Journal of Traumatic Stress, Vol. 7, No. 3, 1994

Emotional Processing in Vocal and Written Expression of Feelings About Traumatic Experiences

Edward J. Murray[1] and Daniel L. Segal[1]

The purpose of this study was to compare vocal and written expression of feeling about interpersonal traumatic and trivial events in 20-min sessions over a 4-day period. Similar emotional processing was produced by vocal and written expression of feeling about traumatic events. The painfulness of the topic decreased steadily over the 4 days. At the end, both groups felt better about their topics and themselves and also reported positive cognitive changes. A content analysis of the sessions suggested greater overt expression of emotion and related changes in the vocal condition. Finally, there was an upsurge in negative emotion after each session of either vocal or written expression. These results suggest that previous findings that psychotherapy ameliorated this negative mood upsurge could not be attributed to the vocal character of psychotherapy.

KEY WORDS: interpersonal trauma; emotional processing; vocal expression; written expression.

INTRODUCTION

Emotional processing has been defined by Rachman (1980) as "...a process whereby emotional disturbances are absorbed and decline to the extent that other experiences and behavior can proceed without disruption." The term catharsis has been used for such processing but this term implies a simple affective discharge, which is not supported by the evidence (Nichols and Zax, 1977). Instead, emotional expression may facilitate cog-

[1]Center for Psychological Studies, Nova Southeastern University, 3301 College Avenue, Ft. Lauderdale, Florida 33314.

0894-9867/94/0700-0391$07.00/0

nitive changes which in turn may lead to adaptive behavior. Emotional processing seems to involve at least three distinct components: an arousal of negative feelings, cognitive change, and a shift to positive feelings (Murray, 1985; Nichols and Efran, 1985).

An effective paradigm for the emotional processing of naturally occurring traumatic or stressful experiences has been developed by Pennebaker (1985; Pennebaker and Beall, 1986). In this paradigm, student subjects were asked to write anonymous essays about traumatic or trivial events on 4 successive days. In the traumatic conditions, the subjects expressed genuine feelings about personal loss, family conflicts, and loss of self-esteem. Writing about traumatic events resulted in an immediate increase in negative mood but longer term positive effects on health. Pennebaker *et al.* (1988) replicated these results and also found a positive effect on immune function. Thus, simply writing about traumatic events seems to have resulted in significant emotional processing.

The Pennebaker paradigm bears a superficial resemblance to psychotherapy. In psychotherapy there is also an arousal of negative feelings and cognitive change but the therapist is viewed as an essential agent in promoting change (Nichols and Efran, 1985; Greenberg and Safran, 1987). In contrast, Pennebaker believes that simply writing about traumatic experiences can accomplish the same resolution as talking to a therapist, or, even, a friend.

Skeptical that simply writing about traumatic events could produce the kind of emotional processing seen in psychotherapy, Murray *et al.* (1989) and Donnelly and Murray (1991) directly compared psychotherapy and written expression about traumatic events. Additional outcome measures as well as a content analysis of the taped interviews and written essays were used. In the first study, involving two days of expression, a greater effect of psychotherapy, primarily on the first day, was found. However, in the second study 4 days were used and there was little difference between psychotherapy and written expression. In comparison to the control, both experimental procedures aroused negative emotion as well as cognitive, self-esteem, and behavior changes during the session. The outcome measures showed comparable changes. However, there was one important difference in that at the end of each session, there was an increase in negative mood after writing about traumatic events while this did not occur after the therapy interviews. So, although both written expression and therapy interviews produced emotional resolution, writing consistently left the subjects in a negative mood.

In comparing psychotherapy and written expression two important factors are necessarily confounded. First, psychotherapy involves an interpersonal interaction. The comments of the therapist or the nonverbal com-

munication between the individuals might play a role in the different mood effects that were found. The therapist may have ameliorated the residual negative mood experienced in the written conditions. Such an effect might be important in keeping a person dealing with an emotional trauma until processing was complete.

The other way in which psychotherapy differs from written expression is that one involves vocal emotional expression while the other does not. There is rather convincing evidence that emotion is expressed by a number of vocal parameters such as: intensity, frequency, and rate of speech. Furthermore, some of these parameters are correlated with autonomic arousal (Scherer, 1986). Although vocal emotional expression may simply result from general physiological arousal, it is also possible that vocal expression may arouse emotions. There is evidence that facial and postural expression arouses emotion (e.g. Riskind and Gotay, 1982; Rutledge and Hupka, 1985). Although there is considerable controversy as to whether such peripheral expression is necessary for an emotional experience, such expression does seem to help arouse and amplify emotions (Izard, 1990; Matsumoto, 1987). However, there has been little experimental work done on the effect of vocal expression on emotional experience.

In contrast, there is a good deal of emphasis in the clinical literature on the capacity of vocal expression to arouse emotion in various forms of psychotherapy (Daldrup *et al.*, 1988; Greenberg and Safran, 1987). In humanistic therapy, it has been found that outcome is related to the extent that a client can express herself in a focused, emotional voice (Rice and Wagstaff, 1967). In a study of Gestalt therapy, changes in voice measures in a critical session were used to identify those who had an emotional resolution and better outcome (Greenberg and Webster, 1982). In psychoanalytic therapy, it has been suggested that cathartic relief may come, in part, from the "...physical action of a strong outpouring of words" (Bady, 1985). Therefore, vocal expression may play some role in emotional processing when talking to a therapist.

The effects of vocal expression was examined in a study by Pennebaker *et al.* (1987) who had students talk very briefly about traumatic or trivial topics into a tape recorder while alone or to a "confessor" sitting behind a curtain. When dealing with traumatic events, subjects in both groups evidenced subjective and physiological signs of stress, but with actually more crying, wavering voice, and use of personal pronouns when alone talking to a tape recorder. In another condition, just thinking about a traumatic topic was found to be stressful. However, as the authors point out, it is difficult to know what is going on when subjects are asked to think about something. In contrast, having subjects write about traumatic or trivial events preserves a record of what happened.

The purpose of the present study was to test the hypothesis that the differential effects of psychotherapy and written expression on residual negative mood after each session were due to the vocal expression inherent in psychotherapy. Subjects were asked to either speak into a tape recorder with no one present or to write for the same time period. Half of each group were asked to deal with one of the most traumatic and upsetting experiences of their lives and the other half were asked to deal with trivial topics. Questionnaires and a mood scale were filled out before and after each session and at the end of the 4 day period. The taped or written productions were content analyzed at a later time.

Private Self-Consciousness refers to the tendency to be aware of covert, hidden aspects of the self, including private feelings (Carver and Scheier, 1981). In the Donnelly and Murray (1991) study, subjects low in this self awareness experienced more emotional stress in the written expression condition. Therefore, the Private Self-Consciousness Scale was included in the present study to examine the effects of this personality variable on the two forms of emotional expression.

METHOD

Sample

Subjects for this experiment were male and female college undergraduates fulfilling a research requirement for an introductory psychology course. There were a total of 120 subjects randomly assigned to either write or talk about a traumatic event or to write or talk about a trivial event, with 30 Ss in a group, half female and half male. In addition, the private self-consciousness scale was available for all subjects (Carver and Scheier, 1981).

Procedure

Subjects met in group sessions the day before the experiment actually began. At this time, after a brief explanation of the experiment, subjects filled out the informed consent and a health questionnaire. They also received their random group assignments for the following four days and were assured of anonymity.

The next day subjects reported to the experimental room, where they filled out a measure of mood state as well as a questionnaire about their topic. Approximately 20 min was spent in each condition. The mood ques-

tionnaire was then filled out again, as well as a postsession questionnaire. This pattern was repeated on each of the 3 remaining days with slight modifications in the pre- and postexperimental questionnaires.

Subjects in the written traumatic condition were informed:

> During each of the four days, I want you to write about one of the most traumatic and upsetting experiences of your life. The important thing about this is that you write about your deepest thoughts and feelings. Ideally, whatever you write about should be intensely personal and dealing with an event or experience that you have not talked about with others in detail. (Pennebaker *et. al.*, 1988)

Subjects in the vocal traumatic condition were also given the above instructions but asked to talk, rather than write, about a traumatic event in their lives with a tape recorder.

Subjects in the trivial conditions were asked to write or talk about an assigned topic on each of the 4 days: (1) their closet, (2) their bedroom, (3) their psychology classroom, and (4) their wardrobe. Subjects were asked to be very detailed in their descriptions.

Instructions were repeated for all groups on the subsequent days. At the end of the fourth day, subjects were administered a post-experimental questionnaire. Three months later a health questionnaire was mailed out.

Measures

Dependent measures included: experimenter ratings of the productions of emotional expression and evidence of positive changes towards more adaptive cognitions and coping strategies; a mood scale to assess changes in mood from beginning to end of each session and from session to session; a brief questionnaire concerning various factors (discussed below); a postexperimental questionnaire assessing changes in cognition and feelings; and a health questionnaire to assess changes in state of health (collected pre-experimentally and at follow-up).

The mood scaled used was a shortened form of the Nowlis Adjective Checklist (Nowlis, 1965; Winer *et al.*, 1981; Murray *et al.*, 1989; Donnelly and Murray, 1991). The revised instrument consists of a list of twenty-four adjectives which subjects rate as describing their feelings very well (3), somewhat well (2), not sure (1), or not at all (0). A principal component factor analysis has shown that two factors can be forced (Donnelly and Murray, 1991). The first, total positive mood, was a bipolar factor. It consisted of the following adjectives which loaded positively: energetic, active, playful, pleased, vigorous, elated, overjoyed, warmhearted, carefree, witty, affectionate, and kindly; adjectives loading negatively included: drowsy, tired, and sluggish. Factor II, total negative mood, consisted of the follow-

ing adjectives: angry, fearful, sad, clutched up, sorry, rebellious, defiant, regretful, and jittery. This Revised Nowlis Mood scale was given before and after each session.

A questionnaire was administered before and after each session. The pre-session questionnaire on the first day assessed recency of the event, degree of emotional upset and painfulness felt when the topic is thought about, how often the topic is thought about, and how much the event has been discussed with others. On days 2 through 4, the pre-session questionnaire again addressed all of these concerns except recency of topic. The postsession questionnaire on days 1 through 4 further inquired as to how much emotional upset and painfulness the subject felt about the topic.

The postexperimental questionnaire was given at the end of the experiment and included questions on changes in positive and negative feelings about the topic, self-esteem, cognitive and behavior changes. All of these questions were rated on a seven point scale (1 = none, 4 = somewhat, and 7 = very much).

Another dependent measure consisted of content ratings of all written or taped material, using a form modified from Murray *et al.* (1989) and Donnelly and Murray (1991). All essays and tapes were rated on a seven point scale (1 = none, 4 = somewhat, 7 = very much) according to degree of positive and negative emotion expressed, evidence of cognitive change (e.g., alternative explanations discussed, better understanding of the problem), self-esteem improvements (e.g., felt better about self, less down on self), and degree to which adaptive coping strategies were discussed (e.g., expresses feelings to people, acts more assertive, take more risks). In addition, seriousness of topic was rated on each S's first essay or tape. A graduate student rated content for all S's after extensive training on practice materials. In addition, four subjects from each condition (n = 16) were randomly selected, and all four sessions for each were independently scored by a second trained graduate student to check inter-rater reliability for each of the six ratings. A Pearson correlation was calculated for each of the four sessions with each rating. A composite reliability coefficient for each rating was computed by averaging the four obtained daily correlations. These average inter-rater reliability coefficients for the five ratings ranged from .54 to .96 ($p < .01$ or better).

Statistical Analysis

The data were analyzed by a repeated measures ANOVA based on a MANOVA program. Alpha was set at the .01 level for the reporting of main effects or interactions as significant. Internal analysis of cell means

was done with a Tukey test, using the conventional .05 level of significance.

RESULTS

Nature of Traumatic Experiences

Although the subjects in this study were healthy college students who were not seeking help, the experiences and feelings that they reported were, for the most part, powerful and poignant. Any clinician would be touched by the feelings of loss, rejection, and failure. The three most frequent traumatic experiences were: death of a relative or friend; divorce of parents and break-up of a relationship. One subject had been in the car when his best friend was killed. Another vowed never to trust a man when her parents were divorced. One young man was unable to date for a very long time after being rejected by his girl friend. These interpersonal traumas may not be as dramatic as rape or combat but they seemed to be very real and important to our subjects.

