

ALPHA BIOFEEDBACK THERAPY IN ALCOHOLICS: AN 18-MONTH FOLLOW-UP¹

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In an earlier study on patients with alcohol problems, an experimental group given 10 hour-long alpha biofeedback training sessions showed greater improvement on State and Trait Anxiety scores than did a control sample. In the present study an 18-month follow-up was done on those Ss. The differences between the experimentals and controls in State and Trait Anxiety after 18 months were essentially identical to the differences between them immediately after treatment, which indicates that alpha training had long-range therapeutic effects. A difference between the groups on the Alcohol Rehabilitation Followup Questionnaire also suggested that alpha training may have been associated with some reduction in alcohol consumption as well.

Although it has become a popular treatment technique, the research available on the therapeutic efficacy of alpha biofeedback training is limited. Increased alpha production has been associated with the forestalling of headaches (Gannon & Sternbach, 1971), pleasant feelings (Brown, 1970), relaxed alertness (Stoyva & Kaimya, 1968), and reduced anxiety (Meldman, 1973) in various studies, although Sterman (1972) has reported that some Ss find alpha training unpleasant. In a controlled study of patients with alcohol problems, Passini, Watson, Dehnel, Herder, and Watkins (1977) found a greater reduction of anxiety in an alpha biofeedback training group than in a nontreatment sample. However, other investigators (Jones & Holmes, 1976; Lynch, Paskewitz, & Orne, 1974) found the quantity of improvement experienced by alpha biofeedback and placebo samples to be about the same. Our current understanding of alpha biofeedback is incomplete, and additional research on its effects is needed. The authors are unaware of any research that has evaluated the long-term effects of alpha training in psychiatric samples. The purpose of the present study was to evaluate these effects in a controlled 18-month follow-up study.

METHOD

Subjects

An attempt was made to contact all individuals who had participated in an earlier study on the effects of alpha biofeedback on alcoholics (Passini et al., 1977) 18 months after the completion of their post-therapy evaluation. All Ss were males hospitalized for treatment of alcohol-related problems. No S with any psychotic disorder or known history of epilepsy was used, and all had been allowed at least a 3-day detoxification period after admission before participation in the study. Both telephone interview and psychological inventory follow-ups were done. The inventories used were mailed to the participants. Of the original 50 patients, 2 refused to participate in the follow-up, 1 could not be found, and 1 died before the follow-up began. Two others died after they had been interviewed, but before the inventory evaluations were completed. Six participated in the interview, but refused to take the inventories. Forty-six of the original 50 Ss (24 experimentals

¹This project was supported by the Veterans Administration Medical Research Service. The authors wish to acknowledge the contributions of Douglas Anderson, Bruce Watkins and the St. Cloud Veterans Administration Brief Treatment Unit to this investigation. Reprint requests should be sent to Charles G. Watson, Research Service, VA Hospital, St. Cloud, Minnesota 56301. and 22 controls) completed the interview, and 38 (22 experimentals, 16 controls) completed the inventories. The primary diagnoses of the experimentals were Alcohol Addiction (18 cases); Episodic Excessive Drinking (2); and Habitual Excessive

Drinking, Alcohol Intoxication, Antisocial Personality and Obsessive-Compulsive Neurosis (1 each). The primary diagnoses of the controls were Alcohol Addiction (21) and Episodic Excessive Drinking (1). Nine members of each group had received tranquilizing or antidepressant (or both) medications as inpatients. The difference between the proportions of the two samples who received such drugs was non-significant ($\chi^2 = .06$, $df = 1$). The Ss did not differ on mean age, education, WAIS Full Scale IQ estimates based on the SRA Test of Educational Ability (Watson & Klett, 1973), or total length of psychiatric hospitalization ($t_s = 1.04$, .93, .65 and 1.12, respectively; all $dfs = 44$). The mean age, education, estimated WAIS Full Scale IQ, and months of previous hospitalization for the entire sample were 43.9 years, 10.5 years, 108.3 and 5.0 months, respectively.

A baseline measure of alpha production (percentage of session time during which alpha was produced) in a 15-minute eyes-closed session was obtained from each S before and after the 12-day training period. The between-groups difference in pretreatment alpha percentage was nonsignificant ($t = .53$, $df = 44$), overall mean = 37.9%. Most of the Ss had been assigned randomly to one group or the other, but younger patients deliberately were placed in the control sample toward the end of data collection to offset an age difference that had developed earlier between the samples.

Procedure

The training program lasted 12 days. During each of the first 2 days the experimentals were given 45-minute finger temperature control training sessions on a Systec Temperature Feedback Trainer to acquaint them with the concept of control over autonomic functions. Sixty-minute alpha training sessions on a Systec Beta-Alpha-Theta Brainwave Feedback Trainer were given on each of the next 10 consecutive work days. The apparatus used was a Systec Beta-Alpha-Theta Trainer with a .3-second alpha time-duration threshold. The alpha sensitivity threshold setting for each individual was determined via a Grass Model Six electroencephalograph, which was used to amplify signals during both baseline and training sessions. Before the Ss' initial alpha baseline figures were recorded, the trainer's threshold dial was set at a point at which appearance of smooth flowing waves characteristic of alpha registered as such on the trainer and on the cumulative recording device. The trainer produced a tone when alpha waves were fed into it. An electrode from the trainer was attached to the dominant occipital area. Experimental Ss were seated in a relaxed semi-reclining position with their eyes closed during the training sessions. Prior to the first day's session, the experimental Ss were instructed in techniques for alpha production (e.g., deep breathing, relaxation, attempting to reach a state of relaxed alertness, and making an effort to maintain the emotional state associated with signal). The experimental Ss were told how much alpha they had produced at the conclusion of each session. However, they were not specifically instructed to practice controlling alpha production outside of the laboratory. The controls received no special alpha or finger temperature control training.

Instruments

The instruments used were chosen because of their relationships to variables that have been described as related to the alpha state or to general psychiatric condition. They were the State/Trait Anxiety Inventory (S/TAI) (Spielberger, Gorsuch, & Lushene, 1968), the Multiple Affect Adjective Check List (MAACL Today Form) (Zuckerman & Lubin, 1965), the Minnesota Multiphasic Personality Inventory (MMPI), the Watson Anhedonia Scale (Watson, 1972), and the Zuckerman (1971) Sensation-Seeking Scales (SSS). These instruments were administered to both groups on the day before the experimentals' training period began, at the conclusion of the program 3 weeks later, and 18 months after completion of the program. The S/TAI, MAACL, SSS, and MMPI were mailed to the patients to be completed. The Anhedonia Scale and an Alcohol Rehabilitation Follow-up

Questionnaire (Pucel, 1972) were obtained via telephone interview. The Ss were paid \$5.00 upon completion of data collection.

The results were analyzed via Type I analyses of variance (Lindquist, 1953), which provided tests of the main effect differences between the two groups; main effect Pre-training, Post-training and Follow-up differences; and the interaction of the two. Where significant Group \times Test Session interactions appeared, 2×2 Pre-training - Follow-up \times Groups and Post-training - Follow-up \times group analyses were run to study the nature of the differential changes.

RESULTS

Significant Pretreatment-Posttreatment \times Group interactions had appeared on alpha percentage, the S/TAI State and Trait Anxiety scores, and on the MMPI Paranoia scale in the original study. While the controls' mean alpha percentage had remained roughly unchanged, the experimentals' had increased from 38.3% to 54.9%. The interaction effect was highly significant ($F = 22.83$; $dfs = 1, 48$; $p < .001$). The State and Trait Anxiety scores of the experimentals had shown significantly more decline than those of the controls ($F_s = 5.56$ and 12.42 ; $dfs = 1, 48$; $ps < .05$ and $.001$, respectively). The MMPI Paranoia scores of the experimentals showed less decline, however, than those of the controls ($F = 5.57$, $dfs = 1, 48$, $p < .05$). No significant interactions appeared on the Multiple Affect Adjective Check List scales, the Anhedonia Scale, the Sensation-Seeking Scales, the Brief Psychiatric Rating Scales, or the other nine MMPI clinical scales.

In the present analyses, the 3×2 interactions on both State and Trait Anxiety were significant ($F_s = 3.52$ and 5.14 , $dfs = 2, 60$; $ps < .05$ and $.01$, respectively). Both Pretreatment vs. Follow-up \times Groups interactions were also significant ($F_s = 4.49$ and 5.96 respectively, $dfs = 1, 30$; $ps < .05$). The Posttreatment vs. Follow-up \times Groups interactions were both nonsignificant ($F_s = .01$ and $.03$, respectively, $dfs = 1, 30$). These data indicate that the experimentals showed greater reduction on State and Trait Anxiety during treatment than other controls and that the effects of the treatment persisted over the 18-month follow-up period. The means of the groups on the pretreatment, posttreatment and follow-up evaluations are presented in Table 1.

