

EMOTIONAL PROCESSING IN COGNITIVE THERAPY AND VOCAL EXPRESSION OF FEELING

DANIEL L. SEGAL
Nova Southeastern University

EDWARD J. MURRAY
University of Miami

College students with unresolved traumatic experiences were given a brief course of cognitive therapy or asked to talk into a tape recorder. Both procedures were equally effective in reducing negative mood and negative thoughts, although cognitive therapy was somewhat more effective on one outcome measure. The arousal of negative affect was inversely related to positive outcome. The reduction of negative affect and, particularly, negative thoughts was positively related to outcome. In spite of similarities in outcome, the two procedures seemed to operate by somewhat different processes.

Recently there has been an emphasis on emotional expression in psychotherapy in general (Safran & Greenberg, 1991) and cognitive therapy in particular (Mahoney, 1993; Robins & Hayes, 1993). There is general agreement that catharsis, in the sense of a simple affective discharge, is not sufficient for therapeutic change. Emotional processing seems to require at least three components: an affective arousal, a cognitive change, and a shift to positive feelings (Greenberg & Safran, 1987; Murray, 1985; Nichols & Efran, 1985).

An effective paradigm for studying the emotional processing of stressful or traumatic experiences has been developed by Pennebaker (Pennebaker, 1985; Pennebaker & Beall, 1986). College student subjects were asked to write anonymous essays on traumatic or trivial topics on four successive days. Although these students were not mental health clients, they wrote deeply felt, poignant essays about personal losses and stresses in the traumatic condition. Writing about these experiences

This article is based on the doctoral dissertation conducted at the University of Miami by Daniel L. Segal under the supervision of Edward J. Murray.

Correspondence concerning this article should be addressed to Daniel L. Segal, Center for Psychological Studies, Nova Southeastern University, 3301 College Ave., Ft. Lauderdale, Florida 33314.

resulted in an immediate increase in negative mood but longer term health benefits. Continuing within this paradigm, Pennebaker, Kiecolt-Glaser, and Glaser (1988) subsequently found that this procedure improved immune functioning. Thus, simply writing about traumatic events resulted in emotional processing without the aid of a therapist.

Finding it hard to believe that simply writing about traumatic events could be as effective as psychotherapy, we directly compared writing and psychotherapy and employed additional outcome and process measures. In the first study (Murray, Lamnin, & Carver, 1989), we found a small advantage of psychotherapy in the first of two sessions. However, in the larger second study using the four day paradigm, we found no difference in outcome between psychotherapy and writing essays about traumatic events; both were effective (Donnelly & Murray, 1991). However, we did note one important difference in process. After each session of writing there was an increase in negative mood that did not occur after the psychotherapy sessions.

Two important factors are necessarily confounded in comparing psychotherapy and writing essays. First of all, psychotherapy involves an interpersonal relationship. Second, psychotherapy involves a vocal expression of feelings as opposed to a written expression. In order to help tease these factors apart, Murray and Segal (in press) compared vocal and written expression in the same paradigm. The two procedures had similar outcomes. Both also showed the upsurge in negative mood after sessions that had suggested different processes for pure expressive procedures and psychotherapy. Further, Esterling et al. (1994), using a similar paradigm, found that both vocal and written expression improved immune functioning, although vocal expression was more effective.

The present study was designed to provide a more powerful test of the hypothesis that psychotherapy is more effective than a pure expression of feelings. First, a more structured treatment, cognitive therapy, was used. Second, a more distressed group of subjects was selected and, for ethical reasons, the trivial topics control condition, which had not shown any changes in the three previous studies, was dropped. Third, additional measures were added or specifically developed for the study to help understand the underlying processes involved.

Cognitive therapy uses affective arousal as a means of accessing "hot cognitions." Nevertheless, the core process is cognitive restructuring (Beck et al., 1979; Beck & Emery, 1985). Recently, there has been considerable concern about how cognitive therapy works because a reduction in maladaptive thoughts can occur in pharmacotherapy and other forms of psychotherapy (Hollon, DeRubeis, & Evans, 1987; Robins & Hayes, 1993). Beck (1991) has suggested that cognitive change is the final com-

mon path
might sh

The su
distresse
about 10
distresse
also rest
parent's

Severa
first was
which ha
ate cogni
this stud
naire (H
Positive a
was usec
PANAS h

METHOI

SUBJECT

In a prel
indicate t
they were
experienc
relationsh
total of 86
completed
cognitive
not signif

PROCED

Subjects v
expressio
therapy, 2
males. In
sessions o
talked to
and spok
to expres
experienc

but longer term
ebaker, Kiecolt-
s procedure im-
about traumatic
of a therapist.
traumatic events
mpared writing
ne and process
(1989), we found
sessions. How-
digm, we found
i writing essays
(Murray, 1991).
cess. After each
ood that did not

comparing psy-
apy involves an
olves a vocal ex-
In order to help
compared vocal
procedures had
ative mood after
pure expressive
(1994), using a
expression im-
was more effec-

powerful test of
n a pure expres-
gnitive therapy,
was selected and,
, which had not
dropped. Third,
ed for the study

of accessing "hot
ve restructuring
has been consid-
ause a reduction
and other forms
Robins & Hayes,
is the final com-

mon pathway for all effective therapies. We felt that the present study might shed some light on these matters.

The subjects for this study were selected to be more emotionally distressed and homogeneous than those in our previous studies. Only about 10% of students pretested were eligible. They had to be still distressed by the traumatic event and willing to talk about it. They were also restricted to three types of trauma: death of a relative or close friend, parent's divorce, and breakup of a significant relationship.

Several new measures were added to the procedure in this study. The first was the Impact of Event Scale (Horowitz, Wilner, & Alvarez, 1979) which has become a standard test in trauma research. In order to evaluate cognitive change, the Negative Thoughts Index was developed for this study. It is similar to the standard Automatic Thoughts Questionnaire (Hollon & Kendall, 1980) but specifically oriented to trauma. The Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988) was used to evaluate mood changes before and after sessions. The PANAS has become a standard measure of mood.

METHOD

SUBJECT SELECTION

In a preliminary survey 648 undergraduate students were asked to indicate traumatic experiences that still bothered them and about which they were willing to talk in a study. The three most frequent traumatic experiences—death of a close relative or friend, breakup of a serious relationship, and parent's divorce—were included in the selection. A total of 86 students met these criteria, 63 agreed to participate, and 60 completed the study. At one month follow-up, 37 subjects were retained: cognitive therapy (18) and vocal expression (19). The two groups were not significantly different as to dropout frequency.

PROCEDURE

Subjects were randomly assigned to either cognitive therapy or vocal expression groups. There were 30 subjects in each group: cognitive therapy, 21 females and 9 males; vocal expression, 22 females and 8 males. In both conditions, the subjects had 20 minute, audio-taped sessions on four successive days. In the cognitive therapy condition they talked to a therapist; in the vocal expression condition they were alone and spoke to the tape recorder. In both cases, they were asked each day to express their deepest thoughts and feelings about the traumatic experience for the entire 20 minutes. Process measures were obtained

before and after each session. In addition, a battery of outcome measures were administered before and after the treatment and at a one month follow-up by mail.

COGNITIVE THERAPY

The therapists were 4 female and 3 male graduate students in clinical psychology who had completed a graduate course in cognitive therapy by the junior author who also supervised in this study. They were given a written manual specifically developed for this study on doing brief cognitive therapy with these types of traumas. The first session focused on information gathering, expression of feelings, and establishing rapport. The second and third sessions emphasized identifying and correcting cognitive distortions and maladaptive beliefs. In the fourth session, the therapist stated what seemed to be the most important maladaptive belief and asked the subject to give counter-arguments, using role reversal, role playing, etc. Praise was given for changes in beliefs or adaptive plans for the future.

In order to evaluate Therapy Integrity, 12 cases (48 sessions) were randomly selected and rated for adherence on a seven point scale ("1" not at all, "4" moderate amount, "7" very much) using the detailed instructions as a guide. The mean rating was 6.1 (S.D. = .51) indicating a very high adherence to the cognitive therapy guidelines.

OUTCOME MEASURES

The Impact of Event Scale or IES (Horowitz, Wilner, & Alvarez, 1979) was administered at an orientation meeting the day before treatment began, at termination immediately following the last session, and at follow up. The IES yields intrusion and avoidance subscales, which are summed to produce a total distress score.

The Negative Thoughts Index (NTI) was administered at the same time points. This measure of negative thoughts relevant to the three traumatic areas was developed specifically for this study. The NTI is a 9 item self-report inventory answered on a 5 point scale. The items were drawn from Beck et al., (1979), Burns (1985), and personal clinical experience. Examples are "I will never feel good about myself as a result of the event." and "I feel responsible for the loss or event." Cronbach's Alpha for internal consistency at baseline was .65 and split-half reliability was .63. Test-retest reliability from orientation to termination was .50, $p < .01$. This intermediate correlation suggests that the NTI is a state measure sensitive to change over time.

The sa
mination
occurre
positive
thinking
topic. Th
point sc
mental
change
& Carve

PROCE

Mood c
sion wa
(PANAS
sion iter
hopeles
analysis
four dep
the fina
on a 5 p

The P
about th
topic no
to 4 so
immedi

The C
Murray
press) w
point sc
the exp
adaptiv
coping
trained
reliabili
were ra
The Pea
= .71, s
cant (p
to thos
1991).

outcome measures
at a one month

students in clinical
cognitive therapy
They were given
on doing brief
session focused
establishing rap-
ing and correct-
e fourth session,
ant maladaptive
using role rever-
beliefs or adaptive

3 sessions) were
point scale ("1"
ing the detailed
.51) indicating a
s.

& Alvarez, 1979)
before treatment
session, and at
scales, which are

red at the same
ant to the three
y. The NTI is a 9
The items were
nal clinical expe-
self as a result of
ent." Cronbach's
plit-half reliabil-
mination was .50,
e NTI is a state

The same Post-Experimental Questionnaire was administered at termination and follow-up. Subjects were asked to rate changes that had occurred as a result of the procedures in the study with respect to positive and negative feelings about the topic and the self, changes in thinking and adaptive behavior, and feelings of resolution about the topic. These questions are shown in Table 2. They were rated on seven point scales ("1" none, "4" somewhat, "7" very much). The Post-Experimental Questionnaire (PEQ) has proved to be a sensitive measure of change in previous studies (Donnelly & Murray, 1991; Murray, Lamnin, & Carver, 1989; Murray & Segal, in press).

PROCESS MEASURES

Mood change from immediately pre-session to immediately post-session was evaluated with the Positive and Negative Affect Schedule (PANAS) developed by Watson, Clark and Tellegen (1988). Four depression items were added to the PANAS (sad, depressed, discouraged, and hopeless) because of a deficit in this area. A principle components factor analysis on pre-testing data with three hundred subjects showed that the four depression items loaded on the negative factor, as expected. Thus, the final measure included 10 positive and 14 negative items answered on a 5 point scale (1 very slightly to 3 moderately to 5 extremely).

