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Shorter communication

When self-help is no help: Traditional cognitive skills training does not prevent depressive symptoms in people who ruminate[☆]

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ABSTRACT

A randomized trial was conducted to test the efficacy of three self-directed prevention intervention workbooks for depression. Cognitively at-risk college freshmen were randomly assigned to one of three conditions: traditional cognitive, non-traditional cognitive, and academic skills. Consistent with hypotheses, participants who were high in rumination and experienced stress exhibited significantly greater levels of depressive symptoms after completing the traditional cognitive skills workbook than after completing the other two workbooks. This pattern of results held post-intervention and 4 months later. These findings indicate that rumination may hinder one's ability to identify and dispute negative thoughts (at least without the help of a trained professional). The results underscore the importance of identifying individual difference variables that moderate intervention efficacy. They also raise concerns about the potential benefits of self-help books, an industry that generates billions of dollars each year.

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Cognitive interventions are among the most effective interventions for depression. These interventions are based on the idea that some people develop depression because they have a tendency to generate negative interpretations of stressful life events (e.g., Beck, Rush, Shaw, & Emery, 1979). Thus, a central goal of cognitively-based interventions is to teach people to identify negative cognitions, evaluate them, and then generate more adaptive cognitions. Research indicates that cognitive therapy (and related cognitive behavioral therapies) is as effective as medication, has no side effects, and may even have a relapse prevention effect (Hollon, Thase, & Markowitz, 2002).

Like most mental health resources, cognitive interventions have focused largely on treatment. Treatment interventions occur after the onset of the disorder and focus on bringing the clinical episode to an end. Although treatment interventions bring much needed relief to those who are suffering, they rarely eradicate a disorder (Albee, 1985). In order to eradicate a disorder, it is necessary to prevent the disorder from occurring in the first place. To this end, depression researchers have begun to create and test prevention interventions.

Results from these initial prevention studies have been promising. They indicate that high-risk individuals are less likely to

develop depression after receiving a cognitively-based intervention than after receiving a control intervention (e.g., Horowitz & Garber, 2006). However, the research to date has two major limitations. First, most interventions have been time intensive (e.g., >12 sessions) and have required trained professionals. These characteristics make dissemination to the general public difficult. Ideally, prevention interventions should be cost effective, highly accessible, and self-directed. Second, previous studies have not identified which individuals are likely to benefit from a cognitive prevention intervention. This is an important limitation because approximately half of participants do not respond to cognitive interventions (Hollon et al., 2002; Horowitz & Garber, 2006).

In light of these limitations, the goal of the current study was to: (a) create and test a cognitive prevention intervention that could be easily disseminated to the general public, and (b) identify moderators of intervention efficacy. To this end, the current study tested a cognitive prevention intervention that uses workbooks. Workbooks were chosen because they are cost-efficient, portable, highly accessible, and can be used without the help of a therapist. We also identified two potential moderators of intervention efficacy to examine – stress and rumination. It is necessary to measure life stress when evaluating the efficacy of cognitive interventions because the cognitive theories of depression specify a vulnerability-stress model. According to this model, the effectiveness of a prevention intervention (assuming the vulnerability was reduced) should only emerge in the presence of stressful life events. Similarly, rumination also has the potential to moderate intervention efficacy. Rumination is the maladaptive tendency to

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repetitively focus on the consequences and causes of negative moods (e.g., Nolen-Hoeksema & Morrow, 1991). Specifically, we hypothesized that rumination would interfere with learning effortful tasks such as those taught in traditional cognitive interventions because it is associated with deficits in executive capacity, cognitive flexibility, task-switching, concentration, attention, memory, motivation, and problem solving (e.g., Lyubomirsky, Tucker, Caldwell, & Berg, 1999; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Ray, Ochsner, Cooper, Robertson, Gabrieli, & Gross, 2005; Watkins & Brown, 2002). Additionally, Joormann and Gotlib (2008) recently demonstrated that ruminators have difficulty removing negative material from working memory. This work strongly suggests that individuals who ruminate may not have the cognitive and motivational capabilities needed to learn the cognitively taxing skills taught in cognitive interventions such as identifying and disputing negative cognitions. Moreover, the task of identifying negative cognitions may provide further fodder for ruminative tendencies as well as increase negative material in working memory (making it difficult to generate more adaptive inferences).

In the current study, high-risk college freshmen participated in a self-directed prevention intervention via workbooks. Participants were randomly assigned to one of three workbooks. The first workbook was based on previous research, and taught traditional cognitive skills with a focus on identifying and disputing negative cognitions as well as generating more adaptive cognitions. The second workbook was a non-traditional cognitive workbook that did not require participants to identify and dispute negative cognitions. Instead, it focused solely on teaching participants how to generate adaptive cognitions. The rationale behind the non-traditional workbook was that the task of evaluating and disputing firmly held negative beliefs would be too cognitively taxing of a process to learn without the help of a trained professional, particularly for those high in rumination. The third workbook taught academic skills. The efficacy of the three workbook interventions in preventing depressive symptoms was assessed upon completion and 4 months later.

In summary, the current study used a prevention design to test the efficacy of three self-directed workbook interventions. It is the first study to test a novel cognitive workbook condition, which unlike traditional cognitive skills, does not require participants to identify and dispute negative cognitions. It is also among the first prevention studies to examine the effects of stress and rumination as potential moderators of intervention efficacy. The hypotheses were: (1) participants experiencing stress would exhibit lower levels of depressive symptoms in the traditional and non-traditional cognitive workbook conditions than in the academic skills condition post-intervention and 4 months later; (2) participants experiencing stress who also have high levels of rumination would exhibit greater levels of depressive symptoms in the (more cognitively taxing) traditional condition than in the non-traditional condition post-intervention and 4 months later.

Method

Participants

Two hundred seventy-one unselected freshmen from a mid-sized private university in the Midwest were recruited via flyers and were screened for cognitive vulnerability (see Fig. 1). The most cognitively vulnerable participants (top 40% of the sample) were then recruited to participate in the longitudinal portion of the study. Just over half ($N = 72$) of these participants (48 women, 24 men; M age = 18.19) agreed to participate and were randomly assigned to one of three workbook conditions. Those who did not

agree to participate did not significantly differ from those who agreed to participate on the screening measure. Participants received a total of \$85 for their participation.

Materials

Acute Life Events Questionnaire (ALEQ; Haeffel et al., 2007)

The ALEQ was used to assess 30 naturally occurring acute stressful life events important to college students that could have occurred over the previous 5 weeks. The ALEQ has demonstrated strong predictive validity in past research (Haeffel et al., 2007).

Beck Depression Inventory (BDI; Beck et al., 1979)

The BDI is a 21-item self-report inventory that assesses depressive symptoms. The BDI has demonstrated strong reliability and validity (Beck, Steer, & Garbin, 1988).

Cognitive Style Questionnaire (CSQ; Haeffel et al., 2008)

The CSQ is a widely used measure of cognitive vulnerability to depression. It assesses participants' inferences for 12 hypothetical negative events on dimensions of cause, consequences, and self-worth. The CSQ has good internal consistency, reliability, and validity (Haeffel et al., 2008).

Response Style Questionnaire (RSQ; Nolen-Hoeksema & Morrow, 1991)

A modified version of the RSQ, created by Abela, Aydin, and Auerbach (2007) for use with adolescents, was used. The rumination scale consists of thirteen items (using a 1 to 4 scale) assessing self-focused responses to negative moods with higher scores indicating greater levels of a ruminative response style.