Effectiveness of Interventions

Does writing or talking about interpersonal traumas without a therapist help in emotional processing? Does one of the interventions help more than the other? The clearest way to see the ongoing effect of the two interventions is to examine the answers to the two questions asked each day: How painful is it for you to think about your topic? and How upset do you feel when thinking about your topic?

The results for degree of painfulness are shown in Figure 1 where it can be seen that both traumatic groups started out reporting high levels of painfulness and then decreased over days. The trivial groups were low to start with and remained so. The difference between the traumatic and trivial groups as well as their interaction with days were statistically significant. The results for the upset question were almost identical and statistically significant.

While the two interventions reduced the pain and upset of the traumatic experience, they did not differ. In Fig. 1, it can be seen that writing and vocal expression were very similar in their effects. There were no statistically significant differences between the two modes of expression.

The effectiveness of the two interventions can also be evaluated at the end of the 4 day treatment period by the postexperimental question-

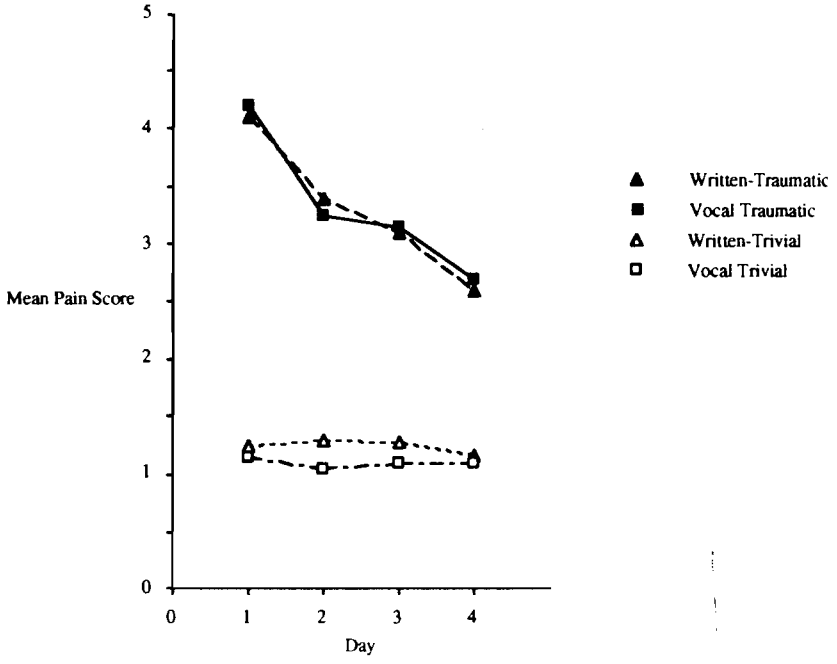

Fig. 1. Mean immediate self-report of pain of topic for mode (vocal versus written) and severity (traumatic versus trivial) 4 days collapsed over pre/post.

naire. The results on the postexperimental questionnaire are shown in Table I. Subjects answered these questions on a scale of: 1 = not at all; 4 = somewhat; 7 = very much. The overall impression of the results in this table is that both the written and vocal expression about traumatic experiences had a moderately positive therapeutic effect but did not differ in effectiveness.

Both the written and vocal expression traumatic groups felt significantly more positive about their topic than the trivial groups but did not differ. None of the groups felt more negative about their topic. Both the written and vocal traumatic groups felt significantly better about themselves than did the trivial groups but did not differ. Interestingly, both written and vocal traumatic groups also felt a little worse about themselves after the intervention, suggesting that dealing with traumatic material may result in somewhat mixed feelings about oneself. Finally, both traumatic interventions resulted in significantly more change in thinking about the topic but not in behaving differently.

In summary, the results show that expressing feelings about traumatic events either in written or vocal form has a positive therapeutic effect.

Table I. Mean Responses to Post-Experimental Questionnaire

Question	Experimental Groups			
	Written Trivial	Vocal Trivial	Written Trauma	Vocal Trauma
(1) To what extent are your feelings more positive about your topic than when you started four days ago?	1.83	1.83[a]	4.13	4.30
(2) To what extent are your feelings more negative about your topic than when you started four days ago?	1.27	1.37	1.37	1.90
(3) To what extent do you feel better about yourself as a result of this experience?	2.17	1.97	3.23	3.90
(4) To what extent do you feel worse about yourself as a result of this experience?	1.07	1.03	1.40	1.53
(5) Has this experience led you to think about your topic in any different ways?	2.03	2.47	3.40	3.87
(6) How much differently have you acted (behaved) in the last four days than usual?	1.40	1.67	1.97	1.97

[a]Means joined by underlines are not significantly different from one another. Those not joined by underlines are significantly different.

There is a systematic decrease in the emotional reaction to the topic from day to day. At the end of the 4 day intervention period there are positive effects on feelings and thinking about the topic and the self.

Process of Emotional Expression

Since the written and vocal expression of feelings about traumatic events seems to have an overall therapeutic effect, it might be expected that each session would have a positive effect on mood. That is, after each session the subject should feel better. Actually, the reverse seems to happen. After each session the subject's mood is less positive and more negative.

In order to show this effect in a clear way, we have summed over the four days the mood scales given just before each session and the mood scales given just after each session to get a pre-post effect. The results for the Negative Mood Scale are shown in Fig. 2. It can be seen that both the written and vocal traumatic groups show a statistically significant increase in negative mood after the sessions. The Positive Mood Scale shows just the opposite: a significant decrease after the sessions (see Fig. 3). The

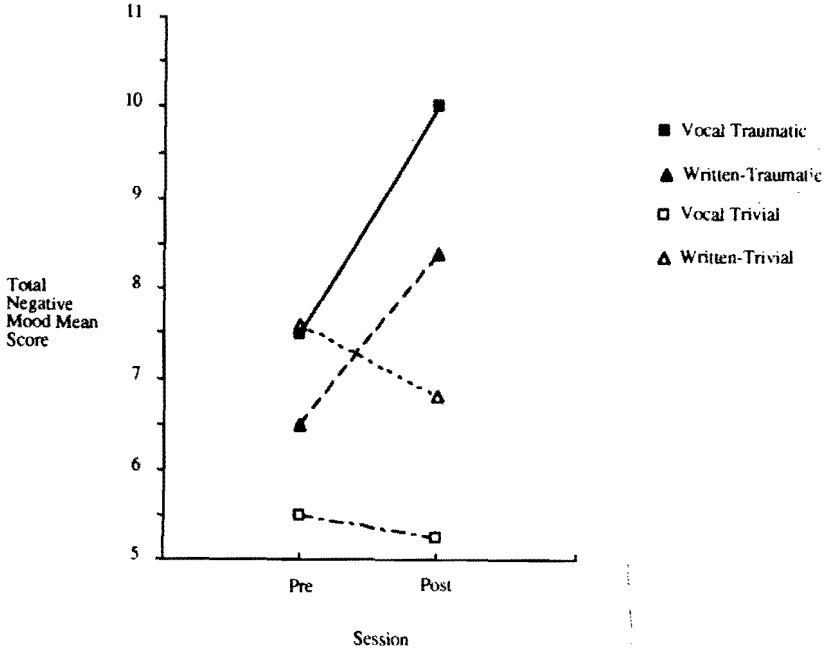

Fig. 2. Mean revised Nowlis Mood Scale total negative mood for mode (vocal versus written) and severity (traumatic versus trivial), pre- and postsession collapsed over days.

changes in the trivial groups are not significant. Furthermore, there are no statistically significant differences in negative or positive mood changes between the written and vocal expression groups in the trivial condition.

The results from the content analysis of the actual sessions are also of relevance. When the ratings of the four sessions are summed and the groups compared there are two striking results as can be seen in Table II. First, the two traumatic intervention groups show significantly more expression of positive and, especially, negative emotion than do the trivial groups. They also show significantly more cognitive, self-esteem and behavior changes. Second, the vocal traumatic group is rated as showing significantly more of these expressions and positive changes than the written expression group.

