Self-Statement Modification Techniques for Distressed College Students with Low Self-Esteem and Depressive Symptoms

Jean Clore and Scott Gaynor

abstract

Thirty students (73% female, M = 21 years) reporting significant distress, low self-esteem, and depressive symptoms were randomly assigned to three sessions of either: (a) restructuring of negative self-thoughts (via training and daily practice using the Thought Record) or (b) enhancement of positive self-statements (via fluency training and daily flashcard rehearsal). Both methods were associated with clinically significant improvement that persisted at follow-up. Using existing studies as benchmarks, this improvement met or exceeded that of related treatment conditions and clearly exceeded that of control conditions. Results suggest both disputation of negative and enhancement of positive self-thoughts can be beneficial.
Key words: cognitive therapy; fluency; self-esteem; depression; self-statement

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Negative self-evaluation (i.e., low self-esteem) is theoretically and empirically associated with a range of psychological difficulties (e.g., eating disorders, social anxiety), but has been especially linked to depressive symptoms. Central to Beck and colleagues' (1979) influential account of depression is the negative cognitive triad, which suggests that depressed individuals have a negative view of the self, world, and future. As Fennell (2004, p. 1058) summarizes: "Beck's cognitive model identifies… negative thoughts about the self as central to the development and maintenance of depression." Empirical findings support a significant link between negative self-statements, low self-esteem, and depression (Hollon & Kendall, 1980; Lewinsohn, Seeley, & Gotlib, 1997; Osman et al., 1997; Roberts, Gotlib, & Kassel, 1996; Smith & Betz, 2002) and the efficacy of cognitive-behavioral therapy as an intervention for depression has been established in large-scale clinical trials and meta-analysis (DeRubeis et al, 2005; Dobson, 1989; Gloaguen, Cottraux, Cucherat, & Blackburn, 1998). According to cognitive theory, negative self-statements result from maladaptive schemata that bias processing of the information taken in from the environment. Correction of these depressive schemata, via training in and practice of cognitive restructuring techniques, is hypothesized to be the critical ingredient of successful therapy (Beck et al., 1979). The presence and influence of, and changes in, these schemata are not directly observed but are inferred from observations of negative self-statements, which the client verbalizes in interaction with the therapist or endorses on self-report measures.

Behavior analysts reject explanations that require reference to hypothetical schemata that are in principle unobservable. However, clinical behavior analysts do not deny the high prevalence of negative self-statements among individuals described as depressed or having low self-esteem. Moreover, because an individual can serve both as a speaker and a listener with respect to his/her own verbal behavior (Skinner, 1957), they also do not deny that these statements can have effects, especially when they occur in a social-verbal context where their presence is considered indicative of psychological maladjustment (Dougher & Hackbert, 1994). Dougher and Hackbert (1994; 2000) describe how negative self-evaluations in response to insufficient reinforcement, punishment, or extinction likely serve to both elicit additional aversive stimulation and occasion depressive behavior. That is, the negative self-statements (e.g., "I'm a loser, Nobody likes me.") might exacerbate feelings of sadness and function as establishing operations, altering the evocative effects of environmental stimuli (e.g., the sight of a group of peers serves as a

discriminative stimulus for punishment), increasing the reinforcing value of depressive behavior (e.g., avoidance of peers) and abolishing the reinforcing value of non-depressive behavior (e.g., approaching peers), potentially also contributing to the development of self-rules that further maintain depressotypic behavior ("Why bother trying to meet people, nobody likes me, I'm unlikable").

The preceding provides a behavioral rationale for potentially targeting self-statements therapeutically and for appreciating how cognitive therapy might have some beneficial effects from a behavioral perspective. There are currently several different views on how best to target self-statements therapeutically. Hayes, Strosahl, and Wilson (1999) promote altering the social-verbal context supporting a link between negative thoughts and depressive behavior. This is pursued through the use of cognitive defusion procedures, which target for change the function of thoughts without attempting to alter their content or frequency. Traditional cognitive-behavioral therapists on the other hand generally target the content of negative thoughts for change, which is pursued through the use of cognitive restructuring techniques designed to help the client to challenge and dispute negative self-statements so as to arrive at more rational, adaptive, and less extreme self-evaluations (Beck et al., 1979; Greenberger & Padesky, 1995; Persons, Davidson, & Tompkins, 2001). A final approach that has received some attention in clinical studies and in the precision teaching literature emphasizes increasing the frequency of positive self-thoughts through structured identification, elaboration, and rehearsal of positive self-statements (Calkin, 1992; Lange et al., 1998).

While it might be conceptually sensible to target negative self-statements in therapy, whether doing so is necessary or sufficient to produce change is an area that is currently being debated. In cognitive-behavior therapy for depression, modification of self-thoughts is considered part of the "cognitive" portion of the intervention. Beck and others (Beck et al., 1997; DeRubeis & Feeley, 1990; Hollon, 2000) have been clear in hypothesizing that the cognitive components aimed at modifying negative thoughts are primarily responsible for CBT's efficacy. For example, Beck and colleagues (1979; p. 146) stated "The most critical stage of cognitive therapy involves training the patient to observe and record his thoughts." However, time course analyses suggest that the majority of improvement occurs early in treatment, prior to the introduction of the explicitly cognitive techniques (Ilardi & Craighead, 1994). Dismantling studies further suggest that behavioral activation alone is as efficacious and enduring as comparison conditions that added cognitive techniques (Gortner, Gollam, Dobson & Jacobson, 1998; Jacobson et al., 1996). Thus, cognitive modification techniques may not be necessary to the change process. However, these data do not address whether they might be sufficient.

In the present study we focused on comparing one technique (i.e., the Thought Record) for challenging negative self-statements and a separate technique (i.e., Fluency Training) designed to increase positive self-statements. Isolating these techniques for evaluation allowed us to begin to test their sufficiency for producing change and also to compare their relative efficacy and potential unique effects.