Workbook intervention

Three workbooks were created: traditional, non-traditional, and academic skills. All three workbooks were approximately 80 pages in length and contained four chapters, each of which comprised seven 15–20 min daily activities. The traditional workbook, based loosely on Greenberger and Padesky's (1995) *Mind Over Mood* workbook, was used to educate participants about the connection between one's thoughts, behavior, and mood with a special focus on how to fill-out a 7-column thought record (environment, mood, thoughts, evidence that supports, evidence that refutes, realistic thoughts, and re-rate mood). The non-traditional workbook was identical to the traditional workbook with one exception; it did not have participants identify and dispute negative cognitions. Rather, the non-traditional workbook replaced these activities with additional information on, and practice with, generating adaptive thoughts. Thus, the non-traditional workbook had participants learn to complete a 5-column thought record (environment, mood, realistic thoughts, evidence that supports, and re-rate mood). The third workbook taught participants academic skills (e.g., time management, goal-setting, memory aids, etc.).

Procedure

The study had three primary phases: screening, intervention, and assessment (see Fig. 1). During the screening phase, participants completed a measure of cognitive vulnerability (CSQ). Participants who were identified as high-risk (M CSQ score = 4.75) were then randomly assigned to one of the three workbook interventions. Participants in all conditions were told that the goal of the study was to "help freshmen adjust to college life." Prior to the intervention, participants completed baseline measures of depressive symptoms (BDI), life stress (ALEQ), and rumination (RSQ). They were then given the first of four workbook chapters