In summary, both the written and vocal traumatic groups show an upsurge in negative mood and a decrease in positive mood after each session. They are similar in this effect. In contrast, the content analysis indicates that the vocal group not only expresses more affect but shows more across the board changes than does the written group.

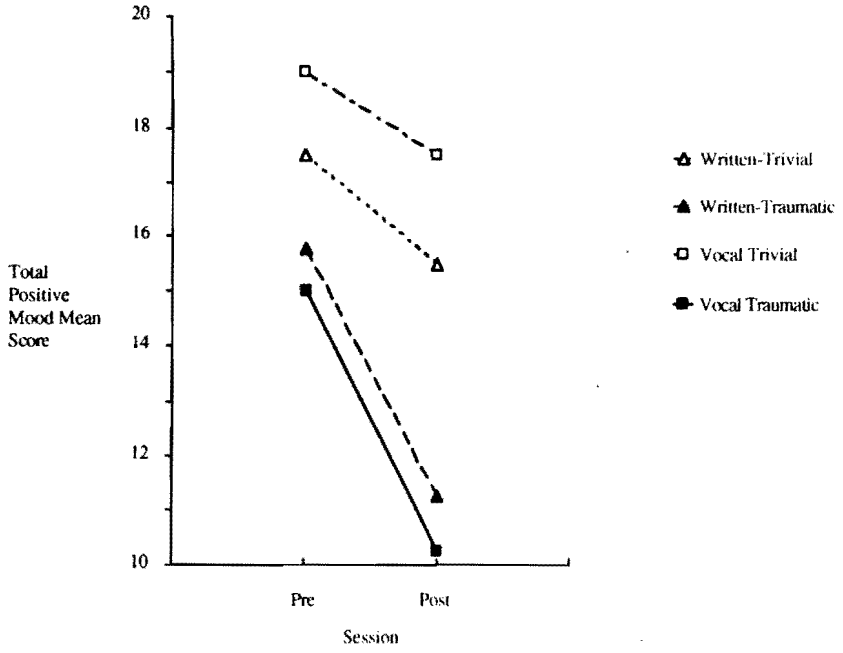

Fig. 3. Mean revised Nowlis Mood Scale total positive mood for mode (vocal versus written) and severity (traumatic versus trivial), pre- and postsession collapsed over days.

Other Results

There were very few significant or interpretable effects of individual difference variables on the main results. There was some suggestion that subjects high in Private Self-Consciousness did better vocalizing their trauma and those who were low did better with written expression. So, too, there was some suggestion that males did better with the vocal condition and females with the written. Together, these findings suggest the hypothesis that individuals who traditionally have difficulty expressing feelings might do better in the vocal condition.

There were no significant effects of the main variables in this study on the follow-up questionnaire about physical and psychological health, probably because there were low mean frequencies on all of the questions both before and after the study. It is possible that the traumatic experiences of the subjects in this study were not strong enough to affect health as compared with those in the Pennebaker studies (Pennebaker *et al.*, 1988).

Table II. Mean Content Analysis Ratings Collapsed over 4 Days

Rating	Experimental Groups			
	Written Trivial	Vocal Trivial	Written Trauma	Vocal Trauma
Positive emotion	1.38	1.47[a]	2.28	3.02
Negative emotion	1.28	1.22	3.77	5.56
Cognitive changes	1.00	1.04	3.02	5.40
Self-esteem changes	1.02	1.04	1.44	1.74
Behavior changes	1.08	1.07	1.54	2.21

[a]Means joined by underlines are not significantly different from one another. Those not joined are significantly different.

However, there was a gender effect on number of days of feeling unwell, with females in the vocal traumatic group not feeling well, a result similar to that reported by Pennebaker *et al.* (1990).

DISCUSSION

The results show that both writing and talking into a tape recorder about interpersonal traumatic experiences had a therapeutic effect. After only four short daily sessions, the subjects felt less negative about the traumatic experience. Conceivably, the therapeutic effect could be enhanced by increasing the number and length of sessions. It is also possible that these methods could be extended to other types of traumas such as childhood sexual abuse or natural disasters. However, the results of this study are limited by the fact that the subjects were normal college students who were not actively seeking help in resolving their traumatic experiences.