The Thought Record is considered one of the essential components of CBT for depression and is a primary vehicle used in attempting to modify negative self-thoughts (Greenberger & Padesky, 1995; Persons et al., 2001). Thought Record training involves teaching the client to identify negative thoughts, examine evidence for and against the negative thoughts, explore possible alternative explanations, and substitute more accurate, realistic, or less extreme thoughts. As such, the Thought Record is one of the most elaborated self-statement modification techniques available.

While disputation of negative self-statements using the Thought Record involves generating less extreme or more adaptive self-statements, the focus is not typically on explicitly increasing positive self-statements (Lange et al., 1997). However, the possibility of increasing positive self-statements has been explored in several smaller scale studies. Philpot and Bamburg (1996) randomized college students reporting low self-esteem to either a control condition or a condition in which participants rehearsed a list

of 15 positive self-statements three times daily for two weeks. Significantly greater improvement in self-esteem and depression was reported in the rehearsal condition. Lange and colleagues (1998) randomized college students with low self-esteem to positive self-instruction training or a neutral task control condition. The intervention involved generating a list of positive personal characteristics, writing an essay incorporating them (session 1), and reducing the essay to a list of positive self-statements (session 2), which over the next three weeks was to be read twice daily. Compared to controls, the intervention group reported significant improvement in self-esteem.

A parallel approach has also been developing in the field of behavior analysis, where Calkin (1981, 1992, 2000, 2002) has advocated applying precision teaching strategies to self-thoughts. Precision teaching involves identifying and counting a target behavior and increasing the rate of that behavior until "fluency" is established through short (e.g., 1-min) repeated timed practices,. A classic example is Lindsley's SAFMEDS (say all fast a minute each day shuffled) method with flash cards. A performance is said to be fluent when the target behavior is not only accurate but also occurs at a high rate (i.e., is fast, automatic, or second-nature; see Binder, 1996; Lindsley, 1996). Calkin (1992) reported data from 35 people using fluency training to increase positive self-thoughts and improve self-esteem. After a baseline during which positive and negative self-thoughts were self-monitored, participants were asked to write as many positive self-thoughts as they could during 1-minute timings once per day. This intervention resulted in participants, on average, doubling their number of self-positives and reporting subjective increases in self-esteem.

In the present study college students reporting significant distress, low self-esteem, and depressive symptoms were randomly assigned to either (a) Thought Record (TR) training or (b) Fluency Training (FT). Commonly used clinical measures were employed to evaluate the clinical relevance of the effects and to identify possible treatment specific effects. In addition, fluency with positive and negative self-thoughts was directly measured (and evaluated in comparison to normative data collected by the authors) providing additional information on treatment specificity. Follow-up data were collected at least one month post-treatment.

Method

Participants

Undergraduate students from a large U.S. university who reported significant distress and low self-esteem were recruited via flyers and class announcements. Participants were screened using the Brief Symptom Inventory – Global Severity Index (BSI-GSI; Derogatis, 1993) and the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1989) and included if they scored one SD above the mean according to the adult non-patient norms on the BSI-GSI and one SD below the mean for a college population on the RSES (see Vispoel et al. 2001). Individuals endorsing strong suicidal ideation and those receiving other psychological treatment were excluded. Those receiving pharmacotherapy were enrolled if they had been on the medication for at least eight weeks. Thirty students met inclusion criteria, a total of nine people were excluded for failure to meet inclusion criteria, and no one met exclusion criteria.

There were no statistically significant demographic differences between the TR and FT groups suggesting comparable groups were attained (see Table 1). Consistent with recommendations in the literature, our use of the BSI emphasized the global severity index as a measure of psychological distress (Boulet & Boss, 1991, as cited from Bufka, Crawford, & Levitt, 2002). The sample BSI-GSI mean (SD) of 1.51 (0.30) exceeded normative means (Cochran & Hale, 1985) and means reported among a large sample of college students seeking services at a counseling center of a private university (Cornish et al., 2000) by more than one standard deviation. In addition, the sample RSES mean (SD) of 22.47 (3.32) was 1.9 standard deviations from a normative mean. Moreover, 46% had a history of mental health treatment,

often for mood problems (50%; see Table 1). One participant, a treatment completer diagnosed with bipolar disorder, was on Lexapro and Depakote for more than 2 months prior to and throughout participation. In sum, the inclusion criteria produced a relatively severe sample.

Table 1
Demographic and Past Treatment Characteristics

Variable	Intent to treat (N = 30)	Completers (*n* = 20)	
		TR (*n* = 10)	FT (*n* = 10)
Age	21.33 (5.13)	21.70 (7.20)	20.50 (1.60)
GPA	3.13 (0.53)	2.96 (0.61)	3.36 (0.47)
Sex (% female)	73%	80%	80%
Ethnicity (% Euro-American)	90%	90%	90%
Full-time student	97%	90%	100%
Yr in school:			
Freshman	27%	20%	20%
Sophomore	33%	40%	30%
Junior	20%	30%	20%
Senior	20%	10%	30%
Tobacco Use	20%	30%	30%
Hx of Mental Health Tx	46%	50%	50%
Tx focus:			
Depression	4	2	1
Bipolar	2	0	2
Depression + OCD	1	0	1
School refusal	1	1	0
Stress/Family Problems	4	2	1
Alcohol	1	0	0
Stress/Family + Alcohol	1	0	1
Hx of medication	17%	10%	30%

Design and Measures

Participants were stratified by gender and then randomized to either Thought Record (TR) training or Fluency Training (FT), both of which consisted of three weekly treatment sessions. Measures were taken at pretreatment, post-treatment, and follow-up and consisted of common clinical self-report measures and a self-thought fluency assessment (STFA) procedure developed by the authors. To reduce potential demand characteristics, participants were informed that during the treatment portion of the study the experimenter was kept blind to all measures except for those used in determining eligibility (i.e., the BSI and RSES) and implementing the initial portion of the intervention (i.e., STFA). The following measures were collected:

Rosenberg Self-Esteem Scale *(RSES; Rosenberg, 1989).* The 10-item RSES asks participants to rate their level of agreement (range 0-40), with statements describing their general view of themselves. Higher scores indicate a more positive self-evaluation with a mean of 32.60 (SD = 5.25) established in a large nonpatient college sample (Vispoel et al., 2001).

