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The Validation of a Behavioral Programmed Text for Increasing Self-Control Attitudes

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THE VALIDATION OF A BEHAVIORAL PROGRAMMED
TEXT FOR INCREASING SELF-CONTROL ATTITUDES

by

Douglas Howard Ruben

A Thesis
Submitted to the
Faculty of The Graduate College
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requirements for the
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THE VALIDATION OF A BEHAVIORAL PROGRAMMED
TEXT FOR INCREASING SELF-CONTROL ATTITUDES

Douglas Howard Ruben, M.A.
Western Michigan University, 1983

Applied behavior analysis programs designed to reduce attitudes about addictive behavior have been weak as far as overall training results. This research was an alternative training model in that it contained (a) a programmed instructional manual and self-paced homework assignments, and (b) lecture sessions. Selection of subjects from a local prison and private industry was based on indicated needs for substance abuse rehabilitation. Subjects went through a series of 9 programmed instructional units on developing self-control, and met for one weekly session for 9 consecutive weeks. Each instructional unit taught within a cognitive-behavioral model introduced concepts and techniques related to interpersonal growth and coping deficits. To test treatment efficacy, a variation of single-case and group designs was employed. Pretest and posttest measures on an attitudinal scale and proficiency performance showed significant \( p < 0.05 \) score improvements. Results on verbal participation, attendance, and completed homework all indicated acquisition of self-control "attitudes." Implications for attitudinal training are discussed.
ACKNOWLEDGEMENTS

Author is grateful to individuals whose efforts were involved in different phases of the preparatory and implementation stages. Cooperative assistance from Easter House and its energetic staff consisting of Dick Bakker, Robert Perra, Richard O'Leary, Barbara Stanton, Barbara Dunkelberger, Rosemary Layne, and a talented nursing staff made the research design possible, and publication of the "self-control" book a reality. Comments and criticisms offered by Drs. Chris Koronakos, Malcolm Robertson, Paul T. Mountjoy and Edwark Pawlak on many prior drafts of the manuscript added that simple touch of perfection that is commonly lost in "natural" behavioral applications. Financial support for the research was through the generous grant from Dr. Terry Hagan and the National Council on Alcoholism, Michigan. Finally, I owe much of my motivation to the patience, sympathetic understanding, and continual encouragement from both Dr. Chris Koronakos and my wife, Marilyn. Both individuals stood by my unrelenting persistence to complete the study despite many bureaucratic obstacles encountered along the way.

Douglas Howard Ruben
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WESTERN MICHIGAN UNIVERSITY M.A. 1983

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INTRODUCTION

Behavioral applications in the field of addictive behaviors cover nearly an infinitely long list of empirical techniques (Kazdin, 1978; Sobell, Sobell, Ersner-Hershfield & Nirenberg, 1982). However, operant approaches evolving out of the Skinnerian technology have been increasing in demand since the formalization of single-case designs (e.g., Hersen & Barlow, 1976; Kazdin, 1982). Shades of operant conditioning models employed in habit-formation research on caffeinism (Foxx & Rubinoff, 1979) and workaholism (e.g., Mentzel, 1979) have received far less attention regarding treatment efficacy than those directed toward addictions such as alcoholism (Miller, 1976; Nathan, 1976; Sobell & Sobell, 1978), drug abuse (Droppa, 1973; Ewing, 1974; Krasnegor, 1979, 1980; Miller, 1973a, 1973b; Miller & Barlow, 1973), obesity (Strunkard, 1982; Strunkard & Penick, 1979), cigarette smoking (Berecz, 1972; Lichtenstein & Brown, 1980), and inhaling vaporous fumes (Blanchard, Libet & Young, 1973).

Many of these procedures employ aversive treatment interventions that were ethically prohibitive for the present study (see Ackerly & Gibson, 1964; Ferrai, Powell & Martin, 1968; Kupperstein & Susman, 1968). However, not all aversive conditioning techniques used for addiction treatment are this injurious. Covert sensitization and desensitization of autonomic or somatic muscles to aversive imagery replace both electric and chemical interventions (cf. Cautela, 1967; Hay, Hay & Nelson, 1977; Wisocki, 1973).
Besides aversive control techniques, there are three basic approaches commonly found in addiction reduction research. The first, a more traditional approach, employs contingency management or "contracting" on designated target behaviors. Weight reduction (e.g., Mann, 1972) and smoking cessation programs (e.g., Winett, 1973) reign supreme in this area. A second therapy is the incorporation of self-control procedures, whereby individuals set their own contingencies and carry them out until they reach approximations to specific goals (Castine & Ruben, 1983; Mahoney & Thorenson, 1974). For example, self-reports, tablet counts, and tracer tests (e.g., urinanalysis) are independent measures of medication compliance that clients can arrange with or without the therapist (Epstein & Masek, 1978). The third area of therapy is attractive in psychology because of its economic expediency. This is the area of comprehensive integrative programs. Multiple training procedures have an advantage over single treatment designs. They provide a variety of empirically proven methods that prepare individuals to continue improvements after therapy ends, in other words, to increase both response and stimulus generalization (cf. Ruben, 1979, 1981, 1983a). Medication for enuretics, for instance, is commonly combined with multiple toