Brief report

Prevention of recurrence of major depression among emerging adults by a group cognitive-behavioral/interpersonal intervention ☆

Erin S. Sheets [a],*, Linda Wilcoxon Craighead [b], Alisha L. Brosse [c], Monika Hauser [c], Joshua W. Madsen [d], W. Edward Craighead [e]

[a] Department of Psychology, Colby College, Waterville, ME 04901, USA
[b] Department of Psychology, Emory University, Atlanta, GA 30322, USA
[c] Department of Psychology, University of Colorado at Boulder, Boulder, CO 80309, USA
[d] VA San Diego Healthcare System & Department of Psychiatry, University of California, San Diego, CA 92161, USA
[e] Department of Psychiatry and Behavioral Sciences and Department of Psychology, Emory University, Atlanta, GA 30322, USA

ARTICLE INFO

ABSTRACT

Background: Among the most serious sequelae to an initial episode of Major Depressive Disorder (MDD) during adolescence is the significant increase in the probability of recurrence. This study reports on an integrated CBT/IPT program, provided in a group format, that was developed to decrease the rate of MDD recurrence in emerging adults.
Methods: Participants were 89 young adults who were not depressed at study entry but had experienced MDD during adolescence. Participants were assigned to a CBT/IPT prevention program or to an assessment only control condition and were followed through the first 2 years of college.
Results: Risk for MDD recurrence was reduced more than 50% for the prevention program participants compared to assessment only controls. The intervention also conferred beneficial effects on academic performance for those students who completed the majority of the group sessions.
Limitations: The study included a self-selected sample of emerging adults who were aware of their history of depression. Due to the small sample size, it will be important to evaluate similar interventions in adequately-powered trials to determine if this is a replicable finding.
Conclusions: With 51% of the assessment only participants experiencing a MDD recurrence during the first 2 years of college, these findings support the need for programs designed to prevent MDD recurrence in young adults. The current program, based on IPT and CBT principles, appears to reduce the rate of MDD recurrence among previously depressed emerging adults.

© 2012 Elsevier B.V. All rights reserved.

1. Introduction

Major Depressive Disorder (MDD) is among the most prevalent and debilitating adolescent disorders, with approximately 18% of adolescents experiencing an initial episode (Fergusson and Woodward, 2002; Lewinsohn et al., 1993). Recurrence subsequently remains a threat over the lifespan for those who experience their initial episode during childhood or adolescence (Mueller et al., 1999). Prior investigations suggest that adolescent-onset depression confers a 45–66% chance for MDD recurrence by age 24 (Fergusson and Woodward, 2002; Lewinsohn et al., 1999). Even when it is successfully treated, the risk of subsequent episodes of MDD increases with each recurrent episode (Mueller et al., 1999).

By emerging adulthood (approximately ages 18 to 25), MDD is a major health burden for depressed individuals, their families,

and society (Murray and Lopez, 1997; Pine et al., 1998; Rao et al., 1999). One of the greatest negative impacts of MDD among young adults is on academic performance, similar to the effect of MDD on work performance among older age groups. It is not surprising that a disorder characterized by loss of interest, fatigue, disrupted sleep, and diminished concentration results in poor academic performance relative to ability. Indeed, MDD is the strongest *psychological* predictor of academic failure and the number one psychiatric disorder associated with drop-out from college (Heiligenstein et al., 1996; Meilman et al., 1992; Svanum and Zody, 2001). Although poor academic performance may contribute to distress during college, it also affects the postgraduate and career trajectory of the depressed individual.

It is clear that programs designed to prevent relapses and recurrences of MDD in adolescents and emerging adults are needed. Three general approaches to recurrence prevention have been employed with adult samples and could be tailored to younger groups: maintenance treatments using the same treatment that was used for acute intervention; maintenance treatments employing a different treatment from the treatment

used for acute intervention; and "independent" interventions that are not related to prior treatment and may be used with individuals who never received treatment (for review, see Beshai et al., 2011).

In a classic maintenance treatment study, Frank et al. (1990) used imipramine and Interpersonal Psychotherapy (IPT) to treat to recovery individuals with recurrent MDD. Upon recovery, patients were randomly assigned to five maintenance conditions, two of which included monthly continuation IPT. The combination of maintenance IPT and antidepressant medication (ADM) produced the longest survival time before MDD recurrence. Another maintenance treatment strategy is the use of continuation-phase sessions to sustain treatment effects. Research by Jarrett and colleagues (Jarrett et al. 2001), Vittengl et al. (2009) suggested that continuation-phase cognitive therapy sessions, offered approximately monthly, significantly reduced recurrence of MDD following successful acute treatment with cognitive therapy.

