1985

Effects of own voice vs. another's voice during progressive relaxation

Tay Corrie Weber

Abstract

The purpose of this study was to assess the difference in stress reduction between listening to one's own voice and listening to another's voice during taped relaxation procedures. Eighteen male undergraduates listened to relaxation tapes of their own voice, that of another person, and a control tape. Stress was measured via skin temperature. It was hypothesized that there would be a significant stress reduction (indicated by increased skin temperature) for both experimental groups and greater reduction in stress when listening to one's own voice than when listening to another voice. A Latin-Square Repeated analysis revealed only a significant order effect and the results did not support the hypotheses. Methodological problems which may have led to these results are examined and clinical benefits of the hypothesized results are briefly discussed.

EFFECTS OF OWN VOICE VS. ANOTHER'S VOICE DURING PROGRESSIVE RELAXATION

BY

TAY CORRIE WEBER

B.A., PENNSYLVANIA STATE UNIVERSITY, 1983

A THESIS
SUBMITTED TO THE GRADUATE FACULTY
OF THE UNIVERSITY OF RICHMOND
IN CANDIDACY
FOR THE DEGREE OF
MASTER OF ARTS
IN
PSYCHOLOGY

MAY 1985

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ACKNOWLEDGEMENTS

I would like to acknowledge

Dr. Joanne Preston

and

Dr. James Hall

for their assistance with this thesis.

Effects of Own Voice vs. Another's Voice During Progressive Relaxation

Several studies have compared the effectiveness of live vs. taped relaxation training. Paul & Trimble (1970) found live training to be superior in reducing physiological arousal and subjective stress and argued that a possible explanation for the superiority of live training was the loss of response-contingent progression (i.e., the therapist does not move on to relax the next muscle group if the client indicates that the present muscle group is not completely relaxed) in tapes. Similar results were found by Israel & Beiman (1977) in a study which assessed self-relaxation as well as live and taped progressive relaxation.

Other studies have examined more specific aspects of taped progressive relaxation. A study of therapist "warmth of voice" used in a systematic desensitization procedure (Morris & Suckerman, 1974) concluded that subjects responded better to "warm" voices than to "cold" voices (as determined by three independent raters on a 6-point Likert-type scale ranging from "extremely cold" to extremely warm"). Also, a more recent study of preferences for gender of voice and background in progressive relaxation tapes (Nathan, Nathan, Vigen, & Wellborn, 1981) found that all subjects, male and female, preferred a female voice and individually, subjects preferred the voice of the opposite sex. Putre et al (1977) found that although taped relaxation procedures reduced muscle stress in hyperactive children, these procedures fared no better than taped adventure stories. They concluded

that the content of the tape made no difference. Finally, Cerio (1983), in a study using fantasy relaxation training (a process using imagery and a countdown of numbers to achieve relaxation) with a test anxious student, found that by listening to one's own taped description of the test situation which elicited anxiety, one can relax faster than by listening to the voice of the therapist. The issue of the effectiveness (as measured by reduction in physiological stress) of listening to one's own voice versus listening to another's voice has not yet been addressed using a large subject group and a physiological measure of stress. The purpose of this study, then, is to assess the difference in reducing physiological stress between listening to one's own voice vs. another's voice during progressive relaxation.

In measuring physiological stress, EMG and skin temperature are two of the methods that have been used in the past. It has been suggested that skin temperature increases as EMG decreases (i.e., as the muscles become more relaxed) during biofeedback (Cinciripini, 1982). It has also been suggested that subjects might be altering temperature indirectly through covert changes in the patterning of skeletomuscular activity and thus of blood flow in peripheral limbs (Rattenbury & Donald, 1982). A more recent study (Kibler & Rider, 1983) found that progressive relaxation, sedative music (Debussy), and a combination of the two used together all significantly reduce stress as measured by increased skin temperature.

Method

Subjects

Eighteen undergraduate males enrolled in an introductory psychology course participated in the experiment. Subjects received three (3) hours research credit toward a mandatory three hours of research participation.

Apparatus

Apparatus used in the experiment consisted of a tape recorder, 60-minute cassette tapes, a tape of progressive relaxation instructions as recorded by Dr. James Hall (University of Richmond), and a Cyborg feedback digital thermometer.

Procedure

Subjects were randomly assigned to one of three groups and were exposed to each of three conditions: own voice, other voice, and control. Order of presentation of these conditions was counterbalanced to control for practice effects. Upon entering a small room, each subject was asked to fill out a revised version of the Hassles Scale (Lazarus, 1981) as a measure of stress which the subject may have been experiencing at the time of testing. No further stress was induced because a prior study on relaxation (Kibler & Rider, 1983) produced significant changes in skin temperature without inducing stress. After filling out the scale, subjects in the "own voice" condition were instructed to tape their own voices as they read a set of written

instructions for progressive relaxation (as developed from guidelines of Bernstein & Borkovec, 1973). Subjects then listened to the tape and were instructed to retape the instructions, if necessary, until they became comfortable (subjectively defined as some degree of familiarity with the tape and acceptance of what one's voice sounds like on tape) with hearing their own voices on tape (a pilot study showed that subjects could become comfortable with their own voice after taping two to three times). Subjects were then connected to a digital thermal feedback unit via an electrode, which was attached to the tip of the index finger of the dominant hand. After a 10-minute adaptation period, during which the subjects sat quietly, baseline skin temperature (°F) was recorded. The lights were then dimmed and subjects were instructed to listen to and follow their taped relaxation instructions (approx. 15 minutes). Final skin temperature was recorded immediately following cessation of the tape. Subjects were then disconnected from the feedback unit and asked to walk around for approximately five minutes (this filler task was employed in an effort to allow the subjects' skin temperature to return to a baseline level between conditions). In the "other voice" condition, subjects listened to and followed the same set of progressive relaxation instructions as recorded by Dr. James Hall (Hall's voice was chosen because eight independent raters gave Hall's voice a mean score of 5.83 on a 7-point Likert-type scale [1=very cold, unpleasant; 7=very warm, pleasant] and because other students' voices are too variable and inconsistent, whereas Hall's voice would lend consistency to the procedure without

jeopardizing the "homemade quality" of the tape [as opposed to being professionally made]). Baseline and final skin temperatures were recorded in the same manner previously mentioned. Subjects again were given a 10-minute adaptation period prior to baseline recordings. In order to maintain some degree of similarity between experimental conditions, subjects were asked to read the instructions silently while listening to the tape for adjustment of tone and volume to a comfortable level of listening. In the control condition, after adaptation, subjects shadowed (to control for active subject participation) a lecture tape (also taped by Dr. Hall). Baseline and final temperatures were again recorded. After completion of the three conditions, subjects were asked to compare Dr. Hall's voice with their own voice in terms of pleasantness/unpleasantness and to make any general comments they had about the experiment. Subjects were asked not to: smoke for 1 hour or eat/drink for 1 to 2 hours prior to testing, come directly from Phys Ed class, or participate if taking drugs (cold medicines, etc.) as these will all alter true readings of skin temperature.

Results

A Latin-Square Repeated 3x3x2 analysis was performed on the baseline and final skin temperatures. The analysis revealed no significant interactions: order x pre/post, $F(2,62)<1$, $p>.05$; voice x pre/post, $F(2,62)=1.68$, $p>.05$; pre/post x groups, $F(2,62)=1.62$, $p>.05$; pre/post x SWG, $F(15,62)=1.03$, $p>.05$; voice x order(b), $F(2,15)=1.45$,

$p>.05$; voice x order(w), $F(2,62)=2.73$, $p>.05$. The analysis also revealed that effects of voice ($F[2,62]<1$, $p>.05$) and pre/post ($F[1,62]=1.05$, $p>.05$) were not significant. Pre and post means and standard deviations for each group are shown in Table 1. There was,

Table 1

Mean Pre- and Post Skin Temperatures as a Function of Voice and Order

		Voice					
		Control		Own		Other	
Order		Pre	Post	Pre	Post	Pre	Post
1	M	92.78	92.45	93.02	93.57	91.33	93.15
	SD	1.66	2.11	1.23	1.43	1.57	1.58
2	M	89.47	89.25	92.08	91.60	92.27	92.93
	SD	3.29	3.15	2.12	2.99	0.90	2.42
3	M	91.27	90.40	88.18	90.75	89.75	90.10
	SD	2.03	4.51	4.99	3.69	2.83	2.71

however, a significant order effect, $F(2,62)=14.4$, $p<.05$. The results of the Neuman-Keuls multiple comparisons test, presented in Figure 1, showed that subjects displayed the highest mean skin temperatures

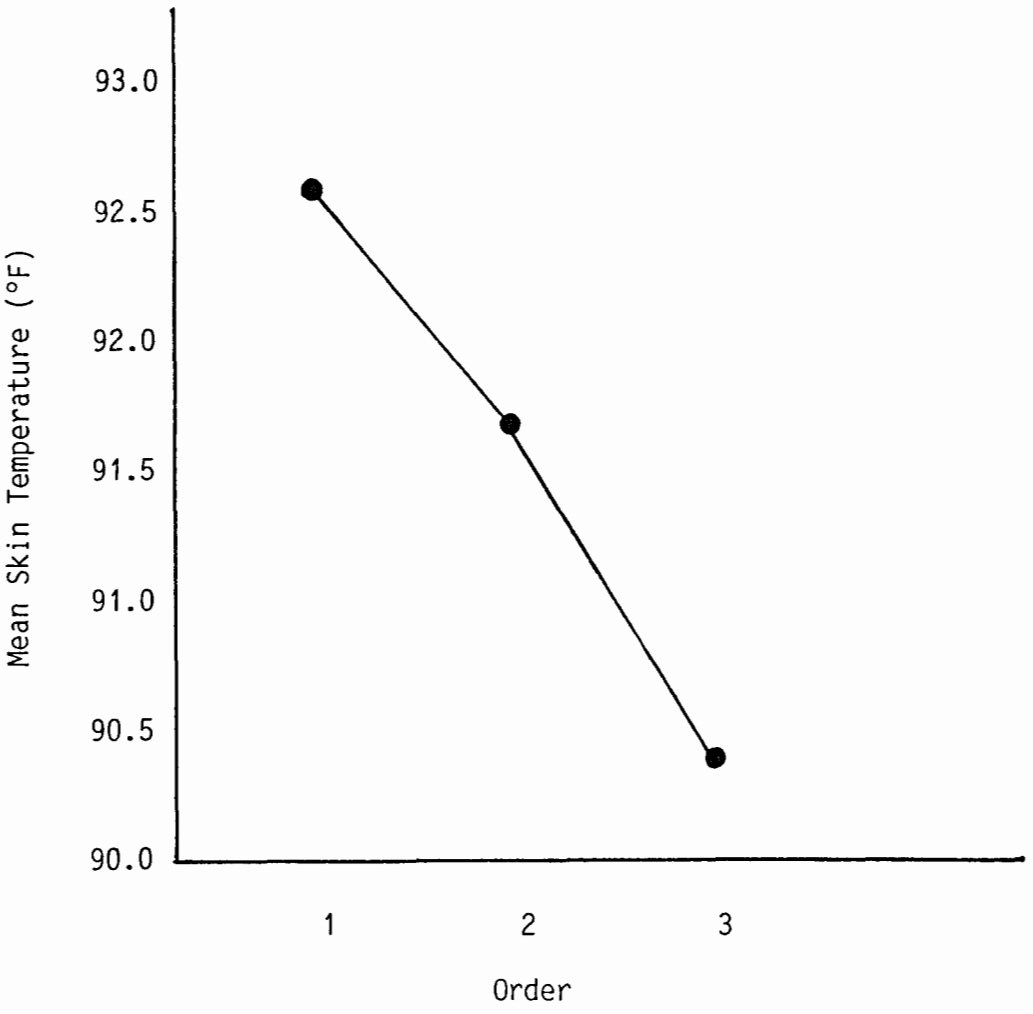

Figure 1.