The PANAS is a general mood measure. A specific measure of feelings about the topic was the question "How painful is it to think about your topic now?" Subjects answered on a seven point scale from 1 not painful to 4 somewhat painful to 7 very painful. This question was asked immediately pre session and immediately post session each day.

The Content Analysis system used in previous studies (Donnelly & Murray, 1991, Murray, Lamnin, & Carver, 1989; Murray & Segal, in press) was applied to the audio tapes of all sessions in both groups. Seven point scales (1 none to 4 somewhat to 7 very much) were used to evaluate the expression of positive and negative emotion, evidence of general adaptive cognitive change, behavioral change towards more adaptive coping strategies, and self-esteem improvements. These were rated by a trained clinical graduate student blind to the purposes of the study. For reliability, 14 cases, half from each treatment, for a total of 56 sessions were rated by a second trained clinical graduate study blind to the study. The Pearson correlations were: negative emotion = .91, cognitive change = .71, self-esteem change = .69, behavior change = .81. All were significant ($p < .01$) except for positive emotion ($r = .44$). Such values are similar to those obtained in a previous reliability check (Donnelly & Murray, 1991).

RESULTS

NATURE OF GROUPS

A series of one way ANOVA's showed that there were no significant differences between the cognitive therapy and vocal expression groups on any of the measures before the start of the treatments. Furthermore, the two groups were not significantly different in length of time since the traumatic event or its perceived importance. On the average, the traumatic event took place four years earlier and was rated very important. Thus, the disturbing experiences were long-standing and very meaningful.

The actual level of distress in the subjects was evaluated using the IES. Descriptive data for the IES is available for several populations (Horowitz et al., 1979; Zilberg, Weiss, & Horowitz, 1982). For clinic patients with stress or parental death, the mean total IES was about 39 to 42. Normal control subjects had a mean of 9.8. Non-patient subjects with parental death scored 22.9. The mean total IES score at orientation in the subjects in the present study was 29.6. The present group is most comparable to the non-clinic subjects reacting to the death of a parent.

OUTCOME EFFECTS

The effects of the two treatments on the Impact of Event Scale are shown in Table 1 where it can be seen that in both groups the IES total score decreased from orientation to termination. MANOVA analysis showed that the main effect for time was significant for total IES - $F(1,58) = 7.72$, $p < .01$. The main effect for time was also significant for the subscales: avoidance - $F(1, 58) = 3.90$, $p < .06$; and intrusion - $F(1, 58) = 8.31$, $p < .01$. However, none of the group X time interactions were significant nor even approached significance. In other words, both groups improved but did not differ.

Table 1 also shows the IES scores for the 37 subjects who completed the follow-up mailing. The main effect for time was again significant for total - $F(1, 35) = 19.38$, $p < .001$; avoidance - $F(1, 35) = 6.55$, $p < .05$; and

TABLE 1. The Effects of Cognitive Therapy and Vocal Expression on the Impact of Event Scale and the Negative Thoughts Index

	Impact Event Scale		Negative Thoughts Index	
	Cognitive Therapy	Vocal Expression	Cognitive Therapy	Vocal Expression
Orientation	28.07	31.20	20.83	19.57
Termination	24.97	25.90	15.90	16.63
Follow-Up at One Month	18.17	16.32	17.88	16.21

TAB

Question

To what positive al started for

To what negative a started for

To what e yourself a

To what e yourself a

Has this ex your topic

How muc (behaved)

To what resolution

intrusion
interacti
treatmer
overall
meaning

The re
the IES a
decrease
expressio
was signi
was not
either gr
on the I
correlate

The re
in Table
about th
more pc
increase
more ne
before th
about th
of the q
thought
At the

TABLE 2. Mean Responses to Post-Experimental Questionnaire at Termination

Question	Cognitive Therapy	Vocal Expression	F	p <
To what extent are your feelings more positive about your topic than when you started four days ago?	5.47	4.40	6.40	.01
To what extent are your feelings more negative about your topic than when you started four days ago?	1.20	1.67	5.66	.05
To what extent do you feel better about yourself as a result of this experience?	4.97	3.90	6.89	.01
To what extent do you feel worse about yourself as a result of this experience?	1.07	1.43	2.98	ns
Has this experience led you to think about your topic in any different ways?	4.93	4.13	2.82	ns
How much differently have you acted (behaved) in the last four days than usual?	2.23	2.03	0.33	ns
To what extent do you feel a sense of resolution regarding your topic?	4.67	4.03	1.53	ns

intrusion $F(1, 35) = 22.46, p < .001$. Again none of the group X time interactions were even near significance. Thus, one month after the treatments both groups continued to improve but did not differ. The overall drop in total IES from about 30 to about 17 seems clinically meaningful in comparison to the normative data presented earlier.

The results for the Negative Thoughts Index were similar to those for the IES as shown in Table 1. For cognitive therapy the mean NTI score decreased from 20.83 at orientation to 15.90 at termination. For vocal expression the decrease was from 19.57 to 16.33. The main effect for time was significant - $F(1, 58) = 30.25, p < .001$ but the group X time interaction was not even near significance. There was no further improvement for either group at follow-up. Thus, both groups improved about the same on the Negative Thoughts Index. The NTI and IES were significantly correlated, at orientation, $.60, p < .01$ and at termination, $.58 p < .01$.

The results from the Post-Experimental Questionnaire are presented in Table 2. It can be seen that both groups reported feeling more positive about their topics but that the cognitive therapy group was significantly more positive. On the obverse question both groups reported little increase in negative feelings but the vocal expression was significantly more negative. Both groups felt somewhat better about themselves than before the study but the cognitive therapy group felt significantly better about themselves. There were no significant group differences on the rest of the questions. Nevertheless, it should be noted that both groups thought about their topic differently and felt a sense of resolution.

