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Randomized trial of a brief depression prevention program: An elusive search for a psychosocial placebo control condition

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Abstract

This trial compared a brief group cognitive–behavioral (CBT) depression prevention program to a waitlist control condition and four placebo or alternative interventions. High-risk adolescents with elevated depressive symptoms ($N = 225$, M age $= 18$, 70% female) were randomized to CBT, supportive–expressive group intervention, bibliotherapy, expressive writing, journaling, or waitlist conditions and completed assessments at baseline, termination, and 1- and 6-month follow-up. All five active interventions showed significantly greater reductions in depressive symptoms at termination than waitlist controls; effects for CBT and bibliotherapy persisted into follow-up. CBT, supportive–expressive, and bibliotherapy participants also showed significantly greater decreases in depressive symptoms than expressive writing and journaling participants at certain follow-up points. Findings suggest there may be multiple ways to reduce depressive symptoms in high-risk adolescents, although expectancies, demand characteristics, and attention may have contributed to the observed effects.
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Introduction

Major depression is a common, recurrent, and impairing condition that predicts future suicide attempts, academic failure, interpersonal problems, unemployment, substance abuse, and delinquency (Gotlib, Lewinsohn, & Seeley, 1998; Newman et al., 1996; Reinherz, Giaconia, Hauf, Wasserman, & Silverman, 1999). Even subdiagnostic depressive symptoms persist over time and predict onset of psychiatric disorders, inpatient hospitalization, impaired social and academic functioning, and suicidal ideation (Capaldi & Stoolmiller, 1999; Nolen-Hoeksema, Girgus, & Seligman, 1992). Because less than one-third of depressed youth receive treatment (Newman et al., 1996) and those who do often receive ineffective interventions (Weersing & Weisz, 2002), it is crucial to develop prevention programs for this common and debilitating condition.

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Several controlled trials have found that prevention programs based on cognitive–behavioral therapy (CBT) principles produce significantly greater reductions in depressive symptoms than observed in assessment-only control groups in universal prevention trials (Jaycox, Reivich, Gillham, & Seligman, 1994; Shochet et al., 2001; Spence, Sheffield, & Donovan, 2003) and in selected trials that target adolescents at high risk for depression (Clarke et al., 1995, 2001). For instance, Clarke et al. (1995) found that a 15-session group CBT intervention resulted in significantly greater reductions in depressive symptoms from pre to post than observed in assessment-only controls for adolescents with elevated depressive symptoms, though this effect was no longer significant at 12-month follow-up. Spence et al. (2003) found a parallel pattern of effects when an 8-session group CBT universal prevention program that was delivered to all students in the schools. Although CBT prevention programs have produced promising findings, the duration of these interventions makes them challenging to implement in schools. Thus, the first aim of the present study was to develop and evaluate a briefer CBT intervention in the hope that its shorter duration would increase its appeal to adolescents and ease of implementation, facilitating subsequent dissemination.

We developed a targeted intervention because prevention trials for depression, eating disorders, obesity, aggression, and substance abuse suggest that intervention effects are stronger for people with elevated symptoms versus the general population (Horowitz, & Garber, 2006; Stice & Shaw, 2004; Stice, Shaw, & Marti, 2006). Those who are struggling with elevated symptoms may be more motivated to engage in prevention programs and may more easily acquire the intervention skills by applying them to their current experiences. We focused on adolescents with elevated depressive symptoms because this is one of the most potent risk factors for future major depression onset (Lewinsohn et al., 1994; Stice, Hayward, Cameron, Killen, & Taylor, 2000; Weissman, Fendrich, Warner, & Wickramaratne, 1992), this population has been found to respond to CBT prevention programs (Clarke et al., 1995), and subdiagnostic depression is common (Roberts, Andrews, Lewinsohn, & Hops, 1990). Our intervention focused on reducing negative cognitions and negative attributions because they are thought to promote and maintain depression (Abramson, Seligman, & Teasdale, 1978; Beck, 1976). Our prevention program also sought to increase the frequency of pleasant activities, based on the notion that initial negative moods prompt a withdrawal from pleasant activities, which exacerbates and perpetuates depression (Lewinsohn, Youngren, & Grosscup, 1979).

The second aim of the trial was to compare the effectiveness of our CBT depression prevention program to several potential placebo control conditions or alternative interventions. This aim addresses an important gap in the depression prevention literature. To our knowledge, only one previous study compared a CBT depression prevention program to an active placebo control condition or alternative intervention. Merry, McDowell, Wild, Bir, and Cunliffe (2004) found that a universal CBT depression prevention program with an interpersonal focus produced significantly greater reductions in depressive symptoms from pre to post than an arts and crafts intervention, though effects faded over follow-up. It is vital to compare prevention programs to placebo or alternative intervention control groups because without such control conditions it is not possible to know whether improvements resulted because of the specific therapeutic procedures theorized to produce intervention effects, general nonspecific effects common to all psychosocial interventions (e.g., attention, therapist competence), or design artifacts (e.g., participant expectancies, demand characteristics). Indeed, the primary method of establishing that an intervention is efficacious is to show that it outperforms a pill or psychosocial placebo or alternative intervention (American Psychological Association, 1995).

Although depression prevention programs have rarely been compared to placebo control groups or alternative interventions, several depression treatment trials have used such comparison groups. CBT treatment for adolescent depression has produced significantly greater pre to post reductions in depressive symptoms than alternative active interventions, such as behavior therapy and nondirective therapy (Brent et al., 1997; Shaw, 1977) and a life skills training intervention (Rohde, Clarke, Mace, Jorgensen, & Seeley, 2004). However, other trials found that CBT treatment did not produce significantly greater reductions in depressive symptoms than relaxation training (Reynolds & Coats, 1986), behavior therapy or non-directive supportive therapy (Jacobson et al., 1996; McNamara & Horan, 1986; Taylor & Marshall, 1977), interpersonal therapy (Hogg & Deffenbacher, 1988), or than pill placebo with clinical management (Treatment for Adolescents with Depression Study Team, 2004). The fact that several treatment trials found that CBT did not significantly outperform placebo control groups and alternative interventions suggests it is vital for depression prevention trials to include these types of control conditions. We acknowledge that

because the present results are from a preliminary trial seeking to identify a placebo (i.e., non-effective) comparison intervention for use in a large-scale efficacy trial of our brief CBT depression prevention program, we had only moderate cell sizes for the various active control conditions.

We evaluated four potential placebo control or alternative interventions that varied along the dimensions that have been theorized to contribute to placebo effects. Because we wanted to examine an active intervention that possessed all of the nonspecific factors of a psychosocial group intervention (e.g., expectancies, attention, and therapist contact), but no CBT content, we included a supportive–expressive group therapy condition. Because we wanted to examine an active intervention that included the content of CBT interventions, but without the non-specific factors, we included a bibliotherapy condition. Because we wanted to examine an active intervention that contained neither CBT content or non-specific therapeutic factors, but involved the same number of visits to the clinic as the active group intervention, we included a lab-based expressive writing condition. Because we wanted to examine an active intervention that did not contain the content or non-specific factors of a CBT intervention, or involve regular visits to the clinic, we included an independent journaling condition. Below, we describe these active control conditions and report results from controlled trials that have evaluated these interventions.

Supportive–expressive group therapy

Following the lead of treatment researchers (Brent et al., 1997; Shaw, 1977), we examined a supportive–expressive group intervention. The goals of non-directive supportive therapy in Brent et al. (1997) were to establish and maintain rapport, provide support, and help the client identify and express their feelings; it did not cover any specific skills from the other treatment conditions. One trail found that by the end of treatment, depression remission rates were significantly greater for CBT (60%) than non-directive supportive therapy (39%), although this effect became non-significant during the 2-year follow-up (Kolko, Brent, Baugher, Bridge, & Birmaher, 2000).

Bibliotherapy

Bibliotherapy, or the prescription of books for the treatment of a disorder, is an inexpensive and accessible medium for intervention delivery. Bibliotherapy has been found to outperform assessment-only control conditions for the treatment of depression for adolescents and adults (Cuijpers, 1997; Gregory, Schwer-Canning, Lee, & Wise, 2004). One study found that CBT bibliotherapy was superior to an assessment-only control condition for adolescents with mild to moderate depressive symptoms through 1-month follow-up (Ackerson, Scogin, McKendree-Smith, & Lyman, 1998). We thought it was particularly important to compare the apparent intervention of choice for the prevention of depression, CBT, to bibliotherapy because the latter is far less expensive to deliver and easier to disseminate.

Expressive writing

We examined expressive writing, based on the work of Pennebaker (1997), in which participants write about issues of emotional significance in three sessions, on the basis that this activity has been found to improve negative affect in adolescents and adults (Koopman et al., 2005; Soliday, Garofalo, & Rogers, 2004). We included this control condition because we found that it did not result in significant decreases in negative affect relative to an assessment-only control condition in a prior prevention trial (Stice, Shaw, Burton, & Wade, 2006).

Journaling

Journaling and other forms of writing have often been incorporated into the psychiatric treatment of adolescents and adults (Stone, 1998; Tyson & Baffour, 2004). Journaling is hypothesized to provide clients with a valuable tool for reflection and contemplation, and to help the client construct a new "story" of themselves and their lives (Stone, 1998).

In sum, the first aim of the present study was to compare the effectiveness of a brief group CBT depression prevention program for youth with elevated depressive symptoms to a waitlist control condition. The second aim of this trial was to compare this brief CBT prevention program to four active control conditions. Consistent with the intent of a dismantling study, two of the control conditions provided selected aspects of the CBT group: CBT skills in bibliotherapy and non-specific therapeutic factors in supportive–expressive group treatment. In the two other active control conditions—expressive writing and journaling—neither training in the presumably beneficial CBT skills nor the non-specific therapeutic effects of treatment with a psychotherapist were provided. Thus, our intent was to provide a rigorous initial evaluation of the factors that may contribute to the effects of a CBT depression prevention programs (e.g., CBT skills, nonspecific factors, demand characteristics, expectancies, attention, and the passage of time).

Methods

Participants

Participants were 225 students recruited from two high schools and one college (70% female; 41% high school students) who ranged in age from 15 to 22 years ($M = 18.4$; SD $= 1.33$) at pretest. The sample was composed of 17% Asians, 6% Blacks, 55% Caucasians, 15% Hispanics, and 7% who specified *other* or mixed racial heritage. Educational attainment of parents, a proxy for socioeconomic status, in our sample (20% high school graduate or less; 20% some college; 34% college graduate; 26% graduate degree) was similar to census data for the county (34% high school graduate or less; 25% some college; 26% college graduate; 15% graduate degree).

Procedures

Participants were recruited using mass mailings and emails, handbills distributed after classes, and posted fliers that invited students between the ages of 15 and 22 experiencing sadness to participate in a trial of an intervention designed to improve current and future mood. Participants interested in the intervention who reported elevated depressive symptoms on an initial screen, the Center for Epidemiologic Studies-Depression (CESD; Radloff, 1977) scale, as operationalized by scores of 20 or above, were invited to complete a more comprehensive pretest survey. Participants with evidence of clinically significant depression, as indexed by a Beck Depression Inventory (BDI; Beck, Steer, & Garbin, 1988) score of 30 or greater ($n = 20$) were excluded and provided with treatment referrals. Cutpoints for inclusion and exclusion were based on research using these two self-report questionnaires as screening tools for adolescent depressive disorders (Roberts, Lewinsohn, & Seeley, 1991). All participants enrolled in the trial were provided with treatment referral information and encouraged to seek treatment at any point during the study if they experienced increased depressive symptoms. If a participant endorsed suicidal ideation on the BDI, project staff called the individual (and parent, if minor) to contract for safety, reiterate the importance of seeking treatment, and provide additional treatment referral information. An emergency response plan was prepared in the event of a suicide attempt being reported in any assessment or group intervention, but was not needed.

Participants were randomly assigned, within blocks created by gender and school, to one of six conditions: (1) CBT group ($n = 50$), (2) supportive–expressive group ($n = 19$), (3) bibliotherapy ($n = 28$), (4) expressive writing ($n = 27$), (5) journaling ($n = 34$), or (6) waitlist control ($n = 67$). Conditions 2–5 were added after the study was underway, which resulted in smaller cell sizes. The CBT and supportive–expressive group interventions consisted of four weekly 1-h sessions that were facilitated by a clinical graduate student and co-facilitated by an undergraduate; groups were composed of 6–10 participants. If a participant missed a session, we conducted a brief (10–15 min) individual session with the adolescent prior to their next session in order to review missed material. Detailed manuals were used for both the CBT and supportive–expressive interventions, which provided session content and verbatim scripts, as well as common problems and suggested solutions. Facilitators were provided detailed, session-by-session didactic training, and facilitators participated in mock groups with lab staff prior to running their first group.

Participants completed a survey at pretest, posttest (1-month later), 1-month follow-up, and 6-month follow-up that assessed depressive symptoms in the past week. If a participant missed a follow-up assessment, efforts were made to conduct a make-up assessment and/or have the adolescent attend the subsequent assessment. Participants were compensated $40 for completing all surveys. Assessments and groups were conducted at the school from which the participant was recruited. The University of Texas Institutional Review Board approved this study and informed consent was collected.

CBT depression prevention intervention

In the design of our brief CBT program (the Blues Group), we drew upon the Clarke et al. (1995) program and our experience with the design of eating disorder prevention programs. Several principles guided the development of our intervention. Didactic presentation was minimized because psychoeducational interventions tend to be less effective than interventions that actively engage participants (Stice & Shaw, 2004). In-session exercises were used that require youth to apply the skills taught in the intervention. We used homework to reinforce the skills taught in the sessions and help participants learn how to apply these skills to their daily life. We also used motivational enhancement exercises to maximize willingness to use the new skills, strategic self-presentation to facilitate internalization of key principles, behavioral techniques to reinforce use of the new skills, and group activities to foster feelings of social support and group cohesion.

Session 1

First, the purpose of the group (overcoming sadness and preventing future sadness) was explained and the session agenda was presented. Second, a get-acquainted activity was used to build group rapport. Next, the emotional and social costs of depression were discussed as a means of motivational enhancement. Participants were then introduced to the consequence, activating event, beliefs (CAB) method for identifying and reducing negative thoughts. Participants checked off their own negative thoughts from a list and shared one of their most frequent negative thoughts. This activity was followed by a discussion of activating events. Participants were asked to record negative thoughts and activating events over the next week on a tracking form. They were also asked to list activities they found pleasurable and to engage in one of these activities before the next session.

Session 2

The costs of negative thinking and homework assignments were reviewed. Participants shared an antecedent that resulted in negative feelings during the past week. Next, there was a discussion and interactive activity about increasing positive thinking. Participants were introduced to the concept of challenging negative cognitions. They shared one negative thought from the past week, which the group challenged. Participants were then asked to write a contract aimed at reducing negative thinking and to select a reward for meeting the goal stated in the contract. For homework, participants identified negative thoughts in vivo once per day and replaced them with positive thoughts. Participants rewarded themselves as per their contract. They also continued filling out their tracking forms and engaged in a second pleasurable activity.

Session 3

This session began with a discussion of the pleasurable activities that participants engaged in and the impact of those activities on their mood. Participants then shared a negative thought from their list, its antecedent, their positive counter-thought, and the reward they earned based on their contract. If they had difficulty with this process, group members helped troubleshoot. For homework, participants continued filling out their tracking forms, used their contract and rewarded themselves for negative thought replacement, and engaged in another pleasurable activity.

Session 4

During the final session, participants checked in regarding their progress with the CAB method. Next, the group discussed how to plan ahead for negative events that might result in negative thinking and depressed mood. Participants brainstormed how to avoid such situations, if possible, and ways to cope with them. They

were given a prevention plan worksheet to complete in session, and were asked to generate both major events and daily hassles that will likely occur. Next, they developed a plan for how they will cope with such an event using cognitive reframing, behavioral activation, and other strategies from the sessions.

Supportive–expressive group intervention

Session 1

Facilitators told participants that the purpose of the group was to provide a forum to discuss feelings in a safe environment, based on the rationale that emotional expression improves mood. Facilitators explained that because each person experiences life and their own feelings differently, participants should refrain from giving advice to one another and instead offer each other support. A get-acquainted activity followed to build rapport. Facilitators then discussed the nature of depression and participants were encouraged to recall ways that their feelings had previously impacted their functioning, such as their sleeping patterns or relationships. The remainder of the session was spent sharing experiences, wherein each participant discussed the reasons they came to the group and how their feelings impact their quality of life. Facilitators actively reflected emotions expressed, rephrased and summarized participant experiences, and encouraged participants to support one another in a similar manner.

Session 2

The second session began with a summary of the first session, including a review of the differences in depressive symptoms and the processes of sharing feelings and providing mutual support. Facilitators solicited feedback from participants regarding how they felt discussing their emotions with a group they did not know and normalized these feelings. Next, participants paired up and discussed how their feelings of sadness came about and processed those experiences. They then summarized their feelings and discussed with the group how their own depression was similar and different from their partner's. The remainder of the session was spent checking in with each participant, to give them an opportunity to discuss any changes in their experiences from the prior session or change in symptoms.

Sessions 3 and 4

The last two sessions were similar to Session 2 and allowed participants the entire session to process their emotional experiences since the prior meeting. They were encouraged to discuss changes in their experiences and symptoms, as well as any emerging problems or worries. As in all sessions within this condition, no direct advice was given, but participants and facilitators actively supported and responded to one another.

Bibliotherapy intervention

Participants in the bibliotherapy condition were given a free copy of the bestselling book by David D. Burns (1980) entitled, *Feeling Good*. The book is a CBT approach to resolving depression and related problems, and is written at a high-school reading level. Topics covered include understanding mood and feelings of sadness, building self-esteem, overcoming feelings of guilt and helplessness, prevention and personal growth, and coping with stress and daily hassles. Participants were told, "This book has been shown to be helpful to some individuals who are feeling sad or depressed. This copy is yours to keep, so feel free to write or highlight in it as you read. You will not be tested on any of the information provided in this book. We encourage you to use this as a self-help resource."

Expressive writing intervention

Participants in this condition were told, "Research has found that some individuals show improvements in mood after writing about their intense emotional experiences. For the next 45 min, please write about your very deepest thoughts and feelings about an extremely important emotional issue that has affected you. In your writing, I'd like you to really let go and explore your very deepest emotions and thoughts. You will be asked to do this three times over the next 3 weeks. On each occasion you may write about the same topic or

about different topics. All of your writing will be completely confidential and will not be read by anyone. Do not worry about spelling, sentence structure or grammar. The only rule is that once you begin writing, continue to do so until your time is up." Participants completed writing sessions in our lab in a quiet, private space.

Journaling intervention

The journaling intervention was similar to the expressive writing condition, and participants were given the same rationale regarding the relation between emotional writing and mood improvement. Instead of writing in the lab, however, participants were given an attractive, hard-cover blank journal, and their choice of pens. They were told that their journal would not be collected or read by anyone, to allow them the privacy to write about whatever they wished. They were not given instructions regarding the frequency or duration of their journal writing, but were told to write during their free time and/or to write at least once per week.

Waitlist control condition

Participants in the control condition were told that it was necessary to observe the changes in mood among individuals who did not receive any intervention. They were offered the CBT intervention at the end of the study.

Measures

Depressive symptoms

The 21-item BDI (Beck et al., 1988) was used to measure of depression symptoms. For each item, participants select among four alternative responses reflecting the increasing levels of symptom severity ($0 =$ no symptom present to $3 =$ severe symptom present). The BDI has acceptable internal consistency ($\alpha = 0.73$–0.95), test–retest reliability ($r = 0.60$–0.90), and convergent validity with clinician ratings of depressive symptoms ($r = 0.75$; Beck et al., 1988). The BDI had an $\alpha = 0.88$ at pretest and a 1-month test–retest $r = 0.72$ in the control group.

Results

Preliminary analyses

We verified that participants assigned to the six conditions did not differ significantly on the BDI, CESD, age, gender, race/ethnicity, or parental education at pretest (p-values > 0.10). Overall, 8% of participants sought some form of treatment during the study, but treatment-seeking rates were not significantly different across conditions (χ^2 [df $= 5$, $N = 225$] $= 1.54$, $p = 0.909$). In the event that a participant missed a session, a brief individual make-up session was scheduled, which functionally resulted in full attendance for the interventions.

The 33 (14%) participants who did not provide complete follow-up data (i.e., posttest, 1- and 6-month follow-up) did not differ from those who provided complete data on any of these pretest variables (p-values > 0.10). However, there was a marginal difference in attrition across condition (χ^2 [df $= 5$, $N = 225$] $= 9.71$, $p = 0.084$); study dropout by the 6-month follow-up was higher in the CBT condition (24%) relative to supportive–expressive (5%), bibliotherapy (14%), expressive writing (0%), journaling (18%), and waitlist conditions (15%). We used full information maximum likelihood (ML) estimation, based on expectation–maximization (EM) algorithm, to impute missing data because this approach produces more accurate and efficient parameter estimates than list-wise deletion or alternative imputation approaches such as last-observation-carried-forward (Schafer & Graham, 2002). It is the recommended strategy for data in which missingness is related to one of the study variables, as was the case within our data because attrition was marginally related to treatment condition.

Intervention effects on depressive symptoms

We first conducted omnibus repeated measures MANOVA models to test whether there was any evidence of differential change in depressive symptoms across conditions. The linear-by-condition interaction was not significant ($F[5/219] = 1.66$, $p = 0.146$), but the quadratic-by-condition interaction ($F[5/219] = 5.05$, $p < 0.001$, $r = 0.32$) and the cubic-by-condition interaction ($F[5/219] = 2.75$, $p = 0.020$, $r = 0.24$) were both significant. The presence of these condition-by-time interactions indicated that it was appropriate to conduct further analyses to probe the nature of the intervention effects. Specifically, we conducted focused follow-up repeated measures ANOVA models that contrasted pairs of conditions at each of the follow-up periods to determine precisely which groups differed significantly from each other and how long these significant differences persisted. In each of these repeated measures models condition was a 2-level between-subjects factor and time was a 2-level within-subjects factor (e.g., pretest to posttest, pretest to 1-month follow-up, and pretest to 6-month follow-up). This is the approach that other investigators have used in the presence of non-linear intervention effects (Gunn, Smolkowski, Biglan, Black, & Blair, 2005). The r statistic is an effect size estimate based on η^2 values reported in the MANOVA; general guidelines suggest that $r = 0.10$, 0.30, and 50 refer to small, medium, and large effects, respectively.

Significant differences between an intervention condition and the waitlist control are shown in bold in the first column of Table 1. As can be seen, CBT participants showed significantly greater decreases from pretest to posttest and from pretest to 1-month follow-up, but not from pretest to 6-month follow-up, compared to waitlist controls. Participants in the supportive–expressive, expressive writing, and journaling condition also showed significantly greater decreases in depressive symptoms than waitlist controls from pretest to posttest, however, these effects were not significant from pretest to 1-month follow-up or from pretest to 6-month follow-up. Bibliotherapy participants showed significantly greater decreases in symptoms relative to waitlist controls from pretest to posttest and pretest to 6-month follow-up, but this effect was not significant from pretest to 1-month follow-up.

Table 1
Results of the repeated measures Anova models testing for differential change across conditions on the beck depression inventory

	Waitlist control			CBT			Supportive–expressive			Bibliotherapy			Expressive writing		
	F(df)	p	r	F(df)	p	r	F(df)	p	r	F(df)	p	r	F(df)	p	r
CBT															
Pre to post	**34.81(1.115)**	**0.001**	**0.48**												
Pre to 1 mo	**9.90(1.115)**	**0.002**	**0.28**												
Pre to 6 mo	2.63(1.115)	0.107	0.15												
Supportive–expressive															
Pre to post	**31.28(1.84)**	**0.001**	**0.52**	0.36(1.67)	0.549	0.07									
Pre to 1 mo	3.30(1.84)	0.073	0.19	0.22(1.67)	0.642	0.05									
Pre to 6 mo	2.99(1.84)	0.088	0.18	0.45(1.67)	0.502	0.08									
Bibliotherapy															
Pre to post	**14.93(1.93)**	**0.001**	**0.37**	0.73(1.76)	0.395	0.10	1.52(1.45)	0.224	0.18						
Pre to 1 mo	3.06(1.93)	0.084	0.18	0.72(1.76)	0.399	0.09	0.07(1.45)	0.786	0.04						
Pre to 6 mo	**8.70(1.93)**	**0.004**	**0.29**	3.06(1.76)	0.084	0.19	0.52(1.45)	0.475	0.10						
Expressive writing															
Pre to post	**17.37(1.92)**	**0.001**	**0.40**	0.97(1.75)	0.328	0.11	2.27(1.44)	0.139	0.22	0.003(1.53)	0.956	0.00			
Pre to 1 mo	1.14(1.92)	0.288	0.11	2.11(1.75)	0.151	0.16	0.60(1.44)	0.442	0.11	0.31(1.53)	0.581	0.08			
Pre to 6 mo	0.01(1.92)	0.930	0.00	1.84(1.75)	0.179	0.15	2.24(1.44)	0.141	0.22	**6.32(1.53)**	**0.015**	**0.32**			
Journaling															
Pre to post	**8.98(1.99)**	**0.003**	**0.29**	**4.50(1.82)**	**0.037**	**0.23**	**5.92(1.44)**	**0.018**	**0.32**	0.95(1.60)	0.335	0.13	1.06(1.59)	0.308	0.13
Pre to 1 mo	2.50(1.99)	0.117	0.16	1.72(1.82)	0.194	0.14	0.38(1.44)	0.543	0.08	0.11(1.60)	0.746	0.04	0.10(1.59)	0.759	0.04
Pre to 6 mo	1.19(1.99)	0.279	0.11	0.06(1.82)	0.803	0.03	0.53(1.44)	0.469	0.10	2.70(1.60)	0.106	0.21	0.85(1.59)	0.360	0.12

Note: Significant effects are shown in bold font.