TABLE 1
MEAN S/TAI SCORES

	Pretreatment	Posttreatment	Follow-up
State Anxiety			
Experimentals	48.2	35.5	40.6
Controls	41.4	39.9	44.6
Trait Anxiety			
Experimentals	44.7	35.1	37.3
Controls	41.6	41.8	43.4

None of the remaining $19 \ 3 \times 2$ or $38 \ 2 \times 2$ interactions run on the other dependent variables was significant.²

The Alcohol Consumption Followup Questionnaire was administered by telephone. The questions asked concerned (a) longest period of time without drinking; (b) total number of abstinent days; (c) number of excessive-consumption days; (d) number of alcohol-related rehospitalizations; (e) number of days spent in rehospitalization; (f) number of arrests; (g) number of days in jail; (h) frequency of

²For the sake of brevity the nonsignificant results are not recorded here. A table that describes them is available from the senior author.

attendance at Alcoholics Anonymous meetings; (i) longest period of abstinence in past 2 weeks; (j) number of abstinent days in the past 2 weeks; (k) excessive drinking days during the last 2 weeks; (l) number of weeks employed; and (m) wages earned during the follow-up period. Only 1 of the 13 *t*-tests used to evaluate differences between the groups on the Alcohol Consumption Questionnaire was significant at the .05 level. This difference concerned longest period of time without drinking during the follow-up period. The mean reported lengths of these periods for the experimentals and controls were 248 and 142 days, respectively ($t = 2.24$, $df = 44$, $p < .05$).³ These data suggest the possibility that alpha treatment may have had a limited beneficial effect on drinking behavior; however, the fact that only 1 of the 13 differences was significant suggests that the difference could have been a chance finding. This suspicion is strengthened by the absence of significant differences in other variables related to drinking behavior.

DISCUSSION

The results suggest that alpha biofeedback training has some long-range therapeutic effects on anxiety level. Because follow-up studies on other types of treatment have suggested that many have little or no long-range effects, these findings are particularly encouraging. The effect of alpha training on posttreatment measures of alcohol consumption, however, was ambiguous. While the experimentals reported a greater mean longest dry period, no significant differences appeared on several other measures of drinking behavior. However, the findings failed to substantiate the presence of relationships between alpha training therapy and measures of ability to enjoy one's self, seek new experiences, or show clinical improvement on those measures of psychopathology defined by the MMPI clinical scales. Nor was alpha training associated with posttreatment job performance. Apparently alpha training is a specific clinical tool for the treatment of anxiety.

The mechanism by which alpha training provides therapeutic benefit is still unknown. In our original study the correlation between amount of change on the clinical variables and on alpha was largely nonsignificant, which suggests that the therapeutic effects of alpha may be attributable to placebo. Two other studies (Jones & Holmes, 1976; Lynch et al., 1974) in which the amount of improvement shown by alpha biofeedback and placebo groups was about the same also have suggested that the therapeutic benefits may be a function of placebo. However, neither of these studies employed non-treatment control groups, and, in one case, the Ss used were college students rather than psychiatric patients. Additional research on the role of placebo in alpha biofeedback therapy is needed.

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SYSTEMS RELEASING ACTION THERAPY WITH ALCOHOLICS: AN EXPERIMENTAL EVALUATION¹

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Described Systems Releasing Action Therapy (SRAT) and a controlled study that evaluated its effectiveness. The therapy combines physical and fantasy exercises and has its roots in the Bioenergetic and Gestalt traditions. To evaluate its effectiveness, 56 patients who were receiving treatment for alcoholism were assigned randomly to therapy and control groups. On 3-week follow-up, the therapy sample showed significantly more improvement than the controls on measures of blood pressure, physical symptoms, anxiety, hysteroid tendencies, disturbed feelings and self-image. Suggestive differences (interactions significant only at the .20 level) in favor of the therapy group also appeared on measures of vital capacity, withdrawal, excessive drinking, anhedonia and four neurosis-oriented MMPI scales. However, 6-month follow-up data were relatively unimpressive. The results suggest this type of therapy is an effective one, at least for the short term.

Systems Releasing Action Therapy is a hybrid of several humanistic approaches. The goals of this therapy are to normalize the functioning of various autonomic systems and to reduce rapidly psychological and physiological symptoms related to anxiety/depression. The therapy is largely nonverbal and utilizes a progressively more strenuous series of Bioenergetic-type physical and Gestalt-type fantasy exercises designed to reduce constriction and produce cathartic reactions. It is based largely upon Gestalt's emphasis on "wholeness" and Wilhelm Reich's description of constriction as the muscular basis of "character armoring" and system disturbances. This constriction, for example, is seen frequently in "masking" in which the facial muscles, eyes, jaw, and neck permit the individual to conceal feelings that he deems inappropriate. Another type of muscular disturbance involves constriction of the diaphragm and the body's long skeletal muscles to allow the individual to avoid being overwhelmed by either his own impulses or outside stimulation.

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