There have been several reports of relapse prevention efforts utilizing the second strategy, i.e., offering an alternative treatment to maintain or enhance acute treatment effects. For example, Paykel et al. (1999) offered standard cognitive behavior therapy (CBT) to patients who had responded to acute treatment with ADM. During the ensuing year, the combination of continued ADM with 16 sessions of maintenance CBT resulted in a lower rate of relapse (29%) than did continuing treatment with medication alone (47%). Fava et al. (1996) compared their form of CBT, "well being therapy", to "clinical management" (CM) following a course of successful treatment with ADM. As has been typical of short-term treatment with ADM, the 4-year relapse rate following termination of medications was 70% in the CM group compared to 35% among the participants who received the additional 10 sessions of Fava's intervention.

Although the results of these recurrence prevention projects using IPT and CBT interventions are largely positive, only 30–40% of depressed individuals seek treatment and only approximately 40% of those seeking treatment are adequately treated (Kessler et al., 2003). Furthermore, only approximately 30% of the adequately treated patients reach remission (Trivedi et al., 2006). Thus, only about 10% of young adults experiencing MDD are likely to be available for maintenance or supplemental relapse programs designed for previously depressed individuals who have received treatment (see Costello et al., 2003).

A more comprehensive approach to the prevention of MDD recurrence would be a program designed for individuals who may or may not have been treated for a previous depression. Such programs could be offered to the entire 18% of young adults who have been previously depressed. In an excellent demonstration of this type of intervention, Clarke et al. (2001), working in an HMO setting, employed a CBT program designed to prevent both first episode and recurrence of MDD. In a 15-month follow-up, this program reduced the rate of episodes of MDD from 28.8% for "treatment as usual" to 9.3%. Fortunately, the college setting offers similar opportunities for widespread intervention and follow-up with at-risk emerging adults. With 68% of high school graduates matriculating in some type of institution of higher education, colleges and universities are a prime location for administering prevention efforts with emerging adults (U.S. Department of Labor, 2011). The present study evaluated an MDD recurrence prevention program offered to previously depressed first-year college students.

One factor that virtually all college students have in common is the considerable transition from high school into college, which typically includes the stress of living in a new environment. Following an IPT model, this life transition creates significant vulnerability to interpersonal issues and resultant depression. Similarly, the stress of the social and academic transition

increases the likelihood of dysfunctional cognitions and consequent negative affect. Because interpersonal difficulties and cognitive dysfunction are both associated with MDD (Ilardi et al., 1997; Hart et al., 2001; Mueller et al., 1999), we developed a program that integrated IPT and CBT principles in a group format for the prevention of MDD recurrence. Discussions of interpersonal issues, cognitive styles, and behavioral deficits were centered on the life transition into college and emerging adulthood. We hypothesized that individuals enrolled in the prevention program would have lower rates of MDD recurrence during the first 2 years of college and would exhibit better academic performance compared to assessment only controls.

2. Method

2.1. Participants

Participants were 89 first-year students at a large, public university in the Western United States. All participants met DSM-IV criteria for past MDD but did not meet criteria for current MDD (American Psychiatric Association, 1994). Exclusion criteria were bipolar disorder, current dysthymic disorder, current substance dependence, past or current primary psychotic disorder, current enrollment in psychotherapy, or current use of antidepressant medication.

All participants entered the study during the fall semester of their freshman year. Prior to participation, all individuals signed written consent forms, and the project was continuously approved by the university's IRB. The baseline assessment was conducted with 147 first-year students, 89 of whom met inclusion criteria. Of the 89 participants, 40 were enrolled in the prevention intervention condition and 49 were enrolled in the assessment only control condition.

3. Measures

3.1. Structured clinical interview for DSM-IV Axis I disorders (SCID)

The SCID (First et al., 1995) is a widely used semi-structured interview that provides current and lifetime diagnoses of DSM-IV Axis I disorders. It was administered at study entry to determine study eligibility and prior or current Axis I disorders. Interrater agreement for MDD diagnosis was good (kappa=0.79) in a randomly selected 20% of the interviews.