Table 2
Means and standard deviations for the various conditions on the depressive symptom scale and results from the paired comparisons

Dependent variable	Pretest M (SD)	Posttest M (SD)	1-month Follow-up M (SD)	6-month Follow-up M (SD)
CBT	20.58 (6.55)$_a$	13.14 (8.14)$_b$	12.26 (8.36)$_b$	11.15 (8.22)$_b$
Supportive–expressive	19.95 (5.99)$_a$	11.42 (4.65)$_b$	12.55 (6.04)$_b$	9.21 (5.77)$_b$
Bibliotherapy	20.28 (5.78)$_a$	14.29 (8.12)$_b$	13.47 (7.67)$_b$	8.03 (6.37)$_b$
Expressive writing	18.15 (5.91)$_a$	12.26 (6.58)$_b$	12.51 (7.10)$_b$	11.21 (8.47)$_b$
Journaling	19.76 (6.80)$_a$	15.46 (8.09)$_b$	13.54 (8.42)$_b$	10.75 (6.89)$_b$
Waitlist	19.38 (5.98)$_a$	18.51 (7.02)	15.73 (9.02)$_b$	12.28 (8.45)$_b$

Notes: BDI, Beck Depression Inventory. Means in the same row with different subscripts were statistically significantly different ($p < 0.001$).

We next tested for differential change across time in depressive symptoms for specific pairs of active interventions to determine whether any intervention significantly out-performed the others. CBT participants did not show significantly greater reductions in depressive symptoms relative to participants in the supportive–expressive, bibliotherapy, expressive writing or journaling conditions from pretest to posttest, pretest to 1-month follow-up, or pretest to 6-month follow-up, with one exception: CBT participants did show significantly greater reductions in symptoms relative to journaling participants from pretest to posttest. Supportive–expressive participants similarly did not show significantly greater reductions in depressive symptoms relative to participants in the other conditions, with one exception: they showed significantly greater reductions in depressive symptoms than journaling participants from pretest to posttest. Bibliotherapy participants also generally did not show significantly greater reductions in depressive symptoms relative to the other active interventions, with one exception again: they did show significantly greater reductions than did expressive writing participants from pretest to 6-month follow-up. Participants in the expressive writing condition did not show significantly greater decreases in symptoms than participants in any of the other active interventions. It was noteworthy that the effects that did reach statistical significance were medium to large in magnitude (r's ranged from 0.23 to 0.52)

BDI means and SD across conditions at the various assessment points, as well as the results of follow-up paired t-tests ($\alpha < 0.001$) that tested for differential change within condition are shown in Table 2. Different subscripted letters in a row indicate that participants in that intervention significantly changed on the depression measure between those two assessment points. As can be seen in Table 2, participants in all five interventions had significantly lower BDI scores by posttest, whereas the waitlist participants did not different until 1-month follow-up. Participants in all conditions showed significant reductions in symptoms over time—possibly due partially to regression to the mean effects, as has been observed in prior prevention trials with at risk participants (Clarke et al., 1995, 2001; Spence et al., 2003). However, these results should not be interpreted as testing intervention effects because they do not test whether change in one condition was significantly greater than change in another condition: that question was addressed by the time-by-condition interactions reported in Table 1.

Intervention effects on depressive pathology onset

We also conducted exploratory analyses that tested whether participants in the intervention conditions were at lower risk for showing onset of severe depressive pathology. We computed the rates of severe depression onset, as operationalized as a BDI of 30 or greater at any point during the 6-month follow-up among those with initial BDI scores below 30 (recall that those with BDI scores over 30 were excluded from this trial). We considered these exploratory analyses because models predicting a dichotomous outcome have less statistical power that models focusing on a continuous outcome. A two-by-five χ^2 model indicated that the rates of severe depression onset were not significantly different across condition (χ^2 [$N = 225$] = 7.85, $p = 0.165$). Nonetheless, the rates of onset were considerably lower in the intervention conditions (group CBT = 6.0%;

supportive–expressive = 0.0%; bibliotherapy = 3.7%; expressive-writing = 3.8%; journaling = 6.3%) than in the assessment-only control group (15%). Because the omnibus test was non-significant, we did not conduct any paired contrasts for onset rates.