At the one month follow-up, the pattern of results was very similar.

no significant
ion groups on
more, the two
the traumatic
atic event took
the disturbing
using the IES.
populations
2). For clinic
was about 39
tient subjects
at orientation
group is most
of a parent.

ale are shown
IES total score
alysis showed
 $F(1, 58) = 7.72$,
the subscales:
 $= 8.31, p < .01$.
significant nor
ups improved

who completed
significant for
 $.5, p < .05$; and

the Impact of

Thoughts Index

Vocal
Expression

19.57

16.63

16.21

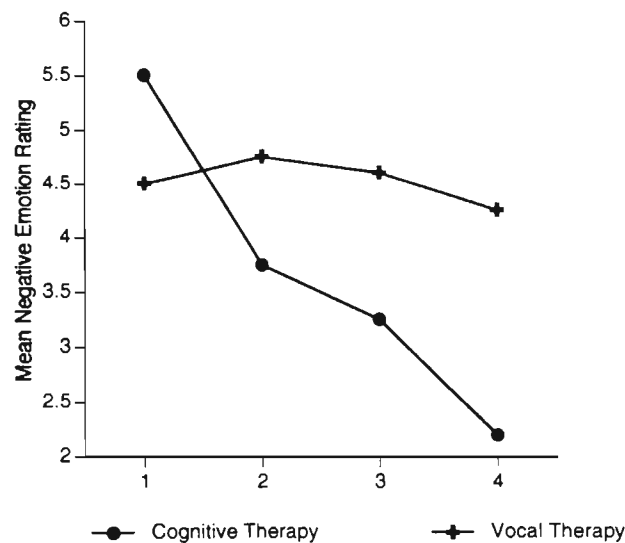


FIGURE 1. Expression of negative emotion during sessions: Mean context analysis ratings of negative emotions expressed for cognitive therapy and vocal expression over 4 days of treatment.

Only two group differences, however, were significant. The cognitive therapy group felt better about themselves - $F(1, 35) = 4.52, p < .05$ and thought differently about their topics - $F(1, 35) = 7.56, p < .01$ relative to the vocal group. In general, then, both groups reported improvement from before the study to follow-up on a number of questions but there was also a moderate advantage for the cognitive therapy.

CONTENT ANALYSIS OF SESSIONS

What actually happened during the four sessions of the intervention? The content analysis of the audiotapes by objective raters provided evidence that subjects in both groups were improving. Both groups showed somewhat irregular but positive changes in how they thought about their traumatic experience and themselves, as well as plans for changing their behavior in an adaptive direction. The main effect of days was significant for: cognitive - $F(3, 147) = 11.83, p < .001$; self-esteem - $F(3, 147) = 3.39, p < .05$; and adaptive behavior - $F(3, 147) = 2.86, p < .05$. There were no significant effects for group or group \times days.

On the other hand, there was a marked difference between the groups in the expression of negative affect during the sessions. This result is shown in Figure 1 where it can be seen that both groups expressed

considerable group differences in a high level of negative emotion category, showing that the cognitive group expressed negative emotion more than the vocal group.

MOOD

The mood of the session and vocal expression over the positive initial

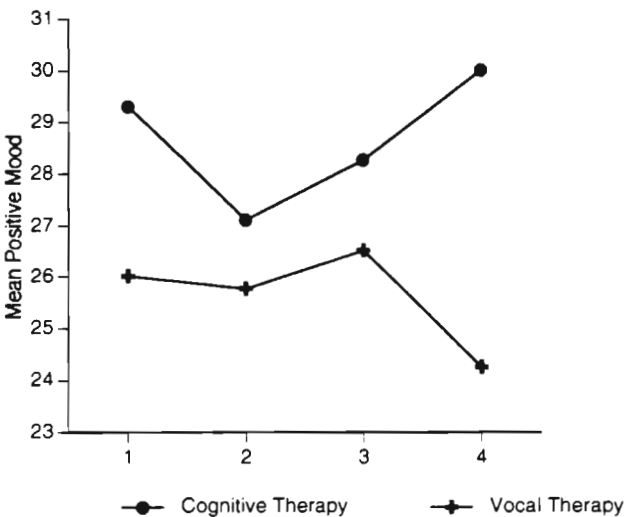


FIGURE 2. Subjective positive mood over course of treatment: Mean PANAS positive mood scores, collapsed over pre- and post-session, for cognitive therapy and vocal expression over four days of treatment.

considerable negative emotion on day 1 but then the cognitive therapy group showed a steady decrease while the vocal expression remained at a high level of expression. The group X days interaction was significant: $F(3, 147) = 7.53, p < .001$. Positive emotion, the unreliable content category, showed no change.

Thus, it would seem that the actual events during the sessions were quite different. In the vocal expression group, there was an unremitting expression of negative emotion over the four sessions. In contrast, in the cognitive therapy group, expression of negative emotion decreased dramatically, presumably related to the work of cognitive therapy. Yet, both groups showed modest improvement in cognition, self esteem, and adaptive behavior.