Should these methods be taken seriously as a therapeutic approach to the treatment of traumatic experiences? Actually, the use of writing, at least, as a therapeutic or paratherapeutic method has been recommended for some time (Phillips and Wiener, 1966). There has been a resurgence of interest in variously structured forms of writing therapy in recent years

(DeVries *et al.*, 1990; L'Abate, 1991). Unfortunately, there has been essentially no research on the effectiveness of writing therapy outside of the Pennebaker tradition of which the present study is a part.

It is doubly important, then, that we try to understand the process by which writing helps in dealing with emotional experiences. The major purpose of the present study was to compare written with vocal expression. The results reported by the subjects showed very clearly that the two procedures were almost identical in reducing negative affect and producing adaptive changes in cognition and self-esteem. In contrast, the observed ratings of the content of the sessions suggested that the vocal group expressed more emotion, both positive and negative, as well as showing greater changes in cognition, self-esteem, and adaptive behavior.

The discrepancy between what was observed and what was experienced subjectively is relevant to the controversy about the necessity of peripheral feedback for emotional experience (Izard, 1990; Matsumoto, 1987). The vocal group was apparently displaying more emotion than the written group but experiencing the same degree of emotion. This result suggests that peripheral display of emotion is not necessary for subjective emotional experience. However, there are some aspects of our method that limit drawing such conclusions.

The experimental design explicitly controlled for the length of time available to each group. However, it is easier to talk than to write so that there were about three times as many words produced by the vocal group as by the written group. Thus, the vocal group was able to go into much greater detail about everything. The greater detail almost certainly influenced the higher across the board ratings for the vocal group. In addition, the voice tone and amplification in the vocal group provided more clues to emotional state for the raters. Our own personal impression was that the written group worked just as hard as the vocal group in dealing with traumatic experiences.

In the previous studies (Murray *et al.*, 1989; Donnelly and Murray, 1991) in which written expression was compared to psychotherapy, the one consistent difference was that at the end of each session in the written condition there was an increase in negative emotion which did not occur after the psychotherapy sessions. Although this difference could be attributed to the presence of the therapist, another difference between the two conditions was written versus vocal expression. Our results show rather clearly that both written and vocal expression without a therapist result in an upsurge in negative mood and a corresponding decrease in positive mood after each session. Thus, the difference in post-session mood found with psychotherapy is most likely due to something about the function of the therapist.

The upsurge in negative mood after sessions of vocal or written expression raises a question about the practical use of these methods. Although vocal or written expression seems to have a therapeutic effect, the negative mood produced after each session might very well lead people to drop out of such treatment before a significant therapeutic effect occurs. In our very brief intervention period we were able to hold the students with the incentive of course credit. In a clinical application involving more than a couple of sessions, some means of motivating patients to stay the course would seem important. One way of motivating patients would be to intersperse psychotherapy hours and make real use of written materials as suggested by several authors (Philips and Wiener, 1966; L'Abate, 1991). It might also be interesting to use a few taped vocal or written expression assignments in the course of regular psychotherapy.

In conclusion, both vocal and written expression had a therapeutic effect in the emotional processing of interpersonal traumatic experiences in normal college students. The two procedures were equally effective in producing change in self-report measures. Direct observation of the content of the sessions suggested that the vocal group was more expressive than the written group but that finding could be a result of the greater verbal productivity and voice cues in the vocal condition. Both vocal and written expression produced an immediate elevation of negative mood and a slight residual of negative feelings about the self, suggesting that the amelioration of this negative mood found earlier with psychotherapy was due to the interpersonal rather than the vocal aspects of psychotherapy. The upsurge in negative mood after each session could limit the practical use of these methods by producing a high drop–out rate unless some method for motivating continuance was employed.

REFERENCES

Bady, S. L. (1985). The voice as a curative factor in psychotherapy. *The Psychoanal. Rev.* 72: 479-490.

Carver, C. S., and Scheier, M. F. (1981). *Attention and Self-Regulation: A Control-Theory Approach to Human Behavior*, Springer-Verlag, New York.