3.2. Longitudinal interval follow-up evaluation—modified (LIFE)

The LIFE (Keller et al., 1987) is a semi-structured interview that assesses the longitudinal course of DSM-IV Axis I disorders[1]. Dates of onset and remission of disorders are precisely calculated, making the LIFE an appropriate means of collecting data for survival analyses. The LIFE was administered at 6-, 12-, and 18-months post-baseline to determine the primary outcome variables: MDD recurrence diagnosis, and days survived (from study entry) without a recurrence. The interrater reliability for MDD diagnosis was high (kappa=0.92) in a randomly selected 15% of interviews.

3.3. Beck depression inventory, 2nd edition (BDI-II)

The BDI (Beck et al., 1996) is a 21 - item self - report questionnaire designed to measure the severity of depressive

---

[1] We would like to thank Martin Keller for his permission to modify the LIFE interview.

symptoms over the past 2 weeks. Higher scores indicate greater symptom severity. The BDI has high internal consistency (mean coefficient alpha=0.93 for college students) and test–retest reliability (0.93 for a 1-week interval); strong construct validity also has been demonstrated (Beck et al., 1996).

3.4. Grades

First-year and cumulative grade point averages (GPAs) were obtained under the direction of the university's Vice Chancellor of Student Affairs. GPAs were based on a 4.0 scale, with $A=4.0$, $B=3.0$, $C=2.0$, $D=1.0$, and $F=0$. Participants' GPAs only included grades earned in courses taken at the university. Because GPAs were not available for the end of year 1, first-year GPAs were an average of the 1st and 2nd semester GPAs, assuming that a participant's credit load was equal for each semester. Cumulative GPAs were obtained during the summer of the participants' 4th year at the university.

3.5. Experimental conditions

Individuals participated in one of two experimental conditions: prevention intervention or assessment only.

3.6. Prevention intervention

The prevention intervention program was designed as an integration of IPT and CBT models, which have produced the most efficacious psychosocial interventions for depression (see Craighead et al., 2007). The program consisted of 12 weekly, 90 min group sessions; six sessions were conducted in the last half of the fall semester and six were conducted early in the spring semester.

The prevention intervention program was developed from clinical research, clinical experience, and feedback from pilot groups. The program focused on cognitive and behavioral problems and ameliorative strategies within an interpersonal context. Although the overarching focus of the groups was on participants' common experiences transitioning into college, other IPT themes (e.g., interpersonal role disputes) were also addressed within the program. The intervention program comprised the following sequence of sections: (1) building of group cohesion, education regarding MDD and its recurrence, and explanation of the rationale underlying the program; (2) instruction in cognitive restructuring and presentation of schemata/core beliefs; (3) behavioral skills training, emphasizing interpersonal contexts (e.g., social problem solving, assertion skills training); (4) enhancement of positive adaptation by utilizing the skills learned; (5) instruction in early identification and prevention of depressive symptoms; and, (6) termination.

Six to eight individuals were assigned to each prevention group. Each group had a primary group leader and a co-leader who were either Ph.D. clinicians or advanced doctoral students with considerable clinical training. Group leaders were trained in both CBT and IPT interventions and met regularly for discussion and supervision.

3.7. Assessment only controls

Individuals assigned to the control condition only participated in the assessment sessions. Assessment only participants were permitted to seek treatment elsewhere at any time. They were instructed to call the program director if, at any time, they desired a crisis session or referrals for treatment.

4. Procedure

4.1. Recruitment

For three consecutive years, all matriculating freshmen at the university were mailed a depression screening survey. Respondents who indicated a history of depression were contacted by phone for further screening and explanation of the study aims.

4.2. Baseline assessment and randomization to treatment

Participants were seen individually and were paid $30 for each completed assessment. The baseline assessment was conducted during two 2-h sessions in which participants completed self-report instruments and were interviewed with the SCID. Final decisions regarding study inclusion were made in a weekly consensus conference attended by all clinical interviewers and two experienced Ph.D. clinicians.

All eligible participants recruited in year 1 ($n=32$) were invited to participate in the prevention intervention; those who chose not to participate but agreed to continue with assessments became the assessment only control group of that cohort. The year 2 ($n=30$) and 3 ($n=27$) cohorts were blocked on gender and time since last MDE (less than or greater than 1 year) and then were randomized to either the prevention intervention or assessment only control condition[2].

