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Preventing mental health symptoms in adolescents using dialectical behaviour therapy skills group: a feasibility study

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ABSTRACT

Previous prevention programmes have largely focused on the emotion regulation strategy of cognitive reappraisal. The present study is a feasibility trial that evaluates a prevention programme that teaches cognitive reappraisal, acceptance and problem-solving strategies. Ninety-six Year 10 high school students were randomly allocated to either the intervention or control condition. All participants completed scales evaluating emotion regulation difficulties, depression, anxiety and anger at baseline, post-intervention and at 6-month follow-up. In addition, the intervention condition completed a workshop evaluation questionnaire at post-intervention that included qualitative items. Mixed models for repeated measures and content analysis were used to analyse the data. Results suggested there were no statistical differences between the conditions although effect sizes suggested a small advantage favouring the control condition. On the qualitative evaluation, however, most participants reported important benefits in relation to improved emotion regulation abilities. These contrasting results are discussed and suggestions made for future research.

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KEYWORDS

Dialectical behaviour therapy; adolescent; mindfulness; school; prevention; randomized controlled trial

Addressing youth mental health problems is an important challenge for many countries. In Australia, young people suffer the highest rates of mental health problems of any other age group (Australian Bureau of Statistics [ABS], 2008). Fifty per cent of adult mental health disorders are estimated to begin by the age of 14 years and 75% by the age of 24 (Kessler et al., 2005). Youth mental illness impacts negatively on individuals and their community. In addition to the personal distress, consequences may include loss of participation in education, which in turn affects future vocational involvement, disengagement from social and family relationships, anti-social behaviour and suicide (Lawrence et al., 2015; McGorry & Goldstone, 2011). Such consequences are not rare in occurrence. For example, suicide is the leading cause of death for Australian youth aged 15–24 years (ABS, 2016). The consequences of mental health problems amongst young people are exacerbated by low help-seeking behaviour in this population (Slade et al., 2009).

Schools are usually the focus for addressing mental health problems in young people because they provide easy access to this population (Hetrick, Cox, Witt, Bir, & Merry, 2016). Interventions can be targeted to those with a mental disorder or elevated mental health symptoms, referred to as 'early intervention', or to all young people irrespective of their pre-existing symptoms, referred to as 'universal

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prevention'. While there are benefits associated with both approaches, universal prevention programmes avoid the need for screening, which requires specialized resources and can stigmatize those allocated to an intervention condition. Furthermore, universal prevention ensures that all young people receive the benefits of an intervention, regardless of levels of symptomatology.

Prevention programmes typically seek to address the aetiology or maintaining factors of mental health problems. One hypothesis that is gaining popularity is that most mental health problems, particularly anxiety, depression, substance-use, eating and personality disorders, are closely associated with poor emotion regulation (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Mennin & Fresco, 2009). Emotion regulation is defined as the ability to monitor, evaluate and modify emotional experiences in order to accomplish one's goals (Thompson, 1994). From this perspective, a mental disorder is the result of the demands of a situation being greater than the individual's emotion regulation skills. For example, if the emotional impact of losing a job is greater than what the person can manage, a depressive disorder may eventuate. Numerous studies have implicated difficulties in emotion regulation in the development and maintenance of mental disorders (Berking & Whitley, 2014). Furthermore, longitudinal data suggest that emotion regulation difficulties precede the development of mental disorders rather than being a consequence of the disorders themselves (Aldao et al., 2010; Berking & Whitley, 2014).

While many existing prevention programmes have sought to teach some form of emotion regulation, to date these have been primarily based on cognitive behavioural therapy (CBT), which focuses on the emotion regulation skill of cognitive reappraisal. Reappraisal encourages individuals to modify their interpretation of a situation in order to change their emotional reaction to it. Research has indicated, however, that there are two other emotion regulation skills with a strong evidence base: 'acceptance' and 'problem-solving', which are not always utilized in prevention programmes (Aldao et al., 2010). Acceptance encourages individuals to focus on the emotional experience with a non-judgemental attitude rather than engaging in avoidance or suppressive behaviours aimed at reducing or avoiding that emotion. Problem-solving addresses the causes of the emotional experience, such as redressing social conflicts. Teaching adolescents multiple emotion regulation strategies may be more effective in preventing mental health problems than focusing on a single skill such as cognitive reappraisal, which may be more relevant to clinical populations (Muran & Motta, 1993).

Dialectical behaviour therapy (DBT) is a therapeutic intervention that instructs individuals in the combination of reappraisal, problem-solving and acceptance-based emotion regulation skills. While DBT has been widely accepted as an evidence-based treatment for borderline personality disorder (Kliem, Kröger, & Kosfelder, 2010; Panos, Jackson, Hasan, & Panos, 2014), it was originally designed to assist individuals with severe emotion regulation difficulties and suicidal behaviour (Robins & Rosenthal, 2011). DBT is delivered over a 12-month period and comprises group-based skills-training workshops, individual therapy, phone support, and supervision for the therapist (Linehan, 1993). While extensive, this time period is necessary given the level of emotion dysregulation that DBT seeks to address. The skills group component is didactic in format and aims to teach a wide variety of emotion regulation skills, which are used in individual therapy sessions. Phone support is used for coaching the individual to use their emotion regulation skills during periods of intense emotional distress.

As a package, DBT has been shown to be effective for suicidal and self-injurious behaviour, anger, substance use and depression in people diagnosed with borderline personality disorder (www.div12.org, Kliem et al., 2010; Panos et al., 2014). Given that emotion regulation is thought to play a central role in many other disorders, researchers have also examined the effectiveness of DBT in non-borderline populations and found that it is effective at reducing anger and aggression (Frazier & Vela, 2014), managing bipolar disorder (Salcedo et al., 2016), attention-deficit/hyperactivity disorder (Hirvikoski et al., 2011), binge eating (Safer, Robinson, & Jo, 2010; Telch, Agras, & Linehan, 2001), bulimia (Safer, Telch, & Agras, 2001), depression (Lynch, Morse, & Robins, 2003) and post-traumatic stress disorder (Bohus et al., 2013). The breadth of disorders DBT has shown to address is likely a reflection of how emotion regulation is an important factor in the aetiology and maintenance of most mental disorders.

DBT has been adapted for adolescents by modifying the content to make it acceptable and engaging for this population (Rathus & Miller, 2015). Amongst adolescents, it has been found to be effective for

those diagnosed with borderline personality disorder (Cook & Gorraiz, 2016), oppositional-defiance disorder (Nelson-Gray et al., 2006), bipolar disorder (Goldstein, Axelson, Birmaher, & Brent, 2007), binge eating disorder (Safer, Couturier, & Lock, 2007), anorexia nervosa and bulimia (Salbach-Andrae, Bohnekamp, Pfeiffer, Lehmkühl, & Miller, 2008) and trichotillomania (Welch & Kim, 2012). There are also a number of research trials that have examined the efficacy of DBT skills group alone, in the absence of the other components. These studies have found that the DBT skills group is effective for managing major depressive disorder, attention-deficit/hyperactivity disorder and binge eating disorder (Valentine, Bankoff, Poulin, Reidler, & Pantalone, 2015). Evidence from meditational research has indicated that the skills group appears to be the key mechanism of change rather than the phone coaching or individual therapy components (Neacsu, Rizvi, & Linehan, 2010).

The central role of emotion regulation in the aetiology of many mental disorders and the substantial evidence of DBT as being an effective tool to teach emotion regulation skills, particularly the skills group component, suggests that it may play a useful role in preventing mental health problems in young people. However, until now, DBT has not been examined in the context of prevention programmes. The present feasibility study was designed to establish the potential utility and feasibility of using a DBT skills group as a prevention programme. An adequately powered outcome study would require approximately 1000 participants (Calea, Christensen, Mackinnon, Griffiths, & O’Kearney, 2009), which requires significant resources. A feasibility study will assist in ascertaining if such a study is indicated and provide information on the design and implementation of such a study. As a feasibility study, an exploratory approach was adopted regarding statistical analyses rather than the testing of pre-established hypotheses. Furthermore, given the small sample size, qualitative data and trends in the quantitative scales were used to provide an indication of the effectiveness of a DBT skills group as a prevention programme for youth.

Method

Participants

Participants were recruited from Year 10 students (equivalent to the 10th grade in the United States) at an Anglican all-girls private high school in Sydney, Australia. The school is a relatively prestigious school by Australian standards with 82% of students attending considered to be of high socio-economic status compared to 25% for other schools in Australia (www.myschool.edu.au). The school is less diverse than other schools in the state with 17% of students coming from a non-English-speaking background compared to 30% for other schools (www.myschool.edu.au). The school performs well academically and falls in the top 5% of schools in the state on a measure of academic success (Australian Curriculum Assessment and Reporting Authority, 2014). From the 105 students enrolled in Year 10 at commencement of the study, 96 participated in the study (91%). To participate, students were required to provide self- and parental-consent and complete the baseline questionnaire battery. All students who completed the questionnaires were accepted into the study (i.e. there were no exclusion criteria). Participants were aged between 14 and 16 years with an average age of 15.5 years. The flow of participants is outlined in Figure 1. There were 46 participants allocated by class to the control condition and 50 allocated to the DBT condition. From the 96 participants, 82% completed the post-intervention questionnaire battery and 93% completed the 6-month follow-up questionnaire battery.

Design and randomization

This feasibility study used a randomized controlled design with a waitlist control condition and a 6-month follow-up period post-intervention. Students were randomly allocated by classes using an Excel random number generator by a school staff member who was independent of the research team. There was no blinding of participants, facilitators or researchers.

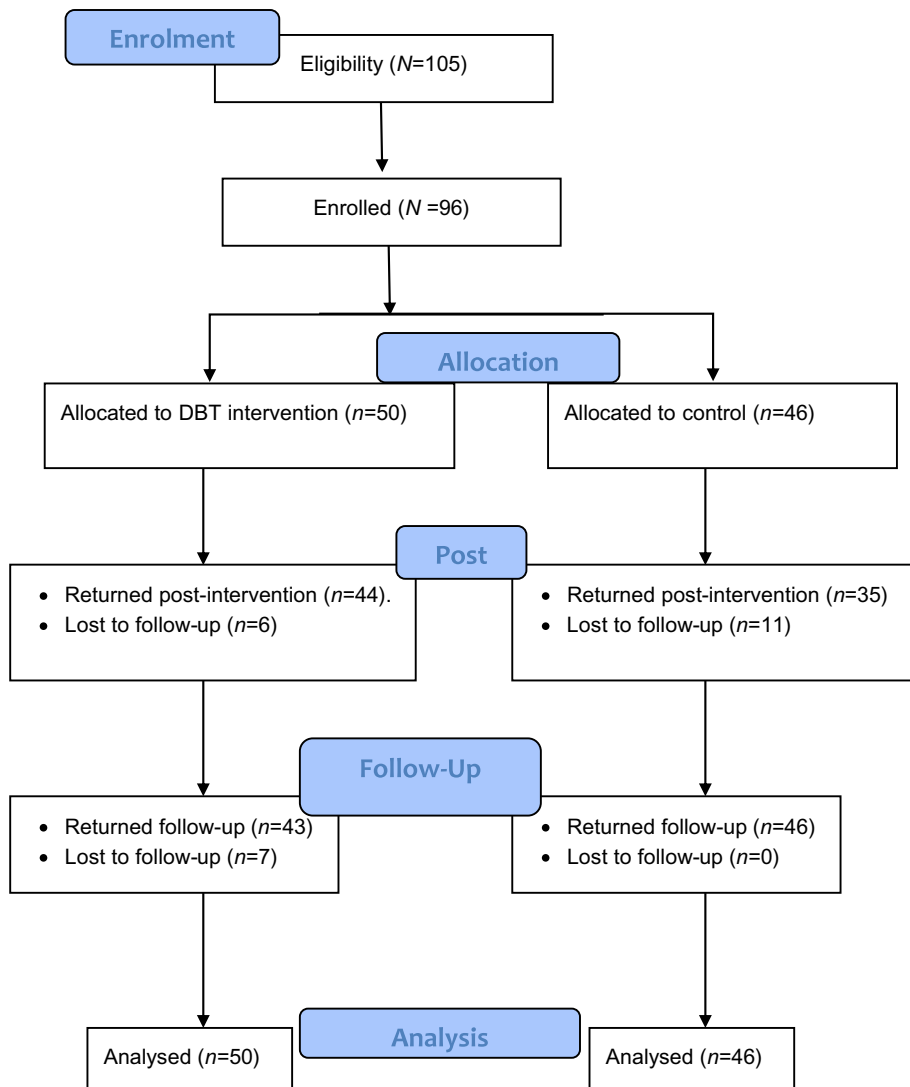


Figure 1. Flow chart of participants' progression through the study.

Interventions

DBT skills group condition

The DBT skills group condition (referred to as the DBT condition) comprised a series of six workshops. The workshops were 50 minutes in duration and the total contact time was 5.0 hours. They were facilitated by the author, RB, who was a clinical psychologist with approximately two years' experience in using DBT and three years as a clinician at the time this study was run. A schoolteacher was also present during the workshops but only as an observer at the school's request. The facilitator received supervision during the workshops by a senior clinical psychologist who specializes in DBT.

The content of the workshops is outlined in Table 1. All four modules of DBT skills group (emotion regulation, mindfulness, distress tolerance and interpersonal relationships) were included in the workshop although only selected components were taught due to time restrictions. This is consistent with how DBT is presented by Marsha Linehan (2015), the creator of DBT, who recognized that not all

Table 1. Workshop components in the DBT condition.

Session	DBT module	Components taught
1	Introduction	(a) Emotions as a cause of behaviour; (b) the biosocial model of emotion regulation; and (c) benefits of emotion regulation
2	Emotion regulation	(a) The basic human emotions; (b) evolutionary function of each basic emotion; (c) the four options available when facing a problem/pain; and (d) Problem-solving
3	Emotion regulation	(a) The model of emotions; (b) common after-effects; (c) regulating emotions using Opposite Action; and (d) regulating emotions through perceptions
4	Mindfulness	(a) Overview of mindfulness; (b) paying attention; (c) non-judgement; and (d) practicing mindfulness
5	Distress tolerance	(a) Overview of distress tolerance; (b) refocusing attention; (c) taking a break; (d) self-encouragement; (e) one thing in the moment; and (f) tolerating distress with temperature, intense exercise, paced breathing and progressive muscle relaxation
6	Interpersonal relationships and sharing	(a) Overview of assertiveness; (b) identifying aggressive, assertive and passive behaviours; (c) benefits of assertiveness; (d) non-verbal communication; (e) barriers to being assertive; and (f) sharing with other participants changes from the workshop

components need to be taught. For the module 'Interpersonal Relationships', assertiveness training was used as it considered to cover the principles of the module in a relatively quick and easy to understand manner. In the final workshop, students were invited to share with other participants things they are doing differently because of the workshops. This served to provide some insight into whether students were benefiting from the material, which parts of the workshop they found most useful, and provided other participants with learning and encouragement from listening to their peers' describe the application of the material to their lives.

During the workshops, the presenter explained the concepts from Table 1 with the support of PowerPoint slides. Personal examples of the concept from the presenter's life were used to illustrate the concepts and participants were asked to share their own examples. For the problem-solving component in session 2, the problem-solving model was applied to a current difficulty of a volunteer participant. For homework, participants were asked to observe and identify these concepts occurring and if possible, practice the skills taught. For the mindfulness session the homework was more directive: participants were given a small portable golf counter and asked to count the number of times they noticed a judgement during a conversation or short period of time.

Control group

For the control condition, students attended their usual classes, which involved learning material regarding future careers. The specific content taught during these classes were: (a) how to write a resume; (b) post-school education options; (c) preparation for work experience; (d) dress etiquette and interview techniques; (e) final preparation for work experience; and (f) feedback from work experience and how to write a formal thank you letter. These classes were of the same duration as the DBT workshops and took place at the same time.

Measures

Difficulties in emotion regulation scale

The difficulties in emotion regulation scale (DERS; Gratz & Roemer, 2004) is a 36-item scale that measures difficulties in regulating emotions. Responses are interpreted as a total score and six subscales: (a) 'Non-acceptance' – the non-acceptance of responses; (b) 'Goals' – difficulties in engaging in goal directed behaviours; (c) 'Impulse' – difficulties in controlling impulses; (e) 'Awareness' – the lack of emotional awareness; (f) 'Strategies' – limited use of emotion regulation strategies; and (g) 'Clarity' – the lack of emotional clarity. Responses are provided on a five-point Likert scale with higher scores indicating greater

emotion regulation difficulties. The scale has demonstrated good psychometric qualities including internal consistency, test–retest reliability and construct validity (Gratz & Roemer, 2004; Tull & Roemer, 2007). Cronbach's alpha for the entire scale is .93 and for the subscales range from .80 to .89 (Gratz & Roemer, 2004). In the present sample, Cronbach's alpha for the total score was .95 and for the subscales ranged from .80 to .93.

Centre for epidemiologic studies – depression scale eight-item version (CES-D 8)

The CES-D 8 is a measure of depressive symptoms designed for the general population (Van de Velde, Levecque, & Bracke, 2009). The eight items of the measure are summated to produce a total score, which can range from 0 to 24. Higher scores indicate greater symptomatology. The CES-D 8 is reported to have good psychometric qualities (Karim, Weisz, Bibi, & ur Rehman, 2015). The Cronbach's alpha in previous studies was between .81 and .85 (Karim et al., 2015; Van de Velde, Bracke, Levecque, & Meuleman, 2010) and in the present sample it was .83.

PROMIS anxiety

The PROMIS-anxiety short form measures emotions related to anxiety such as fear, nervousness, tension, worry and unease (Pilkonis et al., 2011). Seven items rated on a five-point Likert scale ('Never' to 'Always') are based on the previous 7-days with higher scores indicating greater levels of anxiety. Items are summated to produce a single total score. The measure has been found to have sound psychometric qualities (Pilkonis et al., 2011). The Cronbach's alpha was found to be .93 in a validation study (Pilkonis et al., 2011) and .88 in the current sample.

PROMIS anger

The PROMIS-anger short form scale comprises eight items that assess angry mood, negative social cognitions and efforts to control anger (Pilkonis et al., 2011). The scale measures both verbal and non-verbal anger. Responses are based on the previous 7 days and are provided on a five-point Likert scale that ranges from 'Never' to 'Always'. Items are summated to derive a total score. Psychometrics of this measure is reported to be good (Pilkonis et al., 2011). The Cronbach's alpha was .90 in a validation study (Pilkonis et al., 2011) and .92 in the present sample.

Evaluation of programme components

Participants in the programme were asked to rate how useful they found each component of the workshop. The specific wording was

To help us run the program again, we'd like to ask how useful each part of the workshop has been for you. Please rate how useful the following parts of the workshop have been in your life and in helping you manage emotions.

Responses were provided on a seven-point scale from 'Very Helpful' to 'Very Unhelpful'.

Qualitative data

Participants were asked to answer two open-ended questions regarding their response to the programme (Table 2). The first question asked about the perceived benefits of the programme and whether participants were doing anything different as a result of participating. The second question asked whether there were aspects of the programme that they enjoyed and whether they had any suggestions or feedback regarding how the programme could be improved in the future. Participants could provide their feedback anonymously, and answers to each question were handed in separately rather than in a single survey.

Table 2. Programme feedback.

Question 1: Programme Benefits (N = 50)	We'd love to hear, in your own words, how the programme benefitted you overall. Has it helped you in managing emotions? Has been beneficial for any particular areas of your life (e.g. with friends, family, school, etc.)? Are you doing anything differently because of the workshops? We'd love to hear of any benefits you noticed
Question 2: Programme Suggestions (N = 56)	We are interested in ways to improve the programme. To do this, we'd love to hear from you about which aspects that you thought were well done and others that could be improved. This can be about the content, the presenter, the amount of time spent on particular topics, how easy it was to understand, the PowerPoint slides etc. Any suggestions on how to improve the programme are welcomed!

Statistical analysis

The data were analysed with the software package SPSS version 22.0. For the baseline comparisons and dropout comparisons, *t*-tests were used to examine statistical differences between the groups. For the primary analysis, an intention-to-treat approach – mixed models for repeated measures (MMRM), was used to assess whether there were statistically significant differences between the conditions across the three time points on the outcome measures. Tutorial group (class) was used as a random factor and the degrees of freedom were estimated using Satterthwaite's correction (Steel & Torrie, 1980). Cohen's *d* effect sizes were calculated using the difference score between conditions with the formula, d_{ppc2} , from Morris (2008). A positive effect size is indicative of a more favourable outcome for the DBT group (e.g. lower depressive symptoms score), while a negative effect size represents greater improvement in the control condition. Effect sizes were considered 'Small', 'Moderate' or 'Large' if they were between .2 and .49, .5–.79 and .8 or greater, respectively, based on Cohen's (1988) convention.

Qualitative data were coded and analysed by question rather than by respondent, because responses were collected separately. Responses to each question addressed different aspects of the programme. Qualitative data from the feedback forms were analysed and described using content analysis techniques (Neuendorf, 2002). We used a content analysis approach because it is most appropriate to the small sample size and short response format of the feedback data. We used an inductive approach to creating a coding framework (Gibbs, 2007). Two coders (FS, AF) read the responses to each question in order to generate first stage ideas for a coding schema. A preliminary sample of ten responses to each of the two questions were chosen and were coded independently, before meeting to discuss main concepts detected in the data. Similarities and differences in approach were discussed, before agreement was reached regarding a preliminary coding framework, which was then applied to all of the responses. After all responses were coded, with an average of 89% coder agreement, coders met to resolve disagreements in a consistent way. Inter-rater reliability was assessed using the kappa statistics determine coding consistency (Sim & Wright, 2005). This approach to coding enabled us to highlight the parts of the programme that students found most helpful and to identify broad themes in the feedback. Because the responses to the questions were usually brief, relatively standardized and not conceptually rich, the resulting analysis relies on a count of particular responses within the data-set. However, we also provide examples from within these categories, such as examples of specific life changes made as a result of participation in the programme. We ensured rigour of the results by (1) double coding all of the responses; (2) regular discussion of the findings, particularly where coders disagreed; (3) standardized definitions of the codes; and (4) assessing inter-coder reliability for each of the main variables.

Results

The means and standard deviations for the control and DBT group are presented in Table 3. When baseline differences were compared, there were no significant differences with *p* values ranging from .30 to .97. For the variable age, there were also no significant differences ($p = .45$).

Table 3. Means (and SDs) for the control and DBT conditions.

Scale	Subscale	Baseline		Post-intervention		6-Month Follow-up	
		Control	DBT	Control	DBT	Control	DBT
N		46	50	35	44	43	46
DERS	Nonaccept	13.50 (5.71)	12.96 (5.37)	13.94 (6.10)	14.39 (5.81)	14.23 (5.49)	13.59 (6.23)
	Goals	15.74 (5.55)	15.78 (5.10)	14.49 (5.49)	15.41 (4.57)	15.86 (4.64)	14.74 (5.34)
	Impulse	13.41 (6.81)	12.84 (6.19)	11.77 (5.72)	13.30 (5.55)	12.49 (5.39)	12.43 (5.18)
	Aware	16.43 (5.40)	16.20 (3.93)	15.14 (5.81)	15.86 (4.12)	15.21 (4.80)	15.28 (4.90)
	Strategies	19.57 (8.75)	18.48 (7.84)	17.80 (7.46)	16.75 (6.36)	18.30 (7.63)	16.87 (6.80)
	Clarity	10.80 (3.53)	11.08 (3.91)	10.49 (3.38)	10.68 (3.61)	10.72 (3.93)	11.02 (4.06)
	Total	89.46 (27.55)	87.34 (24.00)	83.63 (27.97)	86.39 (23.49)	86.81 (24.95)	83.92 (26.07)
CES-D 8	Total	7.93 (4.51)	6.88 (4.26)	6.65 (4.27)	6.55 (3.79)	13.98 (3.17)	15.15 (4.45)
PROMIS anxiety	Total	17.71 (6.32)	17.63 (4.42)	16.36 (6.45)	18.18 (4.92)	17.79 (6.15)	18.67 (6.87)
PROMIS anger	Total	18.87 (7.91)	18.06 (6.94)	16.67 (6.26)	18.30 (6.65)	18.62 (6.91)	20.73 (7.88)

Table 4 Baseline scores and *t*-test comparison *p*-values for dropouts and completers at post-intervention and at 6-months.

N	Post-intervention			6-month		
	17		<i>p</i> -Value	7		<i>p</i> -Value
	Completer baseline mean (SD)	Dropout baseline mean (SD)		Completer baseline mean (SD)	Dropout baseline mean (SD)	
Age	15.54 (.39)	15.55 (.57)	.98	15.56 (.41)	15.41 (.54)	.38
DERS-nonaccept	13.13 (5.51)	13.65 (5.67)	.73	13.37 (5.62)	11.29 (3.64)	.34
DERS-goals	15.34 (5.21)	17.71 (5.42)	.10	15.74 (5.42)	16.00 (3.56)	.90
DERS-impulse	12.29 (5.87)	16.94 (7.85)	.03*	13.08 (6.49)	13.57 (6.58)	.85
DERS-aware	16.25 (4.59)	16.59 (5.15)	.79	15.97 (4.57)	20.71 (3.73)	.01*
DERS-strategies	18.48 (8.27)	21.41 (8.02)	.19	18.83 (8.29)	21.14 (8.15)	.48
DERS-clarity	10.59 (3.56)	12.59 (4.08)	.04*	10.97 (3.68)	10.71 (4.46)	.86
DERS-total	86.09 (24.62)	98.88 (28.40)	.06	87.96 (25.74)	93.43 (25.77)	.59
CES-D 8	6.89 (4.15)	9.71 (4.88)	.02*	7.22 (4.40)	9.43 (4.12)	.20
PROMIS-anxiety	17.29 (5.37)	19.41 (5.24)	.14	17.49 (5.47)	19.86 (3.80)	.27
PROMIS-anger	17.65 (6.82)	22.06 (8.92)	.03*	18.06 (6.93)	23.29 (11.32)	.27

*Significant at $p < .05$.

Dropout comparison

The participants who dropped out at either post-intervention or at 6-month follow-up were compared on baseline scores and age. The results, presented in Table 4, suggest that participants who dropped out at post-intervention had greater depressive and anger symptoms, and were more impulsive and were less clear about their emotional experience. Those who did not complete the 6-month questionnaires were less likely to be attentive to their emotional experiences. The school provided data on the status of the 6-month dropouts, indicating that all participants who did not complete the 6-month questionnaire had left the school prior to the collection time point.

Effects of the programme

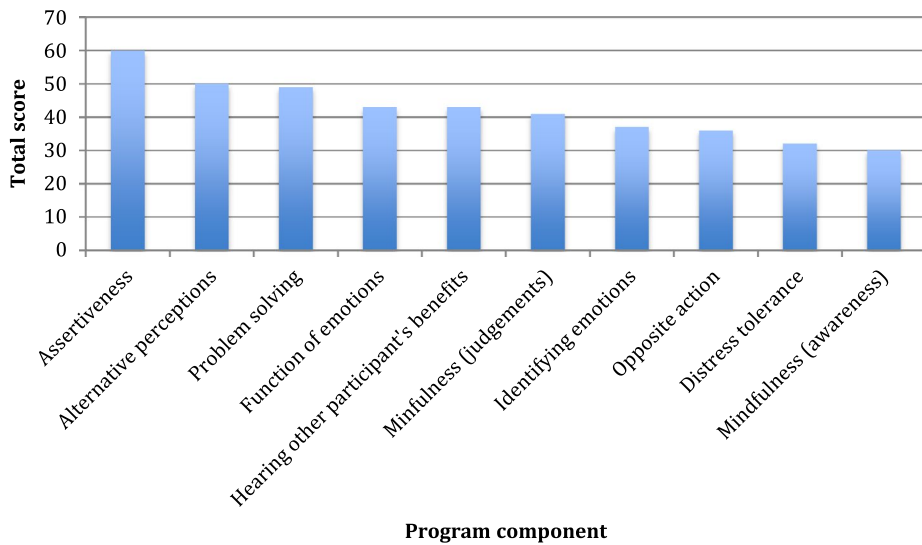
The MMRM analysis results, presented in Table 5, indicate that there were no significant statistical differences between the conditions across the three time points. Effect sizes at post-intervention indicated that were 'Small' improvements for the control compared to the DBT condition in impulsivity, awareness, depression, anxiety and anger. At 6-month follow-up, effect size calculations suggested small effects indicative of greater improvement on goals in the control condition and improvements in depression and anger for the DBT condition.

Results of the evaluation of programme components data

For the evaluation of programme components, each response was coded from -3 for 'Very Unhelpful' to +3 for 'Very Helpful' and summed, with the results presented in Figure 2.

Table 5. MMRM time \times condition results, type III fixed effects and Cohen's *d* effect sizes.

Measure	DF	<i>F</i>	<i>P</i>	Cohen's <i>d</i> pre to post	Cohen's <i>d</i> pre to 6 M
DERS-nonaccept	2105	.41	.67	-.18	.02
DERS-goals	296	1.88	.16	-.16	.22
DERS-impulse	292	1.71	.19	-.32	-.08
DERS-aware	2107	.21	.81	-.20	-.07
DERS-strategies	287	.17	.85	.00	.04
DERS-clarity	292	.00	1.00	.02	-.01
DERS-total	288	1.03	.36	-.19	.03
CES-D 8	272	2.23	.11	-.22	.03
PROMIS-anxiety	285	1.43	.25	-.35	-.18
PROMIS-anger	291	1.81	.17	-.33	-.39

**Figure 2.** Perceived utility of programme components by participants.

Results of the content analysis

Benefits of the programme

This question aimed to encourage respondents to discuss the skills, if any, they had gained in emotion regulation, as well as any more specific benefits or concrete life changes they identified as a result of their participation in the programme. There were 50 responses to this question and responses were coded as follows:

- Whether they were positive (1), negative (2), mixed – i.e. containing both positive and negative feedback (3) or neutral (4)
- Whether they mentioned making concrete changes to their life as a result of the programme (Y/N)
- Whether they mentioned improvements in emotion regulation as a result of the programme (Y/N)
- Recorded the types of 'doing words' they used to describe the emotional skills gained in the programme, owing to variation in how skills in emotion regulation were described by students
- Recorded the emotions they specifically mentioned in relation to skills in emotion regulation

Positive, negative, neutral or mixed

Firstly, we coded for how the programme was evaluated overall in response to this question, and whether their comments were positive, negative, neutral or mixed. It should be noted that the question

Table 6. Participant response to the programme ($N = 50$).

Overall response	%	Count
Positive	74	$n = 37/50$
Negative	12	$n = 6/50$
Neutral	6	$n = 3/50$
Mixed	8	$n = 4/50$

specifically asked students to name any benefits rather than to provide an overall evaluation so the count of positive responses cannot be understood as a representation of people's overall evaluation of the programme. However, 82% (the sum of positive and mixed responses) named a benefit of the programme or a concrete change in their own life as a result of their participation (Table 6). Initial coder agreement was 90%, with a kappa value of .813 ($p < .001$), indicating greater than substantial agreement (Altman, 1991; Sim & Wright, 2005). The remaining 10% were resolved through discussion.

Responses emerging from the request for how the programme benefitted participants fell into the following categories: the discussion of concrete life outcomes or changes, discussion of the acquisition of skills in emotion regulation and a minority of responses indicating that the programme was not helpful to them.

Life changes mentioned

Thirty per cent ($n = 15/50$) of respondents gave a concrete example of life changes they had made as a result of the programme. Initial coder agreement was 86% with the remaining 14% resolved through discussion (Kappa = .77, $p < .001$; indicating substantial agreement). Changes reported ranged from specific life events or actions such as leaving an eating disorder clinic (due to improvement), or downloading a particular app, to the application of skills or strategies in particular circumstances.

Some participants mentioned using strategies in specific circumstances, including at work, before an exam and in their relationships with family and friends. For example, one participant related a particular event at work where someone 'yelled at me for something I had no control over' and used the lessons to stay calm and control their anger. Another related that '[b]efore my mathematics exam I used one of the strategies to put it all in perspective and I think that it really helped'.

They also discussed attempts to make general (rather than specific) changes, such as being more assertive, being more respectful to parents or more patient with friends, using problem-solving, balancing activities to reduce stress, staying calm in stressful situations, practicing mindfulness (three participants) and trying to smile more. These changes were often made with reference to goals of reducing stress and improving interpersonal relationships. For example, people mentioned the skills they developed enabled them to get 'a better perspective on bad marks', and another reduced conflict at home. Others noted overall changes in their outlook, one said the workshops 'helped me have a more positive outlook on my life as a whole' and another said it 'helped me be calmer'.

Emotion regulation

A majority (78%) of responses reported gaining skills in emotion regulation, though they framed this in a variety of different ways. Categories in the emotion regulation content include verbs or doing words for emotion regulation capturing how participants described the skills they gained, particular skills or strategies for emotion regulation and then finally the emotions that participants found the programme helpful to regulate in some way. For these measures, initial coder agreement was 92% with the remainder resolved through discussion (Kappa = .841, $p < .001$, indicating greater than substantial agreement). In our coding and analysis we noted a tendency for respondents to use particular verbs to describe the skills they gaining, including 'identifying', 'managing', 'helping to cope with', 'controlling' and 'overcoming', just to name a few examples. One participant explained that they felt the course 'allows me to identify emotions but not necessarily manage them', while others were confident that the programme 'helped me to manage my emotions a lot'. The most common 'doing word' responses are shown in

Table 7. 'Doing words' for managing emotion and skills and strategies for dealing with emotions.

		Percentage of sample (%)	Number from sample (N = 50)
Doing word	Manage/managing emotions	20	10
	Control/controlling	12	6
	Understand/understanding	12	6
	Cope with/deal with	10	5
	Become aware of/notice	8	4
Skills and strategies	Settle down/calm down/stay calm	14	7
	Think before reacting/acting	12	6
	Think of others' feelings/perspective	6	3
	Mindfulness	6	3
	Perspective	6	3

Table 7. Other respondents said the course provided with them with the capacity to explore or reflect on, express, overcome, accept, identify or release emotions. Beyond the doing words, participants also named specific skills or strategies they now had to use. The most common skills or strategies named are shown in Table 7. Others mentioned the ability to think of other options, increased patience with others, and assertiveness as skills gained in the programme.

Specific emotions

A third theme concerned reference to specific emotions that participants felt they had gained skills in managing. While a narrow majority of 54% ($n = 27/50$) of respondents did not refer to any specific emotions, 62% ($n = 31/50$) used the term 'emotion' generically, and 46% ($n = 23/50$) referred to a specific emotion. 20% ($n = 10/50$) of respondents mentioned the related emotions of aggravation/being aggravated, aggression or aggressiveness, anger ($n = 7/50$) or annoyance in their feedback. Stress and tension were also reported by 10% ($n = 5/50$). Others mentioned anxiety, depression, sadness, non-specified difficulties and being upset as emotions they used the skills taught in the programme to deal with. Some also referred to positive emotions including calmness ($n = 3/50$), happiness ($n = 2/50$) and feeling relaxed as emotions that they programme helped them move towards. It is notable that only two students mentioned sadness or depression, and that anger and aggression was considerably more commonly reported.

Reasons given for neutral or negative responses

Some participants who were either neutral or negative about the benefits of the programme felt this way because they felt the programme was not applicable to them or that they or their peers 'have learnt their own way of managing their emotions' or felt 'there wasn't much that I haven't heard before'. Another felt that 'not much of the information was new to me' in the context of a history of depression and anxiety. Others reacted negatively to the programme because it was 'something our parents tell us'.

Programme feedback

This question sought participant feedback on how the programme could be improved, or aspects of the programme that they felt worked well. Responses to question 2 were coded according to whether students provided specific feedback and what that feedback related to. In total, $N = 56$ responses are recorded for this question, and 96% of respondents provided some form of feedback or suggestion. After responses were inductively coded, we found that they fell into the following categories: time allocation, requests for specific information or content, and mentioning aspects of the experience or delivery that they did or did not like. There was 89% coder agreement with the remainder resolved through discussion (Kappa = .667, $p < .001$, indicating moderately substantial agreement).

About a third of respondents reported that they liked the programme content (29%). For example students liked 'the way the presenter knew and could answer questions about the material presented';

'learning about emotions' and learning about 'coping strategies'. The most common feedback concerned the presenter's handwriting (34%), followed by requests for greater interactivity (32%) and more information or content on mental health issues and how to deal with them (18%). For example, one student said '[I'd] rather we learn more on actual mental health (depression, anxiety, PTSD [etc.]) rather than learn about emotion'. About one in ten (11%) also mentioned that they wanted more examples of real life. There were also comments on the time allocated to different content types, with students feeling there may have been 'too much time spent on emotions' and 'not enough time to learn how to apply it all' with some sections described as 'rushed'. Some students (9%) found it repetitive or asked for 'less recapping' or 'maybe don't go over stuff heaps'.

A related theme was requests for greater interactivity (32%) and less talking (9%): 'needs to be more interactive, less of just talking as that can get boring'. 16% asked for more visual content. In line with this, students responded well to the parts of the course that were interactive, with 11% specifically mentioning these aspects: 'I liked when we were involved and had a chance to understand what we were being taught'. Others mentioned the clickers used as part of the programme (9%) and 'talking about problems' with other students as specific examples of interactivity that they enjoyed. In terms of what students found less enjoyable, 7% mentioned the lack of chairs and being uncomfortable as a result, and this was often related back to their desire for more activities and less sitting. In keeping with this, 14% mentioned the programme being either boring or slow: 'This program is a lot of sitting down'.

Discussion

This study sought to examine the feasibility and acceptability of using DBT skills group as a prevention programme for mental health symptoms in youth, especially anger, anxiety and mood symptoms. The quantitative outcome scales indicated that there were no statistically significant differences between the conditions at either post-intervention or 6-month follow-up. Effect sizes suggested a small increase in symptoms of anxiety, depression, and anger at post-intervention and 6-month follow-up. These quantitative results differed from expectations and from the results from the qualitative analysis. In response to a question on the benefits derived from the programme, 74% participants in the DBT condition described positive benefits (for example that it helped them regulate their emotions or that they were getting less angry) compared with 12% who reported a negative evaluation (for example that they were already aware of these strategies and that the programme did not add teach them anything new).

An examination of the content of these workshops is relevant to interpret these contrasting results. The DBT programme used in this study was heavily based on mindfulness, which promotes the notion of opening up to feelings and becoming more aware of internal processes such as thoughts. Traditional measures of mental health symptoms such as anxiety and depression scales, typically focus on the presence of anxiety or depression symptoms (for example, negative thinking, beating heart, sweating, feeling sad etc.), rather than on the impact of these symptoms on the person's functioning (for example, not completing work or study tasks due to the symptoms). Given that mindfulness encourages opening up to the components of anxiety and depression, it may be that this phenomena is reflected in increased scores on the post-intervention and follow-up responses of participants. However, as the qualitative data suggests, 74% of participants reported a positive benefit compared with 12% who provided negative feedback. The most common benefit described was improved emotion regulation with 78% of participants attributing such changes to the workshop. This suggests that increased symptoms were not accompanied by increased distress or dysfunction, as may be expected. Because emotions in themselves are usually not harmful but rather people's responses to them (e.g. staying in bed), if our hypothesis is correct then participants in the DBT condition were successfully engaging with their internal experiences rather than using unhelpful coping strategies to avoid such emotions. The findings from this study suggest a need for more appropriate measures in mindfulness-based interventions. A measure that assess the impact of emotions and how individuals respond to these would be better suited to a mindfulness intervention rather than scales that are weighted towards to presence of negative emotional states such as sadness and anxiety.

In addition to the results on symptom outcome scales, this study also found a trend favouring the control group on the measure of emotion regulation. This phenomena may be due to the brevity of the intervention. While DBT is typically taught over a longer period (e.g. 2 hours per week for 6 months), the present intervention consistent of only 5 hours. Many of the items of the DERS investigate ability to regulate one's emotions and completing the workshops may have left participants with a greater awareness of what is possible and what they do not know or are able to do effectively. Before participating, they may have felt they could adequately regulate their emotions but the workshops provided them an insight into how much more there is to know about emotion regulation. It may be similar to an introductory course on any subject matter (e.g. a seminar on investment) – people who attend may leave with an insight into the topic but also come to realize how much more there is to learn. Given the qualitative data suggests they learnt better emotion regulation skills, the quantitative data from the DERS alone appears to provide an incomplete picture of the impact of this intervention.

The component of the workshops that was found the most helpful by participants was the assertiveness training. This is likely to reflect: (a) difficulties that adolescents experience in successfully asserting themselves in their relationships; and (b) that relationships are especially important to this age group (Larson & Verma, 1999; Rubin, Bukowski, & Parker, 2006). These findings suggest that it would be important for early intervention and prevention programmes to include a component on managing social relationships. Supporting this notion is a meta-analysis that found better outcomes from prevention programmes based on improving relationships than on those based on CBT alone (Cuijpers, van Straten, Smit, Mihalopoulos, & Beekman, 2008).

The evaluation of this programme also indicated certain parts that participants felt could be improved. Aside from improving the handwriting of the facilitator (which he is working on), the most common recommendation was for greater interactivity. It is likely this is a result of the developmental stage of adolescents' brain, particular in respect to impulse control, concentration, need for stimulation, and difficulties in understanding long-term consequences (Fuller, 2014). It has also been suggested that adolescents learn best when material presented at school evokes emotion and when it is directly relevant to their goals, a trend that appears to be reflected in their request for greater interactivity.

The findings from this study should be interpreted with consideration of the study's limitations. Firstly, only a selected portion of DBT skills group material was used in this feasibility study. Different findings may be obtained if the entire programme was used or other parts selected. Secondly, the sample comprised uniquely of females. Thirdly, the sample was selected from a high socioeconomic school environment. The use of this programme amongst other socioeconomic groups and males remains untested. Finally, one of the qualitative questions emphasized the benefits of the programme and thus may have influenced participants' responses.

Overall this study provides evidence that a DBT-based programme is worthy of further investigation as a prevention intervention. DBT is uniquely placed in that it covers a variety of emotion regulation strategies, unlike other programmes that may only instruct in a single approach to emotion regulation. Further research using a larger sample is indicated, although such a study should be mindful of using appropriate outcome scales that account for the mindfulness component. Further research may benefit in examining which parts of the DBT skills group is most instrumental in providing adolescents the skills they need to deal with life stressors and preventing mental health problems.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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