Brief Symptom Inventory *(BSI; Derogatis, 1993).* This 53-item questionnaire is designed to reflect psychological symptom patterns. Items are endorsed on a scale of 0 (not at all) to 4 (extremely). Normative means on the BSI-GSI with college students of 0.84 (SD = 0.55) for males and 0.71 (SD = 0.42) for females were reported by Cochran & Hale (1985).

Beck Depression Inventory-II (*BDI-II; Beck et al., 1996).* This widely used 21-item self-report assesses the severity of depressive symptoms. The normative mean from a large collegiate sample is 9.11 (SD = 7.57) with recommended descriptors of 0-12 Nondepressed, 13-19 Dysphoric, 20-63 Dysphoric-Depressed (Dozois, Dobson, & Ahnberg, 1998).

Suicidal Ideation Index. A suicidal ideation index was derived by summing items 9 and 39 from the BSI ("Thoughts of ending your life" and "Thoughts of death or dying") and item 9 from the BDI ("Suicidal thoughts or wishes").

Automatic Thoughts Questionnaire-Negative *(ATQ-N; Hollon & Kendall, 1980).* The 30-item ATQ measures the frequency of negative self-statements. Each item is scored on a 5-point scale, ranging from 1 (not at all) to 5 (all the time), with higher scores indicative more negativity. The mean among normative samples is 52.91 (*SD* = 18.18; Dozois et al., 2003).

Automatic Thoughts Questionnaire-Positive *(ATQ-P; Ingram & Wisnicki, 1988).* This 30-item instrument measures the frequency of positive self-statements and is scored on a scale from 1 (not at all) to 5 (all the time). The normative mean averaged across samples, and reported by Dozois et al. (2003), is 98.61 (*SD* = 13.02).

Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978). The DAS is a 40-item instrument is scored on a 1-7 scale. Lower scores indicate more adaptive beliefs. The mean among normative samples, reported by Dozois et al. (2003), is 119.01 (*SD* = 26.89).

Acceptance & Action Questionnaire *(AAQ; Hayes et al., 2004).* The 9-item AAQ measures ability to take action despite uncomfortable thoughts/feelings. Each item is scored on a 1-7 scale, with higher scores indicating greater experiential avoidance and immobility. The mean for clinical populations is 38-40. For non-clinical populations it is 33.4 (SD = 7.2).

Self-thought Fluency Assessment *(STFA).* Developed and pilot tested by the authors, this measure involves two separate 3-minute periods in which the individual is first given two minutes to collect his/her self-thoughts, and then one minute to write as many positive or negative as s/he can. After both positive and negative thoughts are generated, each is rated on a 5-point scale for both personal importance (PI) and believability (B), with 1 being extremely important/believable and 5 being not at all important/believable. The following scores are derived from this procedure (data from a non-distressed college sample, *N* = 58, *M* age = 22 years, 57% female, are presented in parentheses): total number of positive thoughts (*M* = 9.86, SD = 3.00), total number of negative thoughts (*M* = 6.50, SD = 2.52), ratio of positive to negative thoughts (*M* = 1.68, SD = 0.68), average positive PI (*M* = 1.94, SD = 0.47) and B (*M* = 1.88, SD = 0.47), and average negative PI (*M* = 2.80, SD = 0.70) and B (*M* = 2.61, SD = 0.77).

Treatment evaluation. This 11-item questionnaire developed by the researchers asked participants to rate aspects of the treatment, the therapist, and their participation on a scale from 1 (not at all) to 5 (extremely).

Therapist

The first author, a doctoral student in clinical psychology, conducted all of the treatment. She had completed an MA (and was board certified) in applied behavior analysis, had experience using precision teaching, completed graduate coursework in CBT, and a 2-year practicum at an outpatient clinic providing CBT. Additional training involved watching Thought Record instructional videos (i.e., APA, 2000; New Harbinger Publications, 1996) and role-play practices. A Ph.D. level psychologist, trained in CBT and behavior analysis supervised.

Treatments

Participants in both conditions received three weekly therapy sessions. The first session lasted two hours: the first to cover the consent form, screening, rapport building, and pre-treatment assessment measures and the second to begin intervention. The second and third therapy sessions each lasted one hour and focused completely on the relevant intervention. The treatment conditions were brief due to their focus on specific therapeutic techniques.

Thought record training condition. TR training focused on challenging and changing the participants' negative self-thoughts using the 7-column Thought Record, as described and demonstrated by Padesky (Greenberger & Padesky, 1995; New Harbinger Publications, 1996) and consistent with the approach outlined by Persons et al. (2001). The Thought Record helps the user to identify negative automatic thoughts, the situations in which they occur and the associated emotions, the evidence for and against them, and, finally, to generate more balanced, adaptive thoughts.

The therapist used the Thought Record as a framework for introducing the cognitive model to the participant, incorporating examples from the participants list of self-negatives obtained during the STFA to demonstrate the relationship between thoughts, moods, and behaviors (as recommended by Persons et al., 2001). After providing the rationale, the therapist and participant collaboratively discussed situations in which the participant felt badly about him/herself, identified negative thoughts, and then evaluated them using the Thought Record. This collaborative work provided modeling, guided practice, and an opportunity for clarification of questions about the Thought Record. The importance of practice was explained and copies of the Thought Record provided and assigned for homework; participants were encouraged to challenge all negative thoughts, but to formally record three per day. The second and third therapy sessions were spent reviewing the participants' homework from the previous week, and challenging and practicing additional negative thoughts.