4.3. Follow-up assessments

Follow-up assessments were conducted at 6-, 12-, and 18-months post-baseline; thus, the first follow-up assessment occurred almost immediately following the completion of the prevention intervention program. Participants completed self-report measures and were interviewed with the LIFE. All interviewers were uninformed regarding the participants' treatment condition. Final diagnoses were determined in a consensus conference.

5. Results

5.1. Attrition

The demographic and clinical characteristics of the 89 participants are summarized in Table 1. The average length of follow-up was 503 days. Seventy-six (85.4%) participants were successfully followed to completion ($n=74$) or experienced a recurrence of MDD prior to dropping out of the study ($n=2$). Individuals who were lost to follow up were less likely to have received treatment for depression prior to study entry (15.4% versus 56.58%), $\chi^2(1, 89)=7.54$, $p=.006$, but were similar to assessment completers on all other baseline characteristics.

Forty participants participated in the prevention intervention; 49 participants were enrolled in the assessment only control condition. The two groups did not differ on baseline demographic or clinical characteristics ($p > .10$; see Table 1). Intervention group completers were defined a priori as participants who completed a minimum of 8 of the 12 intervention sessions, including at least

---

[2] Year 1 was considered the pilot phase of the program when assessment and intervention procedures were finalized (and remained consistent over the following 2 years). The year 1 participants were given the option to participate in the intervention rather than being randomly assigned to condition. In order to determine if the volunteer assignment procedure of year 1 versus the random assignment of years 2 and 3 resulted in baseline differences, comparisons of the two cohort groups were conducted. No significant differences for cohorts were obtained. Therefore, data for the cohorts were combined for the analyses.

Table 1
Baseline sample characteristics.

Variable	Control (n=49) M (SD)	Prevention intervention		Total sample (n=89) M (SD)
		ITT (n=40) M (SD)	Completers (n=19) M (SD)	
Age (years)	18.8 (0.43)	18.7 (0.39)	18.8 (0.38)	18.7 (0.41)
Age of onset (years)	15.5 (2.18)	15.7 (1.77)	15.6 (1.99)	15.6 (2.00)
BDI-II	12.6 (6.35)	10.7 (6.62)	8.5 (6.58)	11.8 (6.50)
	n (%)	n (%)	n (%)	n (%)
Gender				
Female	39 (79.6)	28 (70.0)	14 (73.7)	67 (75.3)
Male	10 (20.4)	12 (30.0)	5 (26.3)	22 (24.7)
Race				
Caucasian	43 (87.8)	35 (87.5)	17 (89.5)	78 (87.6)
Ethnic minority	6 (12.2)	5 (12.5)	2 (10.5)	11 (12.4)
Number of MDEs				
1	29 (59.2)	27 (67.5)	13 (68.4)	56 (62.9)
2	14 (28.6)	10 (25.0)	5 (26.3)	24 (27.0)
3 or more	6 (12.2)	3 (7.5)	1 (5.3)	9 (10.1)
Comorbid Axis I				
Yes	13 (26.5)	10 (25.0)	5 (26.3)	23 (25.8)
No	36 (73.5)	30 (75.0)	14 (73.7)	66 (74.2)
Lifetime Axis I				
Yes	32 (65.3)	25 (62.5)	11 (57.9)	57 (64.0)
No	17 (34.7)	15 (37.5)	8 (42.1)	32 (36.0)
Prior MDD Treatment				
Yes	25 (51.0)	20 (50.0)	10 (52.6)	45 (50.6)
No	24 (49.0)	20 (50.0)	9 (47.4)	44 (49.4)
Suicidality				
Yes	27 (55.1)	27 (69.2)	12 (66.7)	54 (61.4)
No	22 (44.9)	12 (30.8)	6 (33.3)	34 (38.6)

Note: ITT=Intent-to-treat. BDI-II=Beck depression inventory (2nd ed.). MDEs=major depressive episodes; MDD=major depressive disorder. Lifetime Axis I indicates another prior or current non-mood Axis I disorder. Suicidality indicates recurrent suicidal ideation and/or a suicide attempt during a prior MDE.