MOOD CHANGES DURING TREATMENTS

The content analysis showed what subjects *talked* about during the sessions, but how did they *feel* after the sessions? The cognitive therapy and vocal expression groups showed a different pattern of positive mood over the four days of the study. As can be seen in Figure 2, PANAS positive mood, collapsed over pre-post sessions each day, showed an initial decrease in the cognitive therapy group and then a steady in-

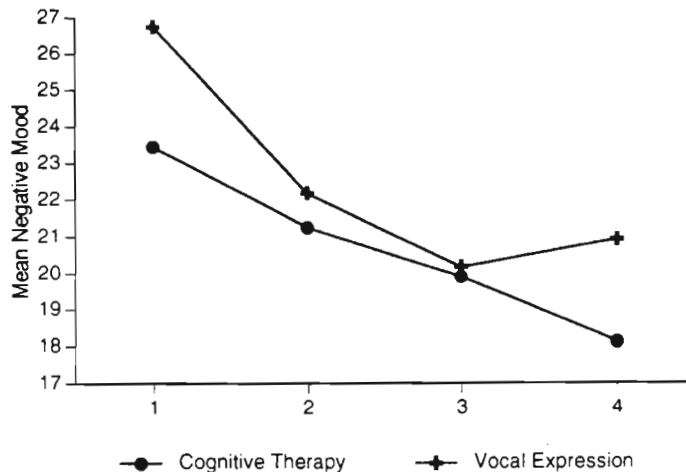


FIGURE 3. Subjective negative mood over course of treatment: Mean PANAS negative mood scores, collapsed over pre- and post-session each day, for cognitive therapy and vocal expression over four days of treatment.

crease. Vocal expression showed little increase and a decrease by the fourth day. There was a significant group \times days interaction $-F(3, 174) = 3.07, p < .05$. The difference is significant only on day 4, $t(58) = 2.02, p < .05$.

The two measures of negative affect—PANAS negative mood and painfulness of topic—showed a steady decrease over the four days, collapsed over group. The decreases were significant for: negative mood $-F(3, 174) = 23.18, p .001$; and painfulness $-F(3, 174) = 34.75, p .001$. The results for PANAS negative mood are shown in Figure 3. However, there were no differential effects for group or group \times days. In other words, cognitive therapy and vocal expression showed a similar decrease in the two measures of negative mood over the four days. These measures of negative affect are moderately correlated with each other as well as with the IES and NTI on the order of .40 to .60.

It should be noted that in the analyses of the PANAS mood scales and the painfulness of topic rating, data from pre and post session were collapsed so as to see the overall trend across days. However, there were important differences between cognitive therapy and vocal expression in changes from just before to just after the sessions. This effect can be most clearly seen with the painfulness rating which is shown in Figure 4. Here the data are collapsed over days. It can be seen that the painfulness of the topic decreased from pre to post session for the cognitive therapy group but increased for the vocal expression group. The group

FIGURE 4
painful

X pre-post
that the diff
was signific

Somewhat
PANAS. Po
group and d
interaction v
for the voc
increased o
significance
expressing g
in the cogni

In summ
mood arou
Over the fo
positive mo
decreased i
after the da
vocal expre
while the i
term effect

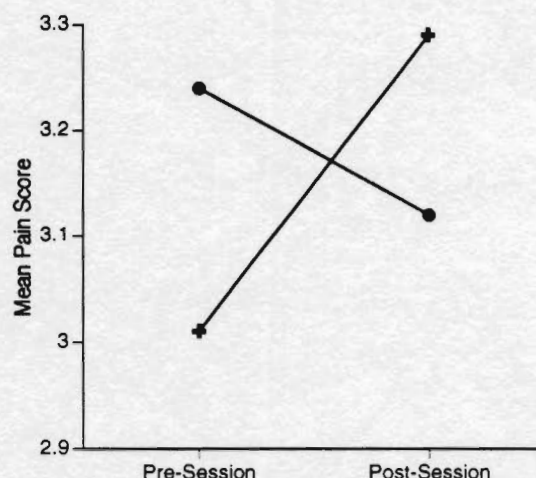


FIGURE 4. Immediate effects of sessions: Mean immediate self-report of painfulness of topic scores for cognitive therapy and vocal expression, pre- and post-session, collapsed over four days.

X pre-post interaction was significant $-F(1,58) = 6.94, p < .01$ indicating that the differential effect of the two treatments from pre to post session was significant.

Somewhat similar, although less dramatic, effects were found with the PANAS. Positive mood increased pre to post for the cognitive therapy group and decreased for the vocal expression group. The group X pre-post interaction was significant $-F(1,58) = 11.00, p < .01$. Negative mood increased for the vocal expression more than for the cognitive therapy where it increased only slightly. The group X pre-post interaction approached significance $-F(1,58) = 3.01, p < .10$. Thus, in general, subjects in the vocal expression group were emotionally distressed after each session while those in the cognitive therapy group felt more positive and less upset.

In summary, there were some important differences in the subjective mood aroused by the two procedures during the course of treatment. Over the four days, the cognitive therapy group gradually increased in positive mood while the vocal expression group decreased. Both groups decreased in negative mood over the four days of treatment. However, after the daily sessions, the cognitive therapy group felt better while the vocal expression group showed an upsurge in negative feelings. Thus, while the immediate effect of vocal expression was negative, the long term effect was beneficial.

TABLE 3. Arousal of Negative Affect and Outcome: Correlations of PANAS Total Negative Mood and Pre-Post Upsurge in Negative Mood with Post-Experimental Questionnaire

Post-Experimental Questionnaire	Cognitive Therapy		Vocal Expression	
	Total Negative Mood	Post Session Upsurge	Total Negative Mood	Post Session Upsurge
Positive Topic	.22	.08	-.20	.07
Negative Topic	.03	.37*	.43*	.43*
Better Self	.00	.03	-.05	-.07
Worse Self	.29	.48**	.38*	.38*
Thinking Change	.26	-.03	.33	.13
Behavior Change	.16	-.10	.48**	.41*
Resolution	.13	-.04	-.21	.03

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

NEGATIVE MOOD AROUSAL AND OUTCOME

Since the processes in cognitive therapy and vocal expression are different in several ways, a correlational analysis was done to help understand the differences. Specifically, measures of negative mood were correlated with outcome on the Post-Experimental Questionnaire for each treatment group.

Table 3 shows the correlations between the 7 items on the Post-Experimental Questionnaire and the total PANAS negative mood scores (summed across four days, pre and post collapsed) as well as with the PANAS post-session negative mood change score (post minus pre session). For the cognitive therapy group there were no significant correlations between the PEQ items and the total PANAS negative mood scores. But there were two significant correlations with the post-session mood change score. There were significant correlations between PEQ items "more negative about topic" and "feel worse about self" and the pre-post upsurge in negative mood following each of the sessions. In contrast, none of the positive changes on the PEQ were related to the upsurge in negative feelings. Thus, to the extent that cognitive therapy resulted in an upsurge of negative mood following sessions, such arousal was related to negative feelings about the topic and the self at the end of the treatment.

In the case of vocal expression, the PEQ items "more negative about topic" and "feel worse about self" were related to both the total negative mood and the upsurge in negative mood. For total negative mood, a test of independent correlations using the Fisher Z transformation showed a significant difference for "more negative about topic" ($p < .05$). Thus, the arousal of negative mood in the vocal expression condition was even more clearly related to negative feelings at outcome. On the other hand, both

TABLE 4. Reduction of Negative Affect, Thinking, and Outcome: Correlations of Change Scores of Painfulness of Topic and NTI with Post-Experimental Questionnaire

Post-Experimental Questionnaire	Cognitive Therapy		Vocal Expression	
	Affect Reduction (Pain)	Thought Reduction (NTI)	Affect Reduction (Pain)	Thought Reduction (NTI)
Positive Topic	.16	.38*	.34	.50*
Negative Topic	-.00	-.26	-.26	-.15
Better Self	.34	.46*	.36*	.28
Worse Self	.14	-.37*	-.41*	-.40*
Thinking Change	.22	.44*	.12	.01
Behavior Change	.09	.22	.13	.11
Resolution	.26	.46*	.59**	.52**

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

measures of negative arousal were related to positive changes in adaptive behavior. For the pre-post upsurge, Fisher's Z was significant for "behavior change," ($p < .05$). We will discuss this anomalous finding later.

A similar pattern of results was found using total score from the Pain rating. So, too, there were similar correlations between the IES at termination and the PEQ. The patterns persisted at the one-month follow up. Various measures of negative affect arousal during treatment were associated with feeling worse at treatment termination but also with increased behavior change in the vocal expression group.

Thus, the arousal of negative mood during therapy resulted in a deleterious effect on PEQ outcome. This negative impact was somewhat stronger for the vocal expression group except for the anomalous outcome finding of improved adaptive behavior.

RELATIONSHIP BETWEEN REDUCTION IN NEGATIVE AFFECT, NEGATIVE THOUGHTS, AND OUTCOME

Earlier it was reported that the Negative Thoughts Index and all the measures of negative affect improved from before therapy to after the four days of therapy at termination for both groups. The question now is whether changes in these measures were related to PEQ results at termination.

Table 4 shows the correlations between the changes in painfulness of topic and the NTI with the PEQ for both groups. It can be seen that there is generally little relationship between the change in painfulness for the cognitive therapy group and the PEQ but such change is moderately related to the PEQ for vocal expression. A significant difference between independent correlations was found using the Fisher Z transformation

for "feeling worse about self" ($p < .05$). All other correlations did not significantly differ.

On the other hand, there is a much stronger relationship between changes in the NTI and outcome for both groups. For the cognitive therapy group, a decrease in negative thoughts was associated with "feeling more positive about the topic," "better about self," "thinking change" and "a sense of resolution" about the topic. There was a negative relationship with "feeling worse about self."

There was a similar pattern in the vocal expression group with reduction in the NTI associated with "feeling more positive about the topic" and a "sense of resolution." NTI change was also negatively correlated with "feeling worse about self." However, there was no correlation between NTI change and "thinking change" in the vocal expression group. In fact, Fisher's Z test showed significant differences between correlations for "thinking change" ($p < .05$), while no other correlations were significantly different.

The same pattern of results was found with all the other measures of change in negative affect, although not as strong as the painfulness of topic measure. The general pattern persisted at follow-up, but not as strongly.

Thus, the reduction of negative affect is associated with positive PEQ items for vocal expression but not for cognitive therapy. The NTI change is associated with positive PEQ items in both groups. NTI change was specifically associated with PEQ "thinking change" in the cognitive therapy group only.

INTERNAL ANALYSIS OF POST-EXPERIMENTAL QUESTIONNAIRE

So far, there are three correlational findings related to differences between cognitive therapy and vocal expression. First, expression of negative emotion is significantly correlated with PEQ behavior change in the vocal expression group only. Second, NTI change is significantly correlated with PEQ thinking change in the cognitive therapy group only. Third, PEQ outcome is associated with cognitive change but not affective change in the cognitive therapy group. In order to explore this area further, the inter-correlations of the seven items of the PEQ were examined.

The correlations of the two items of interest - behavior change and thinking change - with the other items of the PEQ for the two treatment groups are shown in Table 5. (The other inter-correlations are of little interest). It can be seen that the behavior change item relates to the other items in dramatically different ways in the two treatment groups. In the

TABL

Post-Expe
Questionr
Positive T
Negative
Better Sel
Worse Sel
Thinking
Behavior
Resolutio

* $p < .05$, ** p

cognitiv
the othe
resoluti
correlat
negativ
were for
topic,"
up.

Table
thinking
outcome
correlate
group. I
"negativ

Thus,
procedi
PEQ ite
about th
seem to
cognitiv

DISCU

The res
talking
matic ex
PEQ m
of nega
(Murray

TABLE 5. Internal Analysis of Post-Experimental Questionnaire: Correlations of Behavior Change and Thinking Change with other PEQ Items

Post-Experimental Questionnaire	Behavior Change		Thinking Change	
	Cognitive Therapy	Vocal Expression	Cognitive Therapy	Vocal Expression
Positive Topic	.48**	.01	.64**	.35
Negative Topic	.04	.60**	-.17	.36
Better Self	.34	.03	.70**	.54**
Worse Self	.16	.33	-.14	.08
Thinking Change	.44*	.30	—	—
Behavior Change	—	—	.44*	.30
Resolution	.40*	-.13	.56**	.15

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

cognitive therapy group, behavior change is positively correlated with the other positive outcome items, such as "positive topic" and "sense of resolution." In contrast, in vocal expression, behavior change is not correlated with positive outcome items but rather with feeling more negative about the topic. At the .05 level, the following group differences were found using the Fisher Z test of independent correlations: "positive topic," "negative topic," and "resolution." Results are similar at follow-up.

Table 5 also shows that, for the cognitive therapy group, the PEQ thinking change is rather strongly correlated with all the other positive outcome items. On the other hand, thinking change is only weakly correlated with other positive outcome items in the vocal expression group. Indeed, Fisher's Z was significant for "sense of resolution" and "negative topic," both at the .05 level. Results were similar at follow-up.

Thus, there do seem to be different mechanisms at work in the two procedures. Behavior change seems to be associated with other positive PEQ items in cognitive therapy but is associated with negative feelings about the topic in vocal expression. Furthermore, changes in thinking seem to be more closely associated with other positive PEQ items in cognitive therapy than in vocal expression.

DISCUSSION

The results clearly indicated that both cognitive therapy and simply talking into a tape recorder were effective in helping to process a traumatic experience. Although cognitive therapy was more effective on the PEQ measure, both procedures were alike in reducing other measures of negative affect. These results are consistent with the earlier studies (Murray, Lamnin & Carver, 1989; Donnelly & Murray, 1991) in which

written expression was as effective or nearly as effective as general psychotherapy. A strong case could be made for attributing these results to factors common to all procedures. Such factors might include the expectation of help inherent in any healing situation (Frank, 1973), exposure to the traumatic memories (Foa & Kozak, 1991), or cognitive change (Beck, 1991). Nevertheless, the similar results in the two treatments might have been produced by different mechanisms.

There were important differences in what actually happened within the treatment sessions of the two groups. In vocal expression subjects focused on negative emotional content persistently over the four day period. Concurrently with this focus, they experienced an upsurge in negative feelings after each session. In contrast, the cognitive therapists, by design, shifted the focus from the expression of unpleasant feelings to the examination of negative thoughts and cognitive distortions. Concurrently with this shift in focus, these subjects experienced positive affect after each session. Furthermore, positive mood improved over the four sessions for the cognitive therapy group but decreased for the vocal expression group. Thus, cognitive therapy seemed to be a more positive experience.

Aside from the immediate upsurge in negative feelings in vocal expression, both groups experienced a good deal of negative affect, particularly at the start of treatment. Did the arousal of negative affect help in processing the traumatic experience? Both total negative affect and the post-session upsurge in negative affect were related primarily to negative rather than positive PEQ outcome. Thus, the sheer arousal of negative affect by itself does not seem to be therapeutically valuable as might be expected from simple catharsis theories (see Nichols & Zax, 1977).

The one indication that the arousal of negative affect might be helpful was the correlation with behavior change on the post-experimental questionnaire for the vocal expression group only. Further analysis of the post-experimental questionnaire, however, showed that the behavior change item was correlated with feeling more negative about the topic for the vocal expression subjects. In contrast, behavior change for the cognitive therapy subjects was correlated with positive items. For vocal expression, the more uncomfortable subjects felt, the more they tried to do something different, although doing something different was not associated with other positive PEQ items. These results are similar to those reported for depressed people not in therapy who initiated their own coping strategies with varying degrees of success (Doerfler & Richards, 1981).

Although cognitive therapy focused on changing negative thoughts, both groups showed a substantial reduction in the measure of negative

the
for
lor
sin
qu
ba
tha
wi
Ev
rep
'
cer
cha
po
for
rel
for
Fir
rel
the
clc
I
eff
int
of
arc
Bo
neg
me

RE

Bar

Bec

Bec

Bec

Bu

Do

tive as general
ng these results
ght include the
(Frank, 1973),
(1), or cognitive
n the two treat-
isms.

happened within
ression subjects
er the four day
d an upsurge in
nitive therapists,
pleasant feelings
distortions. Con-
rienced positive
proved over the
sed for the vocal
a more positive

ngs in vocal ex-
ative affect, par-
ative affect help
ative affect and
ed primarily to
sheer arousal of
tically valuable as
Nichols & Zax,

might be helpful
ost-experimental
rther analysis of
d that the behav-
gative about the
avior change for
sitive items. For
t, the more they
ng different was
results are similar
ho initiated their
cess (Doerfler &

egative thoughts,
asure of negative

thoughts. Similar reductions in negative thoughts have been reported for anti-depressant medication and other forms of psychotherapy (Hol-lon et al., 1987; Robin & Hayes, 1993). The present results show that simply talking to a tape recorder also can reduce negative thoughts. The question, then, is whether negative thoughts are just symptoms of a more basic affective process rather than causes of negative feelings. The fact that the Negative Thoughts Index is moderately positively correlated with all of the measures of negative affect would support such a view. Evidence for such a symptomatic view of negative cognitions has been reported (e.g., Barnett & Gotlib, 1988).

Yet, we do have some evidence that cognitive processes are more central to change in cognitive therapy than in vocal expression. First, the change in the NTI measure was correlated with thinking changes on the post experimental questionnaire for cognitive therapy subjects, but not for those in vocal expression. Second, thinking change was more strongly related to other positive items on the post experimental questionnaire for the cognitive therapy subject than for the vocal expression subjects. Finally, cognitive change scores, but not affect change scores, were related to positive PEQ items for the cognitive therapy subjects. Although these findings are hardly conclusive, they do argue against closing the case for a unique cognitive mechanism in cognitive therapy.

In conclusion, talking into a tape recorder seems to be almost as effective as cognitive therapy in a brief intervention in dealing with interpersonal traumatic experiences. In both procedures, the reduction of negative thoughts and negative affect rather the level of emotional arousal was associated with positive outcome reported at termination. Both procedures resulted in a reduction in negative thoughts as well as negative affect. Correlational analysis did suggest somewhat different mechanisms in the two procedures.

REFERENCES

- Barnett, P.A., & Gotlib, I.H. (1988). Psychosocial functioning and depression: Distinguishing among antecedents, concomitants, and consequences. *Psychological Bulletin*, 104, 97-126.
- Beck, A.T. (1991). Cognitive therapy as the integrative therapy. *Journal of Psychotherapy Integration*, 3, 191-198.
- Beck, A.T., & Emery, G. (1985). *Anxiety disorders and phobias: A cognitive perspective*. New York: Basic Books.
- Beck, A.T., Rush, A.J., Shaw, B.F., & Emery, G. (1979). *Cognitive therapy of depression*. New York: Guilford Press.
- Burns, D.D. (1985). *Intimate connections*. New York: William Morrow.
- Doerfler, L.A., & Richards, C.S. (1981). Self-initiated attempts to cope with depression. *Cognitive Therapy and Research*, 5, 367-371.

- Donnelly, D.A., & Murray, E.J. (1991). Cognitive and emotional change in written essays and therapy interviews. *Journal of Social and Clinical Psychology, 10*, 334-350.
- Esterling, B.A., Antoni M.H., Fletcher, M.A., Margulies, S., & Schneiderman, N. (1994). Emotional disclosure through writing or speaking modulates latent Epstein-Barr antibody titers. *Journal of Consulting and Clinical Psychology, 62*, 130-140.
- Foa, E.B., & Kozak, M.W. (1991). Emotional processing: Theory, research, and clinical implications for anxiety disorders. In J.D. Safran & L.S. Greenberg (Eds.), *Emotion, psychotherapy and change* (pp. 21-49). New York: Guilford.
- Frank, J.D. (1973). *Persuasion and healing*. Baltimore: Johns Hopkins University Press.
- Greenberg, L.S., & Safran, J.D. (1987). *Emotion in psychotherapy*. New York: Guilford.
- Hollon, S.D., DeRubeis, R.J., & Evan, M.D. (1987). Causal mediation of change in treatment of depression: Discriminating between nonspecificity and noncausality. *Psychological Bulletin, 102*, 139-149.
- Hollon, S.D., & Kendall, P.E. (1980). Cognitive self-statements in depression: Development of an automatic thoughts questionnaire. *Cognitive Therapy and Research, 4*, 383-396.
- Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of Event Scale: A measure of subjective distress. *Psychosomatic Medicine, 41*, 209-218.
- Mahoney, M.J. (1993). Introduction to special section: Theoretical developments in the cognitive psychotherapies. *Journal of Consulting and Clinical Psychology, 61*, 187-193.
- Murray, E.J. (1985). Coping and Anger. In T.M. Field, P.M. McCabe, & N. Schneiderman (Eds.), *Stress and coping* (pp. 243-261). Hillsdale, N.J.: Erlbaum.
- Murray, E.J., Lamnin, A.D., & Carver, C.S. (1989). Emotional expression in written essays and psychotherapy. *Journal of Social and Clinical Psychology, 8*, 414-429.
- Murray, E.J. & Segal, D.L. (in press). Emotional processing in vocal and written expression of feelings about traumatic experiences. *Journal of Traumatic Stress, 7*.
- Nichols, M.P., & Efran, J.S. (1985). Catharsis in psychotherapy: A new perspective. *Psychotherapy, 22*, 46-58.
- Nichols, M.P., & Zax, M. (1977). *Catharsis in psychotherapy*. New York: Gardner Press.
- Pennebaker, J.W. (1985). Traumatic experience and psychosomatic disease: Exploring the role of behavioral inhibition, obsession, and confiding. *Canadian Psychology, 26*, 82-95.
- Pennebaker, J.W., & Beall, S.K. (1986). Confronting a traumatic event: Toward an understanding of inhibition and disease. *Journal of Abnormal Psychology, 95*, 274-281.
- Pennebaker, J.W., Kiecolt-Glaser, J., & Glaser, R. (1988). Disclosure of traumas and immune function: Health implications for psychotherapy. *Journal of Consulting and Clinical Psychology, 56*, 239-245.
- Robins, C.J., & Hayes, A.M. (1993). An appraisal of cognitive therapy. *Journal of Consulting and Clinical Psychology, 61*, 205-214.
- Safran, J.D., & Greenberg L.S. (Eds.) (1991). *Emotion, psychotherapy and change*. New York: Guilford.
- Watson, D., Clark, L.A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070.
- Zilberg, N.J., Weiss, D.S., & Horowitz, M.J. (1982). Impact of Event Scale: A cross-validation study and some empirical evidence supporting a conceptual model of stress response syndromes. *Journal of Consulting and Clinical Psychology, 50*, 407-414.