Discussion

The first aim of this trial was to test whether a brief CBT depression prevention program would outperform a waitlist control group. Results indicated that this 4-session CBT intervention produced significantly greater reductions in depressive symptoms relative to waitlist controls, yet these effects became non-significant by 6-month follow-up. The effect size for pre to 6-month follow-up for the brief CBT intervention relative to waitlist controls ($r = 0.15$) from our trial, though non-significant, was similar in magnitude to the average effect size ($r = 0.14$), which was calculated with meta-analytic procedures, from trials that evaluated longer CBT interventions over a similar follow-up period (Clarke et al., 1995; Clarke et al., 2001; Jaycox et al., 1994; Shochet et al., 2001; Spence et al., 2003). Because moderate cell sizes in the present study (M cell size = 37) limited our statistical power to detect effects, we place greater interpretational weight on the effect sizes than on *p*-values. In addition, the rate of onset of severe depression was 6% in the CBT condition, compared to 15% in the waitlist control condition, although this effect did not reach significance either. Collectively, these results suggest that a brief CBT depression prevention program may be worth following up in more rigorous, larger-scale efficacy trials because a shorter intervention may be more attractive to adolescents, easier to implement, and less expensive to disseminate than longer interventions. Nonetheless, the fact that the effects for both depression outcomes were not significant by 6-month follow suggests that it might be prudent to expand the intervention (e.g., from 4 to 6 sessions).

The second aim of this preliminary trial was to test whether the brief CBT program outperformed several placebo or alternative interventions because virtually no controlled trials have addressed this question. One noteworthy finding was that participants in all of the alternative interventions—supportive–expressive, bibliotherapy, expressive writing, and journaling—also showed significantly greater reductions in depressive symptoms than waitlist controls from pre to post. However, only one intervention produced significantly stronger effects compared to the waitlist control condition by 6-month follow-up: bibliotherapy (though the effects for supportive–expressive relative to the waitlist condition were marginally significant). The average effect sizes for bibliotherapy and supportive expressive interventions by 6-month follow-up were $r = 0.29$ and $r = 0.18$, respectively, which compares favorably to the average effect for the brief CBT intervention evaluated in this trial ($r = 0.15$) and the average effect sizes for the longer CBT programs evaluated in prior trials ($r = 0.14$). These findings represent novel contributions to the literature because, to our knowledge, prior prevention trials have not compared these interventions to a waitlist control condition, but they do echo results from depression treatment trials (e.g., Ackerson et al., 1998).

A second noteworthy finding was that the brief CBT depression prevention program only significantly outperformed one alternative intervention that we evaluated—journaling; it did not outperform any of the other alternative interventions that we examined. It is possible that our CBT prevention program did not produce superior effects relative to these placebo or alternative interventions because it produced smaller effects that the longer CBT prevention programs that have been evaluated in past trials. However, the effect size for change in depressive symptoms relative to the assessment-only control condition ($r = 0.15$) was similar to the mean effect size observed in trials of longer CBT interventions ($r = 0.14$), which seems to imply this explanation is unlikely. It is also important to acknowledge that these null effects may have emerged because we had limited statistical power due to the moderate cell sizes. With average cell sizes of 37, we had a power of approximately 0.80 to detect medium effect sizes ($r = 0.30$) in the repeated measures ANOVA models. It is often difficult to find significant differences between active interventions because the effect sizes are typically small (Kazdin & Bass, 1989), suggesting that these null effects should be interpreted with care. It is possible that CBT might have emerged as significantly superior to the alternative interventions if a larger sample had been used.

With these caveats in mind, it is tempting to speculate on the implications of the present findings. First, the evidence that CBT did not outperform the supportive–expressive intervention may suggest that CBT skills (i.e., the focus on reducing negative cognitions and increasing pleasurable activities) may not be necessary to

produce significant reductions in depressive symptoms in a group intervention. Second, the evidence that a CBT group intervention did not outperform bibliotherapy suggests that the nonspecific factors associated with group-based prevention programs (e.g., group social support, therapist competence and attention) may not be necessary to produce intervention effects for depressive symptoms. Furthermore, the evidence that CBT generally did not outperform either expressive writing or journaling interventions implies that neither CBT-specific skills nor group-based nonspecific factors are necessary to produce significant reductions in depressive symptoms among high-risk adolescents. One interpretation of this pattern of findings is that there are multiple ways to reduce depression, including decreasing negative cognitions and increasing pleasant activity, as well as expressing emotions in a group therapy or writing format. The findings suggest that engaging in any sort of effort to reduce current and future depressive symptoms has a therapeutic benefit, perhaps because it fosters hope for change or increases self-efficacy. A landmark depression treatment trial (Zeiss, Lewinsohn, & Muñoz, 1979) found that cognitive, behavioral activation, and social skills training interventions worked equally well and that all three resulted in improvements in negative cognitions, behavioral activation, and social skills. Zeiss and colleagues concluded that any treatment that provides a rationale, encourages clients to do something based on the rationale, has clients do the activity outside of the treatment session, and attributes improvements to client's skills would be an effective treatment for depression. The same may be true of depression prevention programs. Another interpretation of this pattern of findings is that each set of factors contributes partially to the intervention effects for depression symptoms.

Another noteworthy finding was that the dropout rate was significantly higher in the CBT intervention (24%) than in the supportive–expressive condition (5%) and the expressive-writing (0%) conditions; it was intermediate in the bibliotherapy (14%), journaling (18%), and waitlist control condition (15%). The finding that dropout rates were lowest for two interventions that focused on emotional expression suggests that these types of programs are perceived by participants to be particularly worthwhile. The more structured and potentially demanding format of the CBT intervention may account for the higher dropout rate observed for this intervention. Previous trials of CBT interventions have also had relatively high attrition (Clarke et al., 1995; 28% in CBT group treatment vs. 5% in the assessment-only control condition).