2 of the last 4 sessions. Of the 40 who were assigned to the intervention program, 19 (47.5%) completed the program. Of note, a majority (17 of 21) of the group dropouts were successfully followed to assessment completion and/or recurrence. Group completers were compared to dropouts on the demographic and clinical characteristics, and the groups differed only on baseline BDI scores. Specifically, intervention completers scored an average of 8.5, compared to 12.8 for noncompleters, $t(38)=2.12$, $p=0.04$.

5.2. Impact of intervention on survival

Of the 89 participants who entered the study, 34 (38.2%) were diagnosed with a new episode of MDD over the 18-month follow-up period. Among the 74 who completed the final assessment, 32 (43.2%) reported a recurrence of MDD (see Table 2). Survival analyses were used to test the primary hypothesis that the preventive intervention would delay and/or reduce the risk of MDD recurrence. The PHREG procedure of the SAS Institute (1999) was used to estimate semiparametric proportional hazards models using the maximum partial likelihood method developed by Cox, 1972 (see Singer and Willett, 1991). Fig. 1 illustrates the estimated survival functions for individuals in the ITT condition and the assessment only control condition. A comparison of the two functions indicated a statistical trend toward difference in MDD recurrence in the predicted direction, $\chi^2(1, 89)=3.19$, $p=0.07$. A risk ratio of 0.527 indicates that the risk for recurrence for the ITT condition was only 52.7% that of the controls, which we consider an important real-life difference.

Table 2
Rate of recurrence in participants who completed the final assessment.

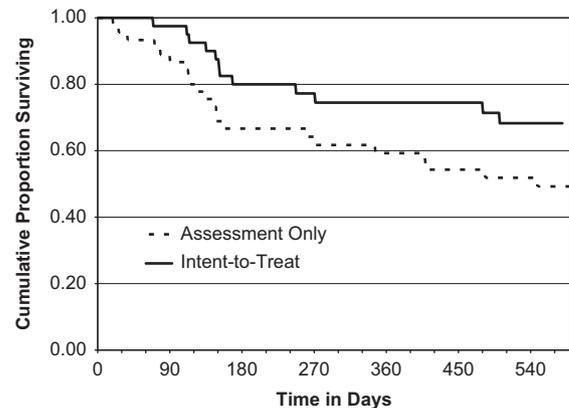|	n	Recurrences (%)
Assessment only	41	21 (51.2)
ITT	33	11 (33.3)
Completers	17	6 (35.3)
Dropouts	16	5 (31.3)
Total sample	74	32 (43.2)

Note: ITT=Intent-to-treat.

Fig. 1. Survival function for the intent-to-treat group and assessment only control group.
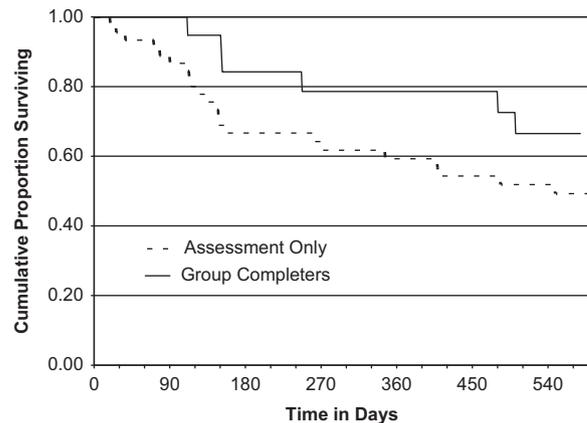

Fig. 2. Survival function for the intervention completers and assessment only control group.

Fig. 2 illustrates the estimated survival functions for individuals who completed the intervention program compared to the control condition. There was not a statistically significant difference between the two groups, $\chi^2(1, 68)=1.90$, $p=0.17$. A risk ratio of 0.529 indicates that the risk for group completers to experience a recurrence of MDD was approximately 53% less than the assessment only control participants, though the smaller sample size of the completer condition prohibited the difference from reaching statistical significance.

5.3. Analyses of GPAs

First-year GPAs of group completers ($M=3.17$, $SD=0.59$) were significantly higher than those of assessment only control participants ($M=2.63$, $SD=0.94$), $t(66)=2.78$, $p=.008$. First-year GPAs of group completers also were significantly higher than those of the participants who did not finish the intervention ($M=2.64$,

SD=0.76), $t(38)=2.44$, $p=.02$. However, the first-year GPAs of the ITT condition ($M=2.89$, $SD=0.73$) were not significantly higher than control participants, $t(87)=1.44$, ns.