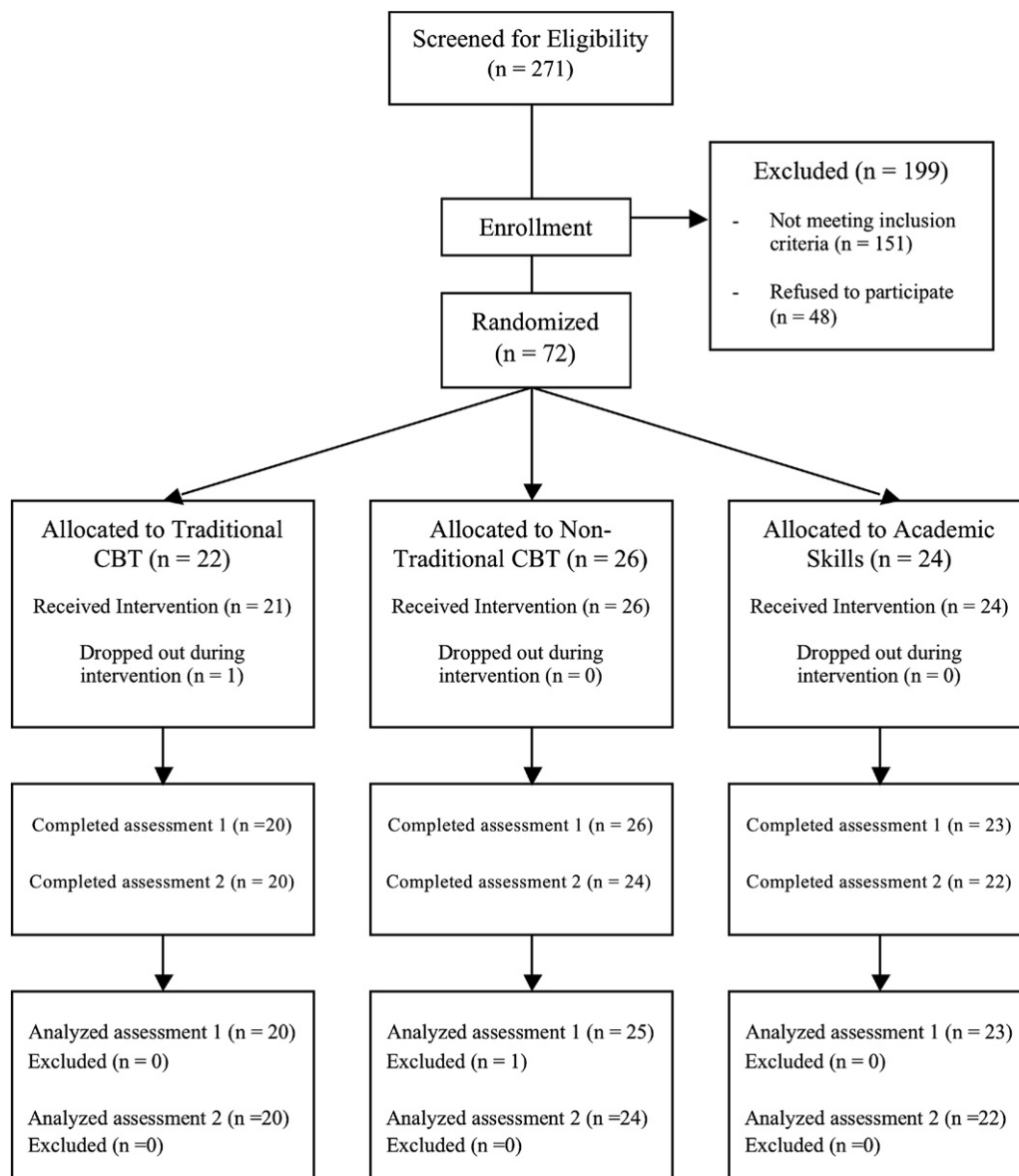


Fig. 1. Flow diagram.

from the condition to which they were assigned. Each week, participants were required to return their workbook chapter and pick-up the next workbook chapter. Participants completed the first outcome assessment (BDI and ALEQ) upon completion of the intervention. They completed the second outcome assessment approximately 4 months later.

Results

Two main hypotheses were tested. The first hypothesis was that participants experiencing stress would exhibit lower levels of depressive symptoms in the cognitive (traditional and non-traditional) workbook conditions than in the academic skills condition upon completion and 4 months later (i.e., a Condition × Stress interaction). The second hypothesis was that participants experiencing stress who also had high levels of rumination would exhibit greater levels of depressive symptoms in the traditional condition than in the non-traditional condition (i.e., a Condition × Stress × Rumination interaction). In the analyses to follow, level of depressive symptoms was

operationalized as BDI score and stress was operationalized as change in ALEQ score (increase in stress or no increase in stress since the previous assessment). Rumination was operationalized as high or low based on a median split of the RSQ. Participants in the traditional, non-traditional, and academic skills conditions did not differ significantly on any of the baseline variables (see Table 1).

Post-intervention effects

To examine the effects of stress, rumination, and workbook condition on depressive symptoms upon completion of the workbook, we performed an analysis of covariance (ANCOVA) with condition (traditional, non-traditional, academic skills), rumination (high versus low), and stress (increase versus no increase) as the independent variables and BDI score at the first assessment as the dependent variable. BDI score and CSQ score at baseline were used as covariates. Results revealed significant main effects of condition, $F(2,54) = 5.67, p = .01, \eta_p^2 = .17$, and stress, $F(1, 54) = 8.35, p = .01, \eta_p^2 = .13$. Contrary to hypotheses, participants who completed the

Table 1

Means and standard deviations for measures at baseline, post-intervention, and follow-up.

	Traditional	Non-traditional	Academic skills	Total
	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
<i>Baseline</i>				
BDI	9.55 (7.35)	9.72 (7.85)	8.10 (6.16)	9.12 (7.11)
ALEQ	3.77 (2.96)	3.62 (2.26)	2.75 (2.19)	3.38 (2.48)
CSQ	4.85 (.57)	4.76 (.46)	4.64 (.45)	4.75 (.49)
RSQ	31.59 (7.88)	32.40 (6.78)	32.21 (8.30)	32.08 (7.56)
<i>Post-Intervention</i>				
BDI	10.20 (8.30)	8.75 (6.67)	6.05 (5.20)	8.26 (6.90)
ALEQ	4.20 (2.98)	4.00 (2.57)	3.14 (2.32)	3.77 (2.62)
<i>4-month Follow-up</i>				
BDI	8.35 (8.27)	9.00 (7.82)	6.30 (5.70)	7.90 (7.32)
ALEQ	3.70 (3.39)	3.08 (2.83)	3.00 (2.29)	3.24 (2.64)

Note. BDI = Beck Depression Inventory; ALEQ = Acute Life Events Questionnaire; CSQ = Cognitive Style Questionnaire; RSQ = Response Style Questionnaire.