Fluency training condition. FT focused on improving the automaticity of the participants' positive self-thoughts by increasing both the number of positive thoughts s/he could readily identify and the rate at which s/he could identify them. During the FT psychoeducation piece, the therapist reviewed the participant's list of positive thoughts from the self-thought assessment and asked him/her how s/he became good at *x* (e.g., Have you always been good at writing poetry? How did you improve?). In addition to using the personal example, the therapist also described learning to drive a standard shift car to illustrate the importance of practicing a new skill in order for it to become automatic and considered mastered. Lastly, the therapist explained how thinking differently is a new skill to be learned, one which needs to be practiced.

During the FT practice, the participant first wrote his/her positive self-thoughts from the self-thought fluency assessment on index cards. Second, the therapist described how math flashcards have the problem on one side with the answer on the other. Similarly, the positive self-thoughts were considered to be the "answer" or correct response to be learned. On the opposite side of the card a "clue/trigger" that might occasion the correct response was identified by the participant in collaboration with the therapist.

These clues/triggers included a variety of situations/life domains (e.g., family relations, education, etc.), people, and activities. The participant then read the set of cards to him/herself, focusing on committing them to memory. Next, the therapist conducted flashcard drills with the participant until s/he could say her/his self-positives aloud without the cards. Fluency was assessed by three timed "mastery trials" in which the participant recited her/his set of positive thoughts aloud as quickly and accurately as s/he could. When the set could be articulated without omissions or hesitation during the timed in-session trials, the performance was deemed fluent.

The participant was then asked to identify more positive self-statements in order to expand her/his original list. If the participant's original list consisted of five self-positives, once it was mastered s/he would add five after each new set was mastered. This strategy provided individualized fluency training goals. To the extent possible, participants created their new self-positive cards independently and in collaboration with the therapist; however, to facilitate item addition, a list of life domains and a list of positive self-characteristics (provided to us by Calkin) was offered to prompt recognition of relevant items. Participants were also encouraged to use positive qualities that others had identified about them. As self-thoughts were identified, care was taken to ensure that they were not Pollyanna-ish, but instead had some referent in the client's life experience which s/he could articulate.

The participants were asked to carry their set of flashcards with them and to practice them as often as possible shuffling the cards between each practice, and to complete at least three formal flashcard drill practices per day. They were also asked to keep a journal of 1-minute daily drills in which they wrote as many positive self-thoughts as they could for one minute.

Results

Treatment Fidelity

Treatment adherence was measured using short questionnaires (available from the authors), one for each treatment session, which included three subscales: general therapy, TR-specific, and FT-specific. The general therapy subscale included items regarding issues such as provision of a clear rationale, establishment of a collaborative relationship, and bridging from the previous session. The other two subscales focused on use of the technique specific to one of the two treatments. All items were scored on a 6-point scale from 1 (not at all) to 6 (extensively). The treatment-specific subscales should differ whether the focus was TR or FT. Treatment adherence forms were completed immediately after each session by the therapist. In addition, a doctoral student in clinical psychology who was blind to condition observed 25% of the treatment session videotapes and completed the adherence forms.

Agreement. A Pearson's product-moment correlation demonstrated strong inter-rater agreement between therapist and coder item ratings ($r = .88$, $p < .001$). Kappa was calculated by treating item adherence scores ranging from 1-3 (not at all – minimally) and 4-6 (considerably – extensively) as categorical, also resulting in very good rater agreement ($K = .86$, $p < .001$).

Adherence. Average treatment adherence scores were calculated for each subscale. Scores of 4 and above were considered to represent adherence. For TR sessions there was a significant difference between raters on the general therapy subscale, $F(1,14) = 5.65$, $p = .03$. While both the therapist ($M = 4.81$, $SD = 0.65$) and coder ($M = 5.42$, $SD = 0.32$) indicated adherence, the coder ratings were higher. There were no differences on the TR subscale (therapist $M = 4.84$, $SD = 0.89$; coder $M = 5.07$, $SD = 1.31$), or the FT subscale (therapist and coder $M = 1.00$, $SD = 0$). These data indicate strong and specific adherence to the TR protocol. For the FT sessions, there were no significant differences between the raters on the general therapy subscale (therapist $M = 5.24$, $SD = 0.55$; coder $M = 5.33$; $SD = 0.35$) or the FT subscale (therapist $M = 5.90$; $SD = 0.15$; coder $M = 5.94$; $SD = 0.11$). However, the TR subscale

differed (therapist $M = 1.10$; $SD = 0.14$; coder $M = 1.83$; $SD = 0.32$, $F(1,12) = 30.3$, $p < .001$. Importantly, neither mean was indicative of adherence to TR. Moreover, the difference was isolated to an item on the use of Socratic questioning, which was minimally used in FT during the generation of new self-positives. The therapist underrated the use of Socratic questioning, while the coder correctly identified this technique. These data indicate strong and specific adherence to the FT protocol.

Acute Treatment Outcome

Of the 30 qualifying participants, 20 completed the study (3 treatment sessions and post-treatment assessment), and 10 dropped out (a 33% attrition rate). Seven of these dropouts terminated after the first treatment session and three following the second treatment session. Attrition rates were comparable in both conditions: five dropped out from FT and five from the TR condition. When provided, reasons for dropping out of the study included family emergencies, other time commitments, and seeking therapy elsewhere. Dropouts did not differ significantly from completers on the RSES, $F(1, 30) = 0.60$, $p = .45$, or on the BSI-GSI, $F(1, 30) = 0.43$, $p = .52$.

Descriptive statistics for the clinical outcome measures and the STFA, as well as the results of the between-group and within-group comparisons conducted with completers are presented in Table 2 (results from the intent-to-treat sample are described in the text). Because of the large number of comparisons, alpha was set at .01 for these analyses. First, a series of ANCOVAs were conducted with post-treatment scores as the dependent variable and pre-treatment scores as a covariate. The ANCOVAs using the clinical self-report measures showed no significant differences between the two conditions on global distress, self-esteem, depressive symptoms, suicidal ideation, negative and positive thinking, and maladaptive beliefs. The same analyses were repeated based on an intent-to-treat approach (using a last data point carried forward method) and revealed similar non-significant differences. On the STFA, as expected due to the nature of the treatments, the FT group demonstrated a significantly greater number of positive self-thoughts. The intent-to-treat analyses also revealed highly significant treatment differences with respect to the total number of self-positives, $F(1, 30) = 16.77$, $p = .000$.

Paired samples *t* tests were used to analyze the differences between pre- and post-treatment scores within each condition (see Table 2). With respect to the clinical measures, statistically significant changes from pre- to post-treatment scores were seen across conditions, suggesting that individuals in both treatments improved. In the TR condition, statistically significant differences were found on global distress, self-esteem, depressive symptoms, suicidal ideation, negative automatic thoughts and experiential avoidance, while in the FT condition, statistically significant differences were observed on global distress, self-esteem, depressive symptoms, negative and positive automatic thoughts, maladaptive beliefs, and experiential avoidance. The STFA data hinted at the possibility of some treatment specific effects as both groups showed a significant improvement in the ratio of positive to negative self-thoughts on the STFA, but for different reasons. The FT group showed an increase in self-positives, while in TR group decreased in negative self-statements.

Table 2
Descriptive Statistics for Outcome Variables at Pre-treatment (Pre) and Post-treatment (Post) and Results of Between-Group and Within-Group Comparisons for Completers

	TR		FT			TR vs. FT	TR Pre vs. Post	TR CSC	FT Pre vs. Post	FT CSC
	Pre (n = 15)	Post (n = 10)	Pre (n = 15)	Post (n = 10)						
Measures	M (SD)	M (SD)	M (SD)	M (SD)	g	F	t [b]	%	t [b]	%

Clinical										
BDI-II[a]	22.26 (6.08)	12.00 (6.07)	26.22 (10.18)	13.70 (7.45)	-0.24	0.10	5.22***	70	4.62***	60
BSI	1.43 (0.38)	0.99 (0.34)	1.59 (0.60)	0.90 (0.54)	0.19	0.84	3.81**	50	3.92**	60
RSES	23.33 (3.39)	29.15 (2.29)	21.60 (3.11)	27.60 (4.09)	0.45	0.04	-4.80***	80	-5.09***	60
SII	1.53 (1.55)	0.40 (0.97)	1.13 (1.30)	0.50 (1.08)	0.09	0.68	3.28**	--	2.09	--
ATQ-N	78.60 (18.40)	55.30 (15.41)	88.26 (21.83)	52.30 (12.86)	0.20	1.44	4.63***	80	6.20***	90
ATQ-P	66.47 (15.45)	87.20 (26.62)	64.20 (9.16)	84.40 (18.08)	0.12	1.34	-2.60*	70	-4.84***	40
DAS	160.73 (29.27)	142.00 (19.90)	178.60 (19.87)	146.20 (28.25)	-0.16	0.42	3.12*	60	4.14**	40
AAQ	42.67 (4.48)	37.10 (5.28)	42.47 (5.25)	37.00 (5.73)	0.02	0.06	3.27**	70	2.73*	70
STFA										
Total +	7.00 (2.39)	7.3 (1.70)	6.33 (2.09)	14.20 (2.90)	2.68	70.55***	-1.33	40	11.19***	100
+ PI	2.22 (0.62)	2.29 (0.82)	2.51 (0.48)	2.05 (0.48)	0.33	1.93	-0.38	60	2.30*	50
+ B	2.35 (0.61)	2.09 (0.52)	2.43 (0.64)	2.27 (0.55)	-0.29	0.82	1.64	70	1.34	40
Total -	7.53 (2.64)	6.30 (1.57)	8.13 (2.13)	7.80 (3.52)	-0.51	0.28	3.00*	80	0.76	50
- PI	2.29 (0.72)	2.84 (0.69)	2.30 (0.71)	2.71 (0.83)	0.16	0.07	-2.34*	70	-1.69	40
- B	2.37 (0.78)	2.70 (0.81)	2.18 (0.69)	2.80 (0.62)	-0.13	0.24	-0.86	60	-2.41*	80
Ratio +/-	0.94 (0.14)	1.20 (0.30)	0.80 (0.28)	2.10 (0.86)	-1.29	7.17*	-3.59**	70	-4.23**	100
PI Diff	0.07 (0.67)	0.55 (0.79)	-0.21 (0.87)	0.65 (0.69)	-0.12	0.92	-1.76	60	-2.76*	80
B Diff	0.03 (0.86)	0.61 (0.85)	-0.25 (0.97)	0.54 (0.69)	0.08	0.03	-1.55	70	-3.16*	80

Note. + = positive self-thoughts, - = negative self-thoughts, PI = personal importance, B = believability, Diff = difference between change in positive and change in negative

[a] For one participant who failed to complete the second side of the BDI at pre-treatment a prorated BDI total score was used. To the raw score from the first side (10) we added the sum of the item means for the questions on side two (7.26). The item means were taken from those reported by Beck et al. (1996).

[b] In addition to the paired *t* tests, Wilcoxon Signed Ranks Tests, which use medians, were also conducted. The conclusions drawn from both types of analysis were identical in all cases.

*$p < .05$, **$p < .01$, ***$p < .001$

Effect Size and Clinical Significance. To supplement the ANCOVA and paired samples *t* test results, we calculated post-treatment between-groups effect sizes using Hedges' *g* (see Table 2). On the clinical self-report measures, effect sizes were small in size at post-treatment ($M = 0.18$) and inconsistent in which treatment they favored. On the self-thought fluency assessment (STFA), large effect sizes were observed on the total number of self-positives ($g = 2.68$) and the ratio of positive to negative self-thoughts

(g = 1.29) favoring the FT condition. With respect to negative self-thoughts, effect sizes favored the TR condition (g = 0.51). The remaining STFA effects sizes were small (M = 0.19, range 0.08 – 0.33).

To supplement the comparison of the means, we calculated clinically significant change (CSC) according to criterion C from Jacobson & Truax (1991). Using the pre-treatment data from our sample and normative data on each measure (provided in the Design and Measures section) a cutoff score that placed the participant closer to the mean of the normative population than the dysfunctional population was established. The percentages of participants meeting the CSC criterion on the clinical self-report measures ranged from 50-85%, with a mean of 64%, indicating that the majority of participants showed clinically significant improvement. Averaging across measures, the percentages of participants meeting criteria were similar across the TR and FT conditions (*Ms* = 69% and 60%, respectively). On the STFA at post-treatment, the percentage of participants in TR and FT reaching CSC was 40% and 100% in total number of self-positives and 80% and 50%, respectively, in total number of self-negatives.

Comparison to a no or minimal treatment control group. Given the lack of group differences between the TR and FT conditions, it is reasonable to ask if the pre to post changes observed were the result of the treatments being similarly efficacious or due to extraneous variables. The current design did not include a concurrent no or minimal treatment control condition to directly address this question, in part because two related studies did and found superior effects for the treatment condition. As in the current study, both Philpot and Bamburg (1996) and Lange et al. (1998) used undergraduate samples, included based on low self-esteem scores, with pre to post data collected at an approximately 1 month interval. As such, these findings can be used as a yardstick for evaluating the current results. Within-groups effects sizes on comparable measures are presented in Table 3 and suggest that for both the completer and intent-to-treat TR and FT samples, changes in self-esteem, depression, and negative thinking were large (g = .79 - 1.9) and clearly exceeded the effects typically found in control conditions (g = .02 - .23).

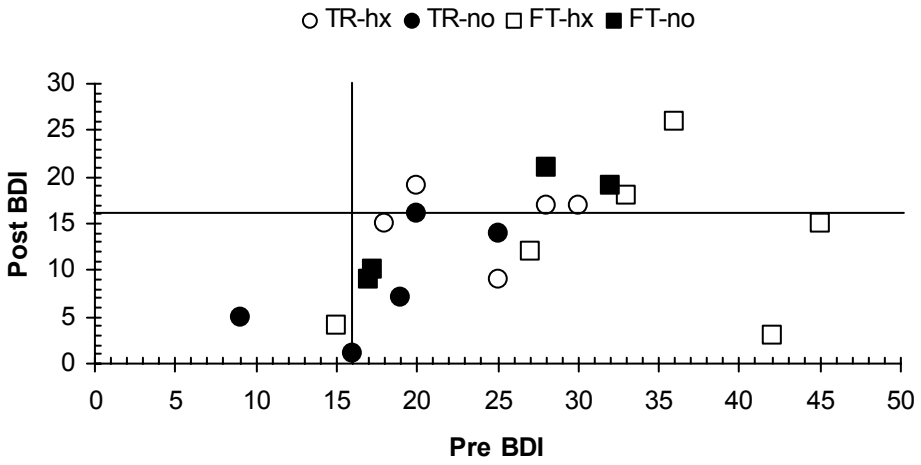
Table 3
Within-group effect sizes, Hedges' g, on compatible measures for completer (and intent-to-treat) samples from the current treatment conditions and relevant treatment and control groups from the literature.

	BDI[a]	ATQ-N	Self-esteem[b]
TR	1.63 (.79)	1.30 (.80)	1.87 (.87)
FT	1.31 (1.11)	1.85 (1.25)	1.65 (1.18)
Rehearsal	0.99	1.11	1.38
Positive Self-Instruction			1.00
No Treatment Control	0.19	0.23	0.02
Neutral Task Control			0.21

[a] Philpot & Bamburg (1996) used the BDI, while the BDI-II was used in the present study.

[b] Philpot & Bamburg (1996) used the Coopersmith Self-esteem Inventory, Lange et al (1998) measured self-esteem using self-evaluation subscales from the Dutch Personality Questionnaire, and the present study utilized the Rosenberg Self-Esteem Scale.

Subsample with a treatment seeking history. Despite the relative severity of our sample, college student samples are commonly described as analog, distinguishing them from clinical samples. Fifty-five percent of our completer sample (n = 11, 5 in TR and 6 in FT) reported a history of mental health treatment, which was for mood problems in 55% of the cases. This subgroup might more closely approximate a clinical sample and address concerns about how the interventions described here would fare with this population. When the pretreatment scores on the clinical self-report measures between those with and without a history of mental health treatment were compared, the means for the former were higher in 6/7 cases; however, only the BDI (M = 29.0, SD = 9.54 vs. M = 20.36, SD = 6.95) reached statistical significance, $F(1,18) = 5.13$, $p = .04$. While those with a history of mental health treatment appeared more severe at pretreatment, both groups improved. The average change on the BDI was 15 points for those with a treatment history and 9 for those without. Thus, at post-treatment the BDI means were not significantly different, $F(1,18) = 0.84$, $p = .37$; M = 14.09, SD = 6.74 vs. M = 11.33, SD = 6.65). A scatterplot of the individual pre and post BDI data is presented in the upper panel of Figure 1. The lower panel presents only the data from the 6 with a history of treatment for mood problems.



