

## Use of Hemi-Sync Audiotapes to Reduce Levels of Depression for Alcohol-Dependent Patients

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**by John R. Milligan, PhD and Raymond O. Waldkoetter, EdD**

### Abstract

This study evaluated the use of Hemi-Sync audiotapes as a supplemental treatment procedure for outpatients diagnosed as alcohol dependent, reporting mild to moderate levels of depressive feelings. The selected Hemi-Sync tape album was applied to assist brainwave synchrony in each hemisphere, alter mental imagery, and enhance relaxation for the experimental group. Subjects were enlisted military patients indicating various levels of depression as measured by the Beck Depression Inventory (BDI). Using a pre- and posttreatment design, the BDI was given before and after treatment as a measure of effect. A comparison group of outpatients was also given before-and-after BDIs but not the supplemental tape treatment. Both subject groups received the primary psychoeducational therapy. Results of the study showed that the group provided with the Hemi-Sync tapes reported obviously less depressive symptoms than the group not provided with the tapes, significant beyond the Both subject groups received the primary psychoeducational therapy. Results of the study showed that the group provided with the Hemi-Sync tapes reported obviously less depressive symptoms than the group not provided with the tapes, significant beyond the  $p < .001$  level. The authors concluded that group therapy augmented with Hemi-Sync audiotapes could offer significant improvement in treatment as reflected by the BDI.

### Introduction

Many studies have documented the common presence of depressive symptoms among patients seeking treatment for alcoholism (Waldkoetter & Sanders 1997). Depressive symptoms are frequently reported as comorbid factors in such treatment (Meichenbaum 1994), which must be addressed for long-term relapse prevention and for treatment acceptance in the short term. Effective treatment programs for substance abuse (SA) are no longer dependent upon the twelve-step Alcoholics Anonymous (AA) model as the only treatment modality. More often SA programs have now moved to models emphasizing cognitive-behavioral approaches and to somewhat decreased reliance on the AA model except as an ongoing support function after formal treatment. Such programs recognize that cognitive thought patterns have contributed to and reinforced dysfunctional lifestyles and life-long behavioral patterns leading to alcohol dependence or abuse.

Modern programs frequently are patterned after models such as the American Society of Addictions Medicine's (ASAM 1991) that emphasize individualized, flexible treatment with specific criteria guiding level of care and length of services. Programs using the ASAM model to determine levels of entry and of care in treatment have found that ASAM placement criteria result in the patients being placed at less intense treatment levels than do programs with fixed entrance and levels of care. The placement at lesser levels of intensity has allowed many such programs to substantially reduce the cost of treatment. The savings result from shorter lengths of stay during the actual treatment phase, with generally longer aftercare or follow-on supportive services once the person completes the treatment phase. This study was designed as an ASAM structured program, which emphasized flexibility and the unique differences in individuals who have developed problematic SA problems requiring treatment.

New techniques in SA treatment include the use of brain-wave training with biofeedback as reported by Peniston and Kulkosky (1989) and Fahrion et al. (1992) and the increased use of cognitive techniques in federal prisons (Sanders 1989). The innovative use of Hemi-Sync audiotapes (Monroe 1982) targeting brain-wave synchronicity using designed sound patterns is reported in relatively select publications or studies (Russell 1993; Sanders & Waldkoetter 1997). More programs are moving to shorter lengths of treatment due both to improved flexible models and to the pressures from managed care organizations to limit costs. The movement to shorter treatment periods increases the importance of developing self-paced and self-administered treatment techniques, which are adjunctive to the primary program. Further exploration relating to the use of Hemi-Sync audiotapes for synchronizing brain-wave patterns, altering mental imagery, and enhancing relaxation appears warranted in SA facilities and was a major purpose of the research reported here.

### Method

The samples in this study were composed of forty-two naval military personnel referred for treatment to an outpatient military alcohol and drug treatment facility. All subjects were males in the enlisted grades, ranging in age from twenty-two to thirty-eight, and were diagnosed as alcohol dependent. Half of the subjects (twenty-one) were assigned to a control group (CG) and the other half to an experimental group (EG). Each subject completed a comprehensive biopsychosocial assessment following the standards of the Joint Commission on Accreditation of Healthcare Organizations Behavioral Health Care Standards (JCAHO 1997) and pertinent military standards. As a part of this assessment, each subject was administered the Beck Depression Inventory (Beck 1987). Those scoring at or above a cut-off score of thirteen (minimal depression) were included in the study. The Beck Depression Inventory (BDI) is a twenty-one-item multiple response screening instrument used to help identify persons who may need further assessment to rule out more serious depressive disorders. The BDI is widely used because it is cost-effective, easy to administer and score, and generally takes less than five minutes to complete. Assignment to the EG or CG was alternated based on order of admission. All subjects scoring above the cut-off score on the BDI were screened by a mental health professional regardless of group assignment to ensure that those in need of treatment for any depressive disorders were provided such care.