traditional cognitive workbook exhibited significantly greater levels of depressive symptoms ($M = 10.20$, $SE = .78$) than participants who completed the non-traditional ($M = 7.92$, $SE = .66$), $F(1, 54) = 5.42$, $p = .03$, and academic skills workbooks ($M = 6.75$, $SE = .71$), $F(1, 54) = 13.25$, $p = .001$. The non-traditional and academic skills conditions did not differ. Not surprisingly, participants experiencing increases in stress had greater levels of depressive symptoms than those not experiencing stress across all conditions. These main effects were qualified by the hypothesized three-way interaction among condition, stress, and rumination, $F(2, 54) = 3.28$, $p = .04$, $\eta_p^2 = .11$. No other main effects or interactions were significant.

Although the predicted three-way interaction was found, the pattern of results only partially supported hypotheses (see Fig. 2). Contrary to hypotheses, participants experiencing stress did not exhibit fewer depressive symptoms after completing the traditional and non-traditional workbooks than after completing the academic skills workbook, $F(2, 54) = .10$, $p = .91$. However, consistent with predictions, participants with high levels of rumination and stress experienced greater levels of depressive symptoms after completing the traditional workbook than they did after completing the non-traditional workbook, $F(1, 54) = 5.17$, $p < .03$. They also had greater levels of symptoms than those who completed the academic skills workbook, $F(1, 54) = 12.32$, $p < .01$ (see Fig. 2).

4-Month follow-up effects

ANCOVA was used again to test the effects of stress, rumination, and workbook condition on depressive symptoms at the 4-month assessment (see Fig. 3). The main effect of stress, $F(1, 52) = 5.64$, $p = .02$, $\eta_p^2 = .10$, and the two-way interactions between condition and rumination, $F(2, 52) = 3.90$, $p = .03$, $\eta_p^2 = .13$, and condition and stress, $F(2, 52) = 2.55$, $p = .08$, $\eta_p^2 = .09$, were significant (or marginally significant). Similarly to what was found at the post-intervention assessment, participants experiencing increases in stress had greater levels of depressive symptoms than those not experiencing stress across all conditions. Moreover, individuals in the traditional condition again exhibited the greatest levels of depressive symptoms, particularly for participants who experienced high levels of stress or exhibited high levels of rumination. These main effects and two-way interactions were qualified by the hypothesized three-way interaction among condition, stress, and rumination, $F(2, 52) = 3.59$, $p = .04$, $\eta_p^2 = .12$.

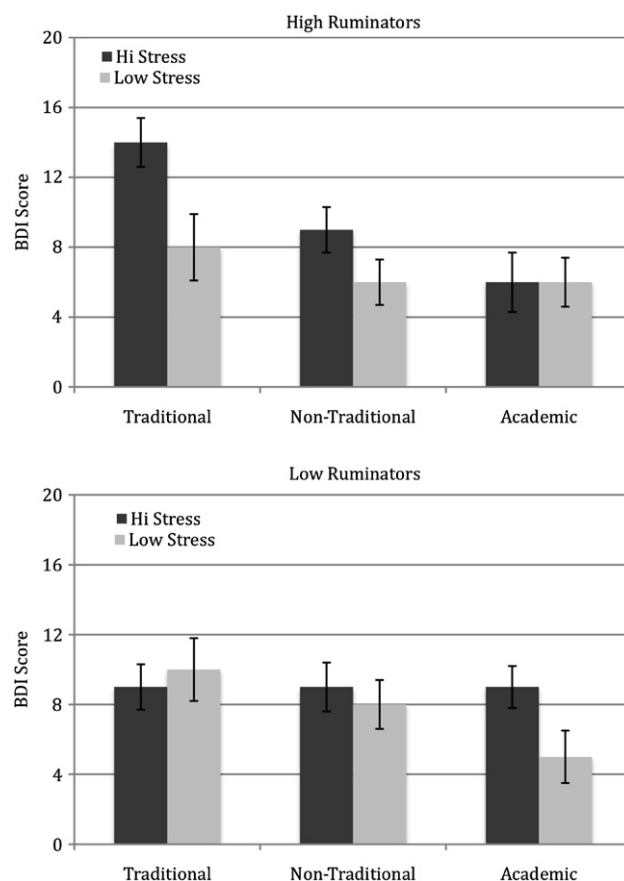


Fig. 2. Depressive symptoms at the first assessment as a function of rumination (high vs. low), condition [traditional cognitive skills, non-traditional cognitive skills, and academic skills], and stress (increase versus no increase) after controlling for initial levels of depressive symptoms and cognitive vulnerability.