One aim of this preliminary trial was to identify a non-effective or minimally effective active control condition for use in future depression prevention trials. Results suggested that the expressive writing and journaling conditions produced the smallest intervention effects. In addition, there was evidence that CBT and supportive expressive therapy both produced significantly larger effects than the journaling intervention. Collectively, these results suggest that one of these two interventions might be appealing active control groups. However, it may also be useful to compare group CBT to CBT bibliotherapy and supportive–expressive therapy because they can be conceptualized as dismantled aspects of group CBT, with the bibliotherapy delivering CBT-specific skills but no group-based nonspecific factors, and the supportive–expressive group providing non-specific therapeutic factors without a CBT-specific focus. We acknowledge that because it did not contain the density of content found in the CBT intervention, the supportive–expressive group provided participants with much more time for discussing their experiences and reactions. Similarly, if participants read the entire *Feeling Good* book, they would have been exposed to CBT skills in much greater detail than was possible in the four CBT group sessions. Thus, although bibliotherapy and supportive–expressive psychotherapy can be thought of as dismantled aspects of group CBT, each intervention also has unique aspects of its own that were not available in the 4-session CBT prevention intervention.

Limitations

Several limitations should be noted. First, the moderate cell sizes limited our ability to detect small effects. Second, we began randomly assigning participants to the four placebo or alternative intervention conditions after we had begun randomly assigning participants to the group CBT and assessment-only control condition. Although participants assigned to the six conditions did not differ on any study variables, it is possible that the participants differed on other unmeasured variables that may have contributed to the observed outcomes. Third, depressive symptoms were assessed solely by a self-report survey, which is less sensitive than diagnostic interviews (Roberts et al., 1991) and made it impossible to test whether any of these interventions reduced the risk for future onset of major depressive disorder. Fourth, this trial used a relatively brief follow-up, which

limited our ability to detect any effects of the interventions on future increases in depressive symptoms or disorder that tend to emerge in selected prevention trials with longer follow-ups. Fifth, we did not assess perceived credibility of the interventions: differences in credibility might have contributed to the observed effects. For example, the superior performance of bibliotherapy based on a published book may have been a function of its higher credibility relative to group treatments provided by graduate students in a research setting. Sixth, we did not collect fidelity or competence ratings in the CBT and supportive–expressive groups, or data on the adolescents' participation in and understanding of the intervention (e.g., whether participants completed homework in CBT group, read the CBT book, or wrote in their journals), which may also have impacted findings.

Clinical implications

The present findings have several clinical implications. The evidence that the brief CBT depression prevention program produced effects that were similar to those observed for longer CBT prevention programs suggests that it might possible to use briefer interventions than have been evaluated previously. This would facilitate dissemination due to reduced cost and greater ease of delivery in school settings. Additionally, the evidence that attrition was higher for the CBT group than for the supportive–expressive group suggests that it might be advantageous to incorporate aspects of the supportive–expressive intervention into group CBT to improve engagement and retention. However, the evidence that supportive-expressive therapy and bibliotherapy may be as efficacious as CBT depression prevention programs implies that less structured and simpler interventions might be equally effective in reducing depressive symptoms in at-risk populations. Although it will be important to replicate these results, the findings have public health implications because interventions such as bibliotherapy are very inexpensive and easy to disseminate relative to CBT and supportive–expressive interventions, which require skilled therapists.

Research implications

It will be important for future trials to test whether these interventions produce positive effects in a more rigorous trial that uses a large sample, structured psychiatric interviews, assessment of intervention credibility and fidelity, and a longer follow-up. It will be vital to test whether any of these interventions significantly reduces the risk for future onset of major depressive disorder. It would also be useful to test for intervention effects on other clinically important outcomes, such as psychosocial functioning and mental health care utilization. Future studies should also examine the mediators that account for intervention effects, as these should be specific if the intervention models are accurate. For instance, CBT interventions should produce effects by reducing negative affect and increasing pleasant activities, whereas supportive–expressive intervention should produce effects by producing greater emotional expression, perceived social support, and self-acceptance.

With regard to bibliotherapy, it will be important to test whether participants read the book and at what rate (e.g., steadily from the time they first receive it versus only in times of increased stress and dysphoria) and to investigate whether there is a dose–response relation between reading and intervention effects. Future trials should also test whether interventions such as bibliotherapy produce larger intervention effects during follow-up because participants are still engaging in the intervention well after the group interventions have ended. It is also possible that addressing one's problems through reading a book may be an effective intervention for only a distinct subgroup of high-risk adolescents, such as university students, and may not represent an effective prevention intervention for the general population. Future research should examine whether the effectiveness of bibliotherapy is moderated by age and reading ability.

Finally, it would be useful to search for other moderators that identify adolescents for whom the particular interventions are particularly effective, as this may allow interventionists to target the optimal populations. For example, it is possible that the interventions will show weaker effects in the context of comorbid psychopathology, as comorbidity may serve to maintain depressive symptoms. A systematic examination of these research questions will hopefully result in continued improvements in prevention programs for this pernicious disorder.

Acknowledgements

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