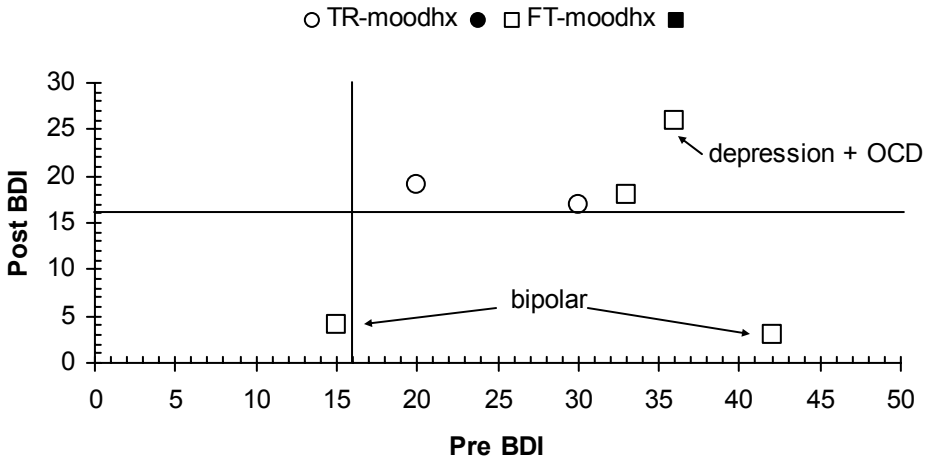


Figure 1. Scatterplot of individual pre (*y* axis) and post (*x* axis) BDI scores across conditions (TR = Thought Record training; FT = Fluency Training) for those with any mental health treatment history (hx = positive history, no = no history) in the upper panel and those with mental health treatment for a mood problem (mood) in the lower panel. The bisecting lines in the graphs represent the CSC criterion score.

Follow-Up

Follow-up data were obtained for all but one completer, who had moved to another state. Follow-up assessments occurred on average at about 5 weeks, but ranged due to scheduling conflicts (M = 5.42, SD = 4.21). The groups did not differ in time to follow-up, $F(1, 18) = .92$, $p = .35$. Again, because of the relatively large number of between and within-group analyses alpha was set at .01. ANCOVAs with the follow-up scores as dependant variables and post-treatment scores as covariates revealed no significant differences between the TR and FT conditions (p range = .10-.85). On the clinical self-report measures, effect sizes were also small at follow-up (M = 0.23, range 0.06 – 0.41). On the STFA, a large effect size was observed on the total number of self-positives favoring the FT condition (g = 1.30). With respect to negative self-thoughts, a large effect size favored the TR condition (g = 0.81). The remaining STFA effect sizes were small (M = 0.21, range 0.03 – 0.46). In terms of CSC, the percentage meeting criteria on the clinical self-report measures at follow-up (53-84%) did not change from post-treatment, and were similar across TR and FT (M = 69% and 63%, respectively).

Paired sample t tests were used to compare post-treatment scores to follow-up scores within each treatment condition, revealing only 1 significant difference. In the TR group, scores continued to improve on the ATQ-P, $t = -3.89$, $p = .005$. There were no other statistically significant changes indicating that improvements were maintained.

Treatment Evaluation

There were no group differences on any of the treatment evaluation items. Participants in both conditions rated the rationale for the treatment technique as "very" sensible (M = 4.05, SD = .51) and the techniques as "moderately to very" effective (M = 3.85, SD = .67). The therapist was rated as "very to extremely" effective in communicating and teaching the techniques (M = 4.70, SD = .57) and motivated (M = 4.30, SD = .80). Participants believed more contact with the therapist would have been only "somewhat to moderately" helpful (M = 2.85, SD = .93), rated themselves as "moderately to very"

compliant with the homework (*M* = 3.40, *SD* = .88), and to have mastered the techniques (*M* = 4.0, *SD* = .46).

Discussion

Both brief treatment conditions were associated with significant improvements in general distress, self-esteem, depression, depressotypic self-statements, and experiential avoidance. The changes observed during treatment were both statistically and clinically meaningful as post-treatment scores approached normative ranges for a majority of participants. Moreover, these improvements were not transient but were maintained at a follow-up assessment of at least one month. Thus, both TR and FT proved equally efficacious and, using the existing literature as a yardstick, equaled other related treatment conditions and surpassed outcomes in control conditions.

Recent data from dismantling studies of CBT for depression call into question the necessity of cognitive techniques for producing change. The TR condition in the current study opens up the option that while not necessary, use of the Thought Record may be sufficient for producing change. However, in the absence of a comparison group that controls for common factors (i.e., a sensible rationale with associated techniques) caution is warranted in wholeheartedly adopting this interpretation. That said, there is an impressive amount of data supporting CBT for depression, cognitive restructuring is a core component of the treatment, and the Thought Record is a primary vehicle used in pursuing cognitive restructuring (Persons et al., 2001).

Given the importance placed on the Thought Record in CBT for depression and its years of use and development, it is interesting that the FT intervention produced equivalent results. The positive FT data is consistent with the literature on the beneficial effects of increasing positive self-verbalizations (Calkin, 1992; Lange et al., 1998; Philpot & Bamburg, 1996) and extends it by using a sample that appeared more severe than those in previous investigations, comparing FT to another active treatment, and demonstrating the maintenance of gains over time. While these data provide some empirical support for targeting self-statements in therapy, they do not suggest a focus on self-statements to the exclusion of other treatment strategies, namely attempts to change overt behavior via behavioral activation, which has been shown to equal or exceed the results of comparisons conditions in which cognitive techniques were included (Jacobson et al., 1996).