Experimental subjects were given a Hemi-Sync album of six tapes, stereo headsets, and instructions on their use (Waldkoetter & Johnson 1995). These instructions included listening to one side of each of the six tapes on a daily basis for twelve days. Both hospitalized and outpatient subjects were to use the tapes within two hours of their scheduled bedtime each

evening and to refrain from stimulant consumption beforehand. Brain-wave training in a biofeedback protocol with alcoholics (Fahrion et al. 1992; Peniston & Kulkosky 1989) identified positive reactions to alpha-theta brain waves with increased alpha and theta brain rhythms, less reported depression, and longer abstinence posttreatment. The Hemi-Sync audiotape's brain-wave stimulation, using a parallel technology to increase hemispheric brain synchrony, alter mental imagery, and promote relaxation, have had growing therapeutic use (Monroe 1982; Russell 1993). This auditory stimulation uses specific mixes of sound frequencies, e.g., alpha, theta, and delta. The brain resonates with this stimulus by producing similar EEG patterns as the listener follows the audioguidance program. The six tapes in the Monroe Institute album were: Morning Exercise, HUMAN-PLUS De-Hab, Energy Walk, Moment of Revelation, Winds over the World, and Surf. The tapes contained voice instructions, music, and binaural beat sound patterns and were less than an hour long on each side. The CG did not receive the tapes.

Both groups followed the same primary treatment program and were re-administered the BDI after three weeks, with the EG having the supplemental audiotape therapy as noted. The SA outpatient treatment program was an outpatient program with treatment levels of outpatient, intensive outpatient, and residential levels of care. The content of the program included two psychosocial skills-building lectures/discussions each day and two group treatment sessions per day, five days per week, with the EG receiving the augmented tape therapy. The length of treatment varied for each individual in both groups depending on progress in meeting treatment goals following the approach of the ASAM model. Other studies suggest that tape effects are cumulative and different for each individual, and after initial exposure, the tape sequence may be varied to support individual choice (Waldkoetter 1983; Waldkoetter & Vandivier 1992). Average length of stay was three weeks followed by a structured aftercare program. Each subject worked with his counselor to develop an individual treatment plan tailored to his needs, including aftercare considerations such as referral to community resources for non-alcohol problems.

**Results and Discussion**

The CG (N=21) had an average (mean) pretreatment BDI score of 15.10 with a standard deviation (SD) of 2.72. The CG posttreatment BDI mean was 8.67 with an SD of 2.56. The EG (N=21) had a pretreatment BDI mean score of 19.95 with an SD of 6.87. After treatment, the EG had a mean BDI score of 4.90 with an SD of 2.30. Analyzing group differences using a one-way analysis of variance (ANOVA) design resulted in a between-groups highly statistically significant F ratio of  $F(1,41) = 25.13, p < .001$ .

**Table 1. Analysis of Variance (ANOVA) for PostBDI Scores of CG and EG**

Post BDI	Sum of Squares	df	Mean Square	F	Significance
Between Groups	148.59	1	148.59	25.13	<.001
Within Groups	236.47	40	5.91		
Total	385.07	41			

These results reflect highly significant differences between the group using the Hemi-Sync tapes and the group not provided with the tapes as a part of their treatment. The large difference between the CG and the EG (BDI) scores would be expected to occur only by chance less than once in 1,000 such measures. The pretreatment mean scores on the BDI of 15.10 for the CG and 19.95 for the EG, although different, are not statistically significant (Milligan 1999). Both groups had significantly lower scores (improved) at posttreatment: CG mean of 8.67 and EG mean of 4.90. It was observed that the cognitively oriented (primary) therapy also significantly reduced reported depressive symptoms of the CG, but the reduction was not nearly as marked as that of the EG using the supplemental tapes.

**Table 2. The Computed BDI Score Means, N's, and SD's**

CG Mean	8.6721	15.1021
SD	2.56	2.72
EG Mean	4.9021	19.9521
SD	2.30	6.87

Total MeanN	6.7942	17.5242
SD	3.06	5.72
CG vs. EG	Post BDI	Pre BDI

### Summary

Earlier studies have explored the possible applications of the Monroe Institute's sound technology and auditory guidance systems (Monroe 1977), and the authors have previously discussed how formal learning and behavioral change could likely occur (Waldkoetter & Milligan 1978). As now may be seen by the EG's lower level of alcoholic depression in this study's analysis, the Hemi-Sync audiotapes-a largely self-administered and self-paced treatment technology-proved clearly useful, suggesting that existing SA treatment programs may benefit from including them as part of their therapeutic regimens.

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*is both a clinical and research psychologist with an ongoing interest in the application of cognitive techniques to the area of substance abuse and other disorders. He is a 1978 graduate of Texas Christian University and has held a variety of positions in both the public and private sectors. His experience includes university-level teaching and research and administrative experience as the director of a large community mental health center. He is currently employed as a clinical psychologist with a military alcohol and drug treatment center.*

*is a member of The Monroe Institute Board of Advisors, a founding member of TMI's Professional Division, and a consulting psychologist with an inclusive background in research psychology. He has a special interest in Hemi-Sync applications for combating substance addiction and for improving the environment of patients in adult care homes.*

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