBT, we took the approach that most participants should be linked with another clinician, and stay in service for at least a few weeks following discharge from the DBT programme, regardless of their stated preferences, unless there were very compelling indications (e.g. a Global Assessment of Functioning of 70 or more) that they were ready to be discharged. For subsequent participants, this seemed to work well.

A question related to this issue is the optimal duration of treatment for adolescents. Treatment in standardised adult DBT programmes is for 12 months, whereas treatment in Rathus and Miller’s (2002) study occurred across 12 weeks. According to therapists’ observations, there seemed to be significant variation in the duration of treatment required for participants in our study. We suspect that this is partially related to the inclusion criteria used. Because we were investigating the feasibility of the treatment and methodology, we deliberately kept inclusion criteria broad, to accelerate recruitment. This meant that we had a highly heterogeneous sample, as exemplified by the substantial variation in scores on primary outcome measures. Other research has highlighted symptoms of borderline personality disorder as core inclusion criteria. Having an inclusion criterion related to significant emotion dysregulation, and requiring that participants have a history of repeated self-harm, would increase the power of a larger-scale trial. Furthermore, narrower inclusion criteria may provide clearer indications about predictors of need for longer treatment duration. A cost of this is that the population of young people to recruit from would be smaller, and therefore recruitment would inevitably be slower, or have to occur over a larger number of sites.
Conclusion and recommendations

In conclusion, the primary findings of this trial, and our recommendations regarding future research are as follows.

DBT seemed to be acceptable to the adolescents, families and clinicians involved in the treatment.

We don’t have sufficient data on burnout to comment on whether providing DBT was more emotionally taxing than their usual work for child and adolescent mental health workers. Future research will need to find a more streamlined approach to questionnaire completion, as well as treatment-as-usual clinicians who consent to completing questionnaires, in order to answer this question.

In addition, we don’t have an indication on the acceptability of DBT to Māori, as our recruitment rate for young people identifying as Māori was low, and none were randomised to DBT. The issue of how generalisable our findings on acceptability are, to the broader population of young people accessing child and adolescent mental health services following self-harm, also remains an open question. Finding a means to collect data on all of the young people within a service who would be eligible for the study, and the reasons for either not referring the family to the research or the family declining contact, would greatly enhance the information we currently have regarding the generalisability of these findings. To ensure that Māori (and Pacific and Asian) families are adequately represented within future samples, it may be important to develop specific recruitment strategies that are culturally appropriate for these youth, and consider oversampling so that they are not lone minorities within skills groups. It may also be helpful to randomise within these ethnicities, to ensure that they are balanced across conditions, thereby allowing separate analyses of the efficacy of the treatments for these populations.

Families and treatment-as-usual services accepted randomisation. It was important to complete assessment screens as rapidly as possible after a family consented to the research, as taking steps to ensure that the treatment arms are sufficiently balanced is essential for a study evaluating treatment outcomes. Future research should consider stratification by history of self-harm at pre-treatment, and possibly by gender. We also recommend that inclusion criteria are narrower, and possibly include a criterion relating to emotion dysregulation, to increase the study’s power.

The majority of participants completed screens without difficulties. However, these assessments were long and required a lot of effort from participants. We recommend identifying an alternative and less burdensome diagnostic screen, or simply screening specifically for diagnoses that are exclusion criteria.

We also recommend that in future research, feedback from the assessments is not passed on to treatment providers, as the assessment then becomes part of the treatment, which is not the case in clinical settings for either treatment condition. We recommend instead that the protocol we used to manage risk following assessments is adapted, so that there are clearer (and much narrower) criteria to determine when the assessor must pass on information regarding risk to a third party. In most cases, the concerns should be passed on to the young person’s caregiver.

Finally, finding a means of avoiding confounds, associated with differences in recall of self-harm between conditions, is a challenge for future research. The treatment developer’s recommendation about this is to have the young people provide weekly counts of self-harm, which are submitted via web-based servers and are confidential, i.e. not passed on to the treatment teams (M. Linehan, personal communication, 21st October 2009).
There were a number of methodological challenges associated with conducting the research, which would be solved by ensuring that the large-scale trial is sufficiently resourced and staffed to run smoothly. Conducting this research in tandem with a research institution, which has the necessary infrastructure and staff with expertise in the administration of clinical trials, will be important for future research.

Regarding treatment provision, the primary recommendations that emerged from this trial were the inclusion of an independent family worker (which also highlights the need to evaluate the adherence of this adjunct to treatment), and the need to carefully manage treatment endings. There were also some indications that the issue of contagion, as part of group treatment, needed to be managed very carefully, and that rigorous enforcing of the group guidelines with respect to not “leading each other into temptation” was critical. The issue of ending treatment in a research study is a challenging one, and in this population, it may be that tapering is required. This could be achieved by adding 6 weeks of fortnightly individual sessions following graduation from the group session, with a focus on relapse prevention and skills generalisation.
References


