EFFECTS OF EEG FEEDBACK TRAINING ON SUSCEPTIBILITY TO HYPNOSIS: PRELIMINARY OBSERVATIONS

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Relaxation instructions seem to be one of the independent variables that increase suggestibility (Barber, 1969). There is a growing recognition (Bandura, 1969) that verbal instructions and cognitive factors can significantly add to the power of reinforcement variables. It seems likely that a combination of verbal instructions and response-contingent feedback will be more effective in deepening muscular relaxation than verbal instructions alone. A study by Paul and Trumb (1970) appears to attribute the inferiority of verbal relaxation instructions, as applied compared to live instructions, to the lack of response-contingent progression in relaxation training. Engstrom, London, and Hart (1970) have reported that EEG alpha-theta feedback training increases hypnotic susceptibility.

Electromyographic (EMG) feedback seems useful in the induction of muscular relaxation (Budzynski & Stoyva, 1969; Green, Walters, Green, & Murphy, 1969). The purpose of this study was to determine if taped verbal relaxation instructions and response-contingent EMG feedback training will increase suggestibility or hypnotic susceptibility over that obtained with instructions and false or noncontingent feedback. The specific hypothesis tested was that six sessions of relaxation practice with response-contingent EMG feedback will result in greater increase in hypnotic susceptibility as measured by the Stanford scales than will relaxation and noncontingent feedback.

METHOD

Subjects

The Ss were 12 white undergraduate males between the ages of 18-22, who volunteered for a study of “relaxation training and hypnosis.” The Ss who admitted to a history of psychiatric problems were excluded from the sample.

Procedure

All Ss were first tested individually with the Stanford Hypnotic Susceptibility Scale Form A (Weitzenhoffer & Hilgard, 1959). The Ss were then assigned randomly and equally to either a control or experimental group. All Ss were assigned to a set of taped instructions which stated that they were to be trained to relax deeply and that the EMG auditory feedback would facilitate this training process. The taped instructions followed closely those in the manual that accompanies the portable EMG feedback apparatus. It included a sample explanation of the feedback system as basically an information system. The sequence of EMG training and the practice of tension-release cycling followed closely the instructions in the manual. Training was started with both auditory and visual feedback at the lowest sensitivity level. As S demonstrates progress by keeping the feedback at a low level (< 4 µV), the sensitivity is raised successively to the medium and high ranges, and held there until he can reach the previous criteria at those sensitivity levels. A final plateau is reached in forearm training when S can maintain a low level (< 4 µV) of feedback on high sensitivity. Next, the electrodes are attached to the area of the frontal muscle of the forehead, and the previous training sequence (e.g., low to high sensitivity) is run. Both experimental and control Ss were reminded by the same taped instructions at the start of each training session to watch for and become familiar with the proprioceptive cues (heaviness, tingling, numbness) of deep relaxation.

Procedures with controls differed from those with experimental Ss only with respect to the following conditions: (a) Control Ss received false or noncontingent EMG feedback; (b) no changes in the sensitivity levels were made for control Ss (controls had no knowledge of this); and (c) the electrodes were moved from forehead to forehead for all control Ss at the start of the fourth session of training.

Feedback training consisted of six 45-min. sessions. The Ss were seated on a large padded recliner during all procedures. After terminating his sixth training session, each S was immediately retested with Form B of the Stanford Hypnotic Susceptibility Scale. All procedures were conducted individually and all administered by the same E, the writer. The entire study was done in E's office at a mental health clinic, and E attempted to restrict his verbal contact with Ss to the taped instructions. During the orientation period (first 10 min. of first session), all Ss (control and experimental) were given both visual and auditory “true” or response-contingent EMG feedback. After the orientation, the EMG console and visual feedback were placed on a table behind S's chair. The earphones of control Ss were disconnected without their knowledge from the EMG console, and connected to a recorder that delivered taped auditory EMG feedback from the actual first six relaxation training sessions of a psychiatric patient bearing “true” or response-contingent auditory EMG feedback.

RESULTS

Not all experimental Ss reached the preestablished criterion of relaxation training, but all approximated it at the end of the sixth session of training. None of the control Ss even approximated the criterion for forehead muscle relaxation. Table I presents the pre- and posttest scores and differences on the Stanford Hypnotic Susceptibility Scale of the two groups.

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A Mann-Whitney test of the difference between the posttest scores of the experimental and control groups yielded a significant difference ($p = .001$); a similar analysis yielded a nonsignificant difference between pretest scores.

### CONCLUSION

The very small size and select nature of this sample necessitates caution in drawing conclusions and generalizing from these data. A study with a larger sample of outpatients is in progress. The possibility of experimental bias in the use of the Stanford Hypnotic Susceptibility Scale Forms A and B must be considered.

If the above results are replicable, EMG training could be used to increase the efficacy of automated relaxation training procedures within systematic desensitization and to avoid the problem (Paul & Trimbly, 1970) which seems to arise because of the lack of response-contingent progress when tape-recorded relaxation instructions are used.

### REFERENCES