The pattern of results for the three-way interaction was consistent with the pattern found at the post-intervention assessment. Participants experiencing stress did not exhibit fewer symptoms after completing the traditional and non-traditional cognitive workbooks than participants completing the academic skills workbook, $F(2, 52) = .255$, $p = .09$ (though participants in traditional condition tended to have greater depression levels [$M = 14$] than those in the non-traditional [$M = 9$] and academic skills [$M = 7$] conditions). However, consistent with predictions, participants with high levels of stress and rumination experienced greater levels of depressive symptoms after completing the traditional workbook than after completing the non-traditional workbook, $F(1, 52) = 10.64$, $p < .01$. They also experienced greater levels of depressive symptoms than those who completed the academic skills workbook, $F(1, 52) = 5.95$, $p < .03$ (see Fig. 3).

Discussion

This study tested the efficacy of three workbook interventions for preventing depressive symptoms. Contrary to hypotheses, participants experiencing stress did not exhibit lower levels of depressive symptoms after completing a cognitive workbook (traditional or non-traditional) than after completing an academic skills workbook. In fact, participants completing the traditional workbook exhibited greater levels of depressive symptoms than participants completing either the non-traditional or academic skills workbooks. Consistent with hypotheses, participants who

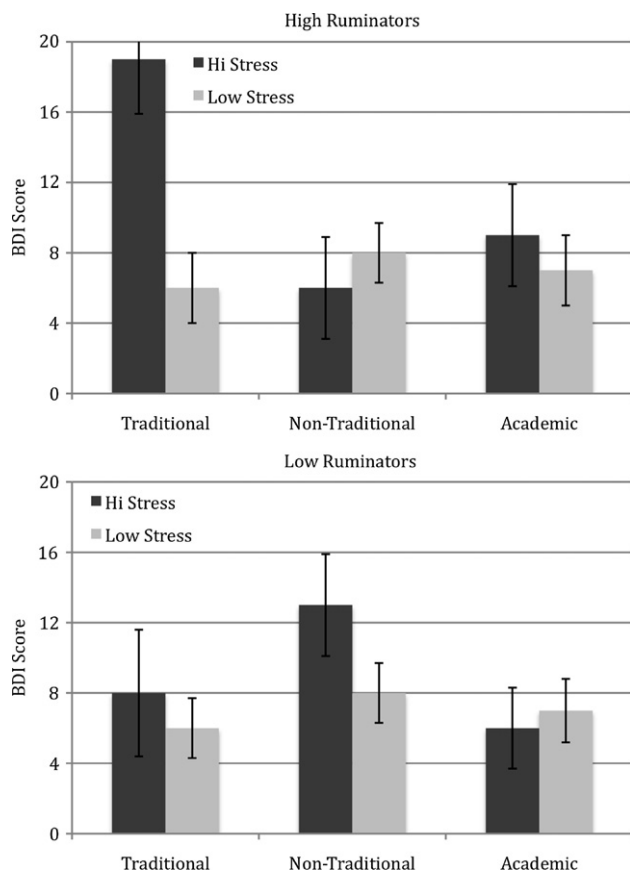


Fig. 3. Depressive symptoms at the 4-month assessment as a function of rumination (high vs. low), condition [traditional cognitive skills, non-traditional cognitive skills, and academic skills], and stress (increase versus no increase) after controlling for initial levels of depressive symptoms and cognitive vulnerability.

were high in rumination and experienced stress exhibited significantly greater levels of depressive symptoms after completing the traditional workbook than after completing the non-traditional workbook. This pattern of results held at post-intervention and the 4-month follow-up. As shown in Figs. 1 and 2, participants who ruminated (and experienced stress) had dramatically higher levels of depressive symptoms after completing the traditional workbook than after completing the other two workbooks. The size of the three-way interaction effects tended to be in the medium range (Bakeman, 2005).