Mean skin temperature as a function of order of presentation.

during the condition to which they were first exposed ($\bar{X}$=92.59), next highest to the second condition presented ($\bar{X}$=91.67), and lowest to the third condition presented ($\bar{X}$=90.38).

Also, in comparing Dr. Hall's voice to their own, most of the subjects considered Hall's voice to be more pleasant (N=16) than their own; while only a few considered his voice to be about the same as (N=1) or more unpleasant (N=1) than their own voice. The data on the Hassles Checklist revealed a mean number of items checked of 3.67, with the two most common responses being "too many things to do" (N=15) and "test/exam" (N=13).

Discussion

It was hypothesized that listening to one's own voice during progressive relaxation would produce greater reduction in stress (as measured by an increase in skin temperature) than listening to the voice of another person. It was also hypothesized that the two treatment groups would produce greater reduction in stress than a control group which listened to a lecture tape. The results did not support either hypothesis. It is likely that problems in the methodology were responsible for these results. First, because subjects showed high initial baseline temperatures (i.e., 90°F or higher), there may have been a ceiling effect which prevented the subjects from raising their temperatures much higher. Subjects with lower baselines (i.e., 75°F) may have been a more appropriate group of subjects. Also, a different measure of stress, such as EMG, could have been more appropriate.

Secondly, appropriate timing of the tension/release cycles is necessary for progressive relaxation procedures to be effective. It was obvious that the correct timing was absent from the subjects' own tapes. The data showed a pattern in which subjects who listened to Hall's relaxation tape prior to making their own tape showed higher mean temperature changes in response to their own tape. Though this pattern was not significant, the timing in Hall's tape may have been closer to the appropriate timing and a modeling effect may have been present. Without professional training, subjects would not have the appropriate timing of cycles in their tapes. However, future research could include a pre-treatment exposure condition in which subjects could listen to professionally made tapes to get a better feel for the correct timing.

Regarding the order effect, in which subjects showed the highest mean temperatures in the initial condition and declined steadily thereafter, it is possible that fatigue was the cause (subjects sat through approximately 2½ hours of testing) and/or the filler task of walking around served to produce stress rather than merely allowing subjects' temperatures to return to baseline. A shorter period of walking around or a task requiring less movement may have been more useful. Other explanations for the order effect include the lack of control for room temperature and the possibility that subjects became overstressed (thinking about items on the Hassles Checklist, for example) as time passed. Finally, voice condition may simply be too subtle a variable to make any significant difference in skin temperature.

In reference to the comments made about the experiment, a number of subjects reported feeling more relaxed after listening to both relaxation tapes. This would seem to support the idea that a ceiling effect prevented detection of the reduction in physiological stress. The Hassles Checklist data seem to indicate that subjects were under at least some degree of stress at the time of testing.

A significant difference between the control and experimental groups would have indicated that progressive muscle relaxation produces more reduction of stress than merely resting quietly. Also, a significant difference between the two experimental groups would have indicated that one's own voice produces a higher mean change in temperature than that of another person (i.e., therapist). No significant difference between the two experimental conditions would indicate that one's own voice may be at least as effective as that of the therapist. There seems to be no question regarding the importance of home practice of relaxation techniques (Sherman, 1982; Hillenberg & Collins, 1983) and these results would provide the therapist and client with another option should situations arise in which live relaxation training is impractical (for reasons of time, money, or convenience) or the client is not responding well to the voice of the therapist or that of another tape.

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Checklist

Please check any of the following items you have recently experienced:

1. Concern about weight
2. Concern about health of a family member
3. Physical appearance
4. Too many things to do
5. Misplacing or losing things
6. Anxiety over wasting time
7. Being lonely
8. Test/exam
9. Spat with roommate
10. Problem with girlfriend/boyfriend
11. Paper due
12. Other

Tay Weber received his B.A. in psychology from the Pennsylvania State University (1983) and his M.A. in psychology from University of Richmond (1985). He hopes to attain a Ph.D. in clinical psychology in order to eventually open a private practice. Also, combined interests in psychology and cartooning have led to publications in Contemporary Social Psychology.