The results for the cumulative GPAs paralleled the results for the first-year grades. The cumulative GPAs of group completers ($M=3.11$, $SD=0.61$) were significantly higher than those of control participants ($M=2.71$, $SD=0.85$), $t(66)=2.17$, $p=.04$. The cumulative GPAs of group completers were significantly higher than cumulative GPAs of group dropouts ($M=2.61$, $SD=0.77$), $t(38)=2.25$, $p=.03$. However, the cumulative GPAs of the ITT condition ($M=2.85$, $SD=0.73$) were not significantly higher than control participants, $t(87)=0.81$, ns.

6. Discussion

Among the most serious sequelae to an initial episode of MDD during adolescence is the significant increase in the probability of recurrence over early adulthood (Fergusson and Woodward, 2002; Lewinsohn et al., 1999). This intervention was designed to prevent recurrence of MDD among emerging adults who were depressed during adolescence. The program, based on an integration of IPT and CBT principles, was found to reduce the probability of recurrence by approximately 50%, although the small sample size resulted in only a trend toward statistical significance. It wil be important to evaluate similar interventions in adequately-powered trials to determine if this is a replicable finding. If this prevention approach is reliably efficacious, the impact for college students could be vast as approximately 18% of emerging adults have already experienced diagnosable MDD (Fergusson and Woodward, 2002; Lewinsohn et al., 1993).

Data for the assessment only participants in this study replicated prior findings on depression recurrence in emerging adulthood (e.g., Alloy et al., 2000). Approximately 50% of the control participants had a MDD recurrence during the first 2 years of college. The clinical diagnostic interviews clearly indicated that the MDD episodes were serious and debilitating. At baseline, all participants were diagnosed as having experienced a past MDD, and approximately 64% also met criteria for another lifetime non-mood Axis I disorder, a typical rate of comorbidity among seriously depressed clinical populations (DeRubeis et al., 2005). Participants also reported high rates of suicidal ideation and attempts during their adolescent depressive episode(s) with 61% reporting a history of suicidality.

The other primary finding of this study suggests that an intervention designed to prevent MDD recurrence can have a positive impact on academic performance in a college population. Individuals who completed the prevention program achieved significantly higher GPAs both within the first year and over 4 years of college compared with controls and group dropouts. Because many depressed students drop out of college or perform well below their potential, institutions of higher learning may find prevention programs to be quite cost effective.

There are limitations to the current study. First, this was a self-selected sample of emerging adults who were both aware of their history of depression and were willing to participate in a program regarding their prior MDD. Additionally, there was a fairly high rate of attrition among participants assigned to the prevention program, though the analyses are based on the conservative "intent-to-treat" approach. It will be important to focus on ways to decrease the attrition from future prevention programs. Because it appeared to be difficult for some students to begin group participation, in our subsequent work, we have adopted Heimberg's procedure (see Heimberg et al., 1998) of conducting the first session as an individual session. During that session, the participant is informed of how the group will operate, provided

feedback on individual test and interview results, and given an opportunity to ask questions.

Based on the reports of the group leaders, there are some clinical observations worth noting. It appeared that most of these young adults were having difficulty establishing a typical, meaningful social life for a college freshman. Some had already begun to abuse substances either in an attempt to self-medicate negative affect or to cope with boredom or loneliness. Many of the students reported that the prevention group was their major social interaction, especially during the first semester of college. Providing an opportunity for such interaction, particularly with other individuals who had also been depressed, may have been one of the major values of the program and could be a key mechanism by which the group provided a reduction in MDD recurrence. Second, the group leaders were impressed by the compassion and support that the group members provided for each other. For example, one student's mother died rather suddenly and unexpectedly. Upon the student's return from her mother's funeral, the group members were extraordinarily supportive; this group member wrote to the program director that she would have dropped out of school at that time had it not been for the group support. Future, adequately-powered studies comparing the intervention to a social contact control condition are needed to determine the effective components of this IPT-CBT program. Finally, the group leaders noted that students who appeared to suffer from various gradations of personality pathology created difficulties within the group sessions. This occurred not only with the obvious interpersonal and behavioral difficulties created by varying degrees of narcissistic, histrionic, and borderline personality characteristics, but also resulted from the failure of extremely avoidant individuals to speak very often in the group setting. The small sample size precluded analyses of clinical outcomes due to personality disorder factors. Nevertheless, the clinical impression of the group leaders was that prevention programs may be more effective if different group interventions could be tailored to those individuals with higher levels of Cluster B and Cluster C personality disorder symptoms.

In summary, the current program, based on IPT and CBT principles, appears to reduce the rate of MDD recurrence among previously depressed emerging adults; there was approximately a 50% reduction in the risk of recurrence during the first 2 years of college for the prevention intervention condition compared to the assessment only condition, although this difference was only a statistical trend by traditional criteria. Beneficial effects on GPA were stronger for those participants who completed the majority of the intervention sessions. This study needs to be replicated with a larger sample of emerging adults in order to evaluate more fully the efficacy of this MDD prevention program.

References

Alloy, L.B., Abramson, L.Y., Hogan, M.E., Whitehouse, W.G., Rose, D.T., Robinson, M.S., Kim, R.S., Lapkin, J.B., 2000. The temple-Wisconsin cognitive vulnerability to depression project: lifetime history of Axis I psychopathology in individuals at high and low cognitive risk for depression. Journal of Abnormal Psychology 109, 403–418.

American Psychiatric Association, 1994. Diagnostic and Statistical Manual of Mental Disorders, Fourth ed. Author, Washington, DC.

Beck, A.T., Steer, R.A., Brown, G.K., 1996. Beck Depression Inventory. The Psychological Corporation, San Antonio, TX.

Beshai, S., Dobson, K.S., Bockting, C.L.H., Quigley, L., 2011. Relapse and recurrence prevention in depression: current research and future prospects. Clinical Psychology Review 31, 1349–1360.

Clarke, G.N., Hornbrook, M., Lynch, F., Polen, M., Gale, J., Beardslee, W., O'Connor, E., Seeley, J., 2001. A randomized trial of a group cognitive intervention for preventing depression in adolescent offspring of depressed parents. Archives of General Psychiatry 58, 1127–1134.

Costello, E.J., Mustillo, S., Erkanli, A., Keeler, G., Angold, A., 2003. Prevalence and development of psychiatric disorders in childhood and adolescence. Archives of General Psychiatry 60, 837–844.

Cox, D.R., 1972. Regression models and life tables. Journal of the Royal Statistical Society 34, 187–202.

Craighead, W.E., Sheets, E.S., Brosse, A.L., Ilardi, S.S., 2007. Psychosocial treatments for major depressive disorder. In: Nathan, P.E., Gorman, J.M. (Eds.), A Guide to Treatments that Work, third ed. Oxford University Press, New York, pp. 289–307.

DeRubeis, R.J., Hollon, S.D., Amsterdam, J.D., Shelton, R.C., Young, P.R., Salomon, R.M., O'Reardon, J.P., Lovett, M.L., Gladis, M.M., Brown, L.L., Gallop, R., 2005. Cognitive therapy vs medications in the treatment of moderate to severe depression. Archives of General Psychiatry 62, 409–416.

Fava, G.A., Grandi, S., Zielezny, M., Rafanelli, C., Canestrari, R., 1996. Four-year outcome for cognitive behavioral treatment of residual symptoms in major depression. The American Journal of Psychiatry 153, 945–947.

Fergusson, D.M., Woodward, L.J., 2002. Mental health, education, and social role outcomes of adolescents with depression. Archives of General Psychiatry 59, 225–231.

First, M.B., Spitzer, R.L., Gibbon, M., Williams, J.B.W., 1995. Structured Clinical Interview for DSM-IV Axis I Disorders, Research edition, Patient Version (SCID-I/P, Version 2.0). Biometrics Research, New York State Psychiatric Institute, New York.

Frank, E., Kupfer, D.J., Perel, J.M., Cornes, C., Jarrett, D.B., Mallinger, A.G., Thase, M.E., McEachran, A.B., Grochocinski, V.J., 1990. Three-year outcomes for maintenance therapies in recurrent depression. Archives of General Psychiatry 47, 1093–1099.

Hart, A.B., Craighead, W.E., Craighead, L.W., 2001. Predicting recurrence of major depressive disorder in young adults: a prospective study. Journal of Abnormal Psychology 110, 633–643.

Heiligenstein, E., Guenther, G., Hsu, K., Herman, K., 1996. Depression and academic impairment in college students. Journal of American College Health 45, 59–64.

Heimberg, R.G., Liebowitz, M.R., Hope, D.A., Schneier, F.R., Holt, C.S., Welkowitz, L.A., Juster, H.R., Campeas, R., Bruch, M.A., Cloitre, M., Fallon, B., Klein, D.F., 1998. Cognitive behavioral group therapy vs. phenelzine therapy for social phobia. Archives of General Psychiatry 55, 1133–1141.

Ilardi, S.S., Craighead, W.E., Evans, D.D., 1997. Modeling relapse in unipolar depression: the effects of dysfunctional cognitions and personality disorders. Journal of Consulting and Clinical Psychology 65, 381–391.

Jarrett, R.B., Kraft, D., Doyle, J., Foster, B.M., Eaves, G.G., Silver, P.C., 2001. Preventing recurrent depression using cognitive therapy with and without a continuation phase: a randomized clinical trial. Archives of General Psychiatry 58, 381–388.

Keller, M.B., Lavori, P.W., Friedman, B., Nielsen, E., Endicott, J., McDonald-Scott, P.A., 1987. The longitudinal interval follow-up evaluation: a comprehensive method for assessing outcome in prospective longitudinal studies. Archives of General Psychiatry 44, 540–548.

Kessler, R.C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K.R., Rush, A.J., Walters, E.E., Wang, P.S., 2003. The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). The Journal of the American Medical Association 289, 3095–3105.

Lewinsohn, P.M., Hops, H., Roberts, R.E., Seeley, J.R., Andrews, J.A., 1993. Adolescent psychopathology, I: prevalence and incidence of depression and other DSM-III-R disorders in high school students. Journal of Abnormal Psychology 102, 133–144.

Lewinsohn, P.M., Rohde, P., Klein, D.N., Seeley, J.R., 1999. Natural course of adolescent major depressive disorder, I: continuity into young adulthood. Journal of the American Academy of Child and Adolescent Psychiatry 38, 56–63.

Meilman, P.W., Manley, C., Gaylor, M.S., Turco, J.H., 1992. Medical withdrawals from college for mental health reasons and their relation to academic performance. Journal of American College Health 40, 217–223.

Mueller, T.I., Leon, A.C., Keller, M.B., Solomon, D.A., Endicott, J., Coryell, W., Warshaw, M., Maser, J.D., 1999. Recurrence after recovery from major depressive disorder during 15 years of observational follow-up. The American Journal of Psychiatry 156, 1000–1006.

Murray, J.L., Lopez, A.D., 1997. Global mortality, disability, and the contribution of risk factors: global burden of disease study. Lancet 349, 1436–1442.

Paykel, E.S., Scott, J., Teasdale, J.D., Johnson, A.L., Garland, A., Moore, R., Jenaway, A., Cornwall, P.L., Hayhurst, H., Abbott, R., Pope, M., 1999. Prevention of relapse in residual depression by cognitive therapy. Archives of General Psychiatry 56, 829–835.

Pine, D.S., Cohen, P., Brook, J., Gurley, D., Ma, Y., 1998. Anxiety and depression in adolescence as predictors of anxiety and depression in adulthood. Archives of General Psychiatry 55, 56–66.

Singer, J.D., Willett, J.B., 1991. Modeling the days of our lives: using survival analysis when designing and analyzing longitudinal studies of duration and the timing of events. Psychological Bulletin 110, 268–290.

Svanum, S., Zody, Z.B., 2001. Psychopathology and college grades. Journal of Counseling Psychology 48, 72–76.

Trivedi, M.H., Rush, A.J., Wisniewski, S.R., Nierenberg, A.A., Warden, D., Ritz, L., Norquist, G., Howland, R.H., Lebowitz, B., McGrath, P.J., Shores-Wilson, K., Biggs, M.M., Balasubramani, G.K., Fava, M., 2006. Evaluation of outcomes with citalopram for depression using measurement-based care in STAR*D: implications for clinical practice. The American Journal of Psychiatry 163, 28–40.

U.S. Department of Labor, Bureau of Labor Statistics, 2011. College enrollment and work activity of 2010 high school graduates (USDL-11-0462). Retrieved from ⟨http://www.bls.gov/news.release/pdf/hsgec.pdf⟩.

Vittengl, J.R., Clark, L.A., Jarrett, R.B., 2009. Continuation-phase cognitive therapy's effects on remission and recovery from depression. Journal of Consulting and Clinical Psychology 77, 367–371.