The results for the traditional workbook condition are particularly noteworthy given the large body of evidence documenting the effectiveness of cognitive behavioral therapy for treating depression. In the current study, participants who were taught traditional cognitive behavioral skills actually exhibited significantly higher depression scores than participants in the non-traditional as well as the academic skills conditions. In fact, the negative outcomes for participants in the traditional condition were strong enough to reach significance as a main effect at the post-intervention time point. However, at both time points, the negative effects of being in the traditional condition was most detrimental to those who high levels of rumination and experienced stress.

Fortunately, this study's design allows us to determine what aspects of the traditional workbook made it ineffective. The traditional and non-traditional workbooks were identical in all respects, except the non-traditional workbook did not require participants to identify and evaluate negative cognitions. Thus, it can be concluded that self-taught cognitive skills such as identifying and disputing negative cognitions may render cognitive interventions ineffective

(or potentially harmful) for college students, particularly those who ruminate. This also raises concerns about the benefits of self-help books (e.g., *CBT for Dummies*), an industry that generated an estimated \$9 billion in 2004 (Menchola, Arkowitz, & Burke, 2007). Clearly, it is important for future research to continue to examine the degree to which particular subgroups of individuals can learn to identify and dispute negative without the help of a trained professional.

It is also important to note the effectiveness of the academic skills workbook. This workbook was more effective than the traditional workbook and equally effective as the non-traditional workbook in preventing future depressive symptoms (for those who ruminate and experience stress). This finding supports recent work by Stice, Burton, Bearman, and Rohde (2006) and Stice, Rohde, Seeley, and Gau (2008) showing that a variety of intervention types may have clinical utility. One explanation for the efficacy of the academic skills book is that it focused on helping students cope with one of the most significant stressors in their lives – getting good grades at an academically competitive university. However, without randomizing participants to a waitlist control group, one cannot conclude that the non-traditional and academic skills workbooks were more effective in reducing depressive symptoms than no intervention at all. That said, we would expect a high-risk sample to exhibit increases (rather than decreases) in depressive symptoms over time if the prevention interventions were not effective.

Limitations of the current study should be noted. First, it would be premature to make conclusions about clinically significant forms of depression because the current study only assessed depressive symptoms. However, it is important to note that participants who completed the traditional workbook (and were high in rumination and stress) exhibited BDI scores approaching the “moderate” range of depression at the 4-month assessment (see Fig. 2). This was in sharp contrast to similar participants who completed the non-traditional or academic skills conditions, and scored in the “minimal” range (<10) on the BDI. Second, the study examined college freshmen. Although freshmen are ideal for testing prevention interventions because they are at the peak age for developing depression (Hankin et al., 1998) and are likely to experience high levels of stress, the results may not generalize to community samples or populations that might have difficulty using a workbook intervention (e.g., people with low levels of education). Third, the study had a small sample size. Although effects were strong enough to be detected, replication is needed before definitive conclusions can be made about the efficacy of self-taught traditional and non-traditional cognitive skills in preventing depressive symptoms. Finally, further research is needed whether the measurement of stress is crucial to determining intervention efficacy. In the current study, the results of the hypothesized condition \times stress interaction were mixed. The interaction was not significant post-intervention; however, it did approach significance at the ($p = .08$) at the 4-month assessment.

In conclusion, cognitive workbooks have the potential to be an easily disseminated and effective strategy for preventing depression. However, the current results suggest that cognitive workbooks as traditionally operationalized (and sold in stores) may not work for individuals who ruminate. For these individuals, a modified form of cognitive skills training that does not rely on identifying and disputing negative cognitions may be more effective. It will be important for future studies to further test this modified cognitive skills training in both treatment and prevention trials.

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