Daldrup, R. J., Beutler, L. E., Engle, D., and Greenberg, L. S. (1988). *Focused Expressive Psychotherapy*, Guilford, New York.

deVries, B., Birren, J. E., and Deutchman, D. E. (1990). Adult development through guided autobiography: The family context. *Fam. Rel.* 39: 3-7.

Donnelly, D. A. and Murray, E. J. (1991). Emotional changes in written essays and therapy interviews. *J. Soc. Clin. Psychol.* 10: 334-350.

Greenberg, L. S., and Safran, J. D. (1987). *Emotion in Psychotherapy*, Guilford, New York.

Greenberg, L. S., and Webster, M. C. (1982). Resolving decisional conflict by Gestalt two-chair dialogue: Relating process to outcome. *J. Counsel Psychol.* 29: 408-422.

Izard, C. E. (1990). Facial expressions and the regulation of emotions. *J. Per. Soc. Psychol.* 58: 487-498.

L'Abate, L. (1991). The use of writing in psychotherapy. *Am. J. Psychother.* 45: 87-98.

Matsumoto, D. (1987). The role of facial response in the experience of emotion: More methodological problems and a meta-analysis. *J. Per. Soc. Psychol.* 52: 769-774.

Murray, E. J., Lamnin, A. D., and Carver, C. S. (1989). Emotional expression in written essays and psychotherapy. *J. Soc. Clin. Psychol.* 8: 414-429.

Murray, E. J. (1985). Coping and anger. In Field, T. M., McCabe, P. M., and Schneiderman, N. (eds.), *Stress and Coping*, Erlbaum, Hillsdale, NJ, pp. 243-261.

Nichols, M. P., and Efran, J. S. (1985). Catharsis in psychotherapy: A new perspective. *Psychotherapy* 22: 46-58.

Nichols, M. P., and Zax, M. (1977). *Catharsis in Psychotherapy*, Gardner, New York.

Nowlis, V. (1965). Research with the Mood Adjective Check List. In Tomkins, S., and Izard, C. (eds.), *Affect, Cognition and Personality*, Springer, New York.

Pennebaker, J. W. (1985). Traumatic experience and psychosomatic disease: Exploring the roles of behavior inhibition, obsession, and confiding, *Can. Psychol.* 26: 82-95.

Pennebaker, J. W., and Beall, S. K. (1986). Confronting a traumatic event: Toward an understanding of inhibition and disease. *J. Abn. Psychol.* 95: 274-281.

Pennebaker, J. W., Hughes, C. F., and O'Heeron, R. C. (1987). The psychophysiology of confession: Linking inhibitory and psychosomatic processes. *J. Per. Soc. Psychol.* 52: 781-793.

Pennebaker, J. W., Colder, M., and Sharp, L. K. (1990). Accelerating the coping process. *J. Per. Soc. Psychol.* 58: 528-537.

Pennebaker, J. W., Kiecolt-Glaser, J., and Glaser, R. (1988). Disclosure of traumas and immune function: Health implications for psychotherapy. *J. Consult. Clin. Psychol.* 56: 239-245.

Phillips, E. L., and Wiener, D. N. (1966). *Short Term Psychotherapy and Structured Behavior Change*, McGraw-Hill, New York.

Rachman, S. (1980). Emotional processing. *Beh. Res. Ther.* 18: 51-60.

Rice, L. N., and Wagstaff, A. K. (1967). Client voice quality and expressive styles as indexes of productive psychotherapy. *J. Consult. Psychol.* 31: 557-563.

Riskind, J. H., and Gotay, C. C. (1982). Physical posture: Could it have regulatory or feedback effects on motivation and emotion? *Mot. Emot.* 6: 273-298.

Rutledge, L. L., and Hupka, R. B. (1985). The facial feedback hypothesis: Methodological concerns and new supporting evidence. *Mot. Emot.* 9: 219-240.

Scherer, K. R. (1986). Vocal affect expression: A review and a model for future research. *Psychol. Bull.* 99: 143-165.

Winer, D. L., Bonner, T. O., Blaney, P. H., and Murray, E. J. (1981). Depression and social attraction. *Mot. Emot.* 5: 153-166.