It is interesting to compare and contrast the self-statement measures. On the STFA, significant group differences were observed with respect to the total number of self-positives, as expected due to the nature of the FT condition. The effect sizes at post-treatment also indicate large group mean differences on the total number of self-positives and ratio of positives to negatives. Participants in the FT condition doubled, and in many instances nearly tripled, their total positive thoughts and the total number of negative thoughts stayed the same, thus improving the FT ratio of positives to negatives to 2.1:1.0. In the TR condition, there were no changes in the total positive thoughts, but there was a decrease in negative thoughts, which improved the TR ratio of positive to negative self-thoughts to 1.2:1.0. At follow-up, both groups had a ratio of 1.7:1.0, due to a slight decrement in positive self-statements in the FT group and a greater decrement in negative self-statements in the TR group. Interestingly, the ratio of 1.7:1.0 is nearly identical to the data from our local, non-distressed sample and corresponds to the ratio of 1.6:1.0 that others have suggested represents a psychologically healthy balance (Kendall et al., 1989; Schwartz & Garamoni, 1989). Unlike on the STFA, the groups did not differ on the ATQ-N or ATQ-P. Instead both showed post-treatment ratios of 1.6:1.0. Thus, the most consistent finding across the self-statement measures was the change in the ratio of positive to negative self-statements.

For both groups, the average personal importance and believability ratings tended to increase for positives to decrease for negatives. The general direction of these changes, even though not reaching

formal statistical significance according to our corrected alpha level (p = .01), speak to a potential criticism of the treatments as being artificial, too structured, or in the case of FT, a rote memorization task. If the treatments were artificial, or if FT was simply memorization of generic positive thoughts, believability and personal importance would be expected to show no change, or maybe even decrease. Clinical behavior analysts have suggested that self-thoughts may have a number of overlapping functions: 1) as a conditioned elicitor, based on either direct or indirect/verbal pairings with actual aversive events, 2) as an establishing operation, altering the momentary reinforcing effectiveness and evocative functions of other stimuli, and 3) as a verbal self-rule or as the basis for establishing self-rules (Dougher & Hackbert, 1994, 2000). Believability and personal importance ratings may be a crude proxy measure for these functions (Wilson, Hayes, Gregg, & Zettle, 2001; p. 229). For instance, a self-thought that is low in believability and personal importance may be one that is a weak conditioned elicitor, functions as only a mild establishing operation, and fails to be a basis for generating self-rules. Conversely, a self-thought that is high in believability and personal importance may be a stronger conditioned elicitor that also functions as a more significant establishing operation, and serves as a basis for generating self-rules. This analysis, while plausible, is entirely speculative at the moment.

Given the short duration of the TR and FT conditions, it is worth noting that brief therapy is commonplace. Benton et al. (2003) reported that the mean number of sessions received at their university counseling center was six, while a national survey found 73% of campus counseling centers averaged 3-6 sessions per client (Stone, Vespia, & Kanz, 2000). Moreover, in a large national sample of clients seeking psychological services, the median number of sessions attended was less than five (Hansen et al., 2002). These data suggest that the development and evaluation of focused, brief intervention strategies appears important. That said, it is important to note that while the treatment gains achieved were impressive, on most of the clinical measures there was room for additional improvement and there were individual differences in treatment response.

There were a number of limitations in the present study. One is the generally small sample size, which reduced statistical power for finding between group differences. That said, the between group effect sizes in the present study were not large or consistent on the clinical measures indicating that extremely large samples would be needed to find group differences that, if found, would not reliably favor one condition. A second consideration is the attrition rate. The 33% attrition rate is not atypical in clinical trials, but is worth noting given the brevity of the interventions offered. Attrition was not associated with increased severity of distress, lower self-esteem, or group assignment. It is possible that attrition was due to the brevity of the treatments offered rather than in spite of it. That is, when only one technique is being offered, if the rationale for that technique does not readily resonate with the participant, there is less incentive to stay in treatment than there would be when offered a multi-component treatment package. Another limitation is the absence of data on overt behavior changes and reliance on self-report inventories, which may be influenced by demand characteristics, a Hawthorne effect, or repeated testing. To provide some protection, we employed commonly used clinical measures that have sound psychometric properties and kept the therapist blind to as many of the measures as possible during treatment. In addition, we added the STFA, which sampled actual behavior under standardized conditions, providing at the very least a manipulation check documenting that the treatments had some unique effects. Lastly, this study lacks a concurrent waitlist or supportive therapy control group. Given the comparisons between the present results and the extant literature, it seems reasonable to conclude that TR and FT are better than no treatment. An important next step is comparison to a supportive therapy group, which would control for the effects of non-specific factors. In addition, because of the specific targets of TR (challenging negative thoughts) and FT (increasing positive thoughts) another interesting future comparison would be with cognitive defusion procedures from Acceptance and Commitment Therapy (Hayes, Strosahl, & Wilson, 1999). Cognitive defusion procedures emphasize changing the function of thoughts rather than their content or frequency and recent data with non-distressed college students

suggested a defusion technique could reduce the discomfort and believability of negative self-thoughts (Masuda, Hayes, Sackett, & Twohig, 2004).

In a relatively severely distressed college sample, three sessions of TR or FT were associated with significant and sustained improvements according to commonly used clinical indices. These data support the feasibility, acceptability, and potential utility of implementing both strategies clinically and warrant consideration in future research, especially research exploring treatment specific effects and attempting to identify relationships between specific techniques and mechanisms of change.

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Author Contact Information:

Jean L. Clore, M.S., B.C.B.A. Western Michigan University Department of Psychology 1903 West Michigan Avenue Kalamazoo, MI 49008-5439 USA jean.l.clore@wmich.edu Phone +1 (269) 387-4497	Scott T. Gaynor, Ph.D. Western Michigan University Department of Psychology 1903 West Michigan Avenue Kalamazoo, MI 49008-5439 USA scott.gaynor@wmich.edu Phone +1 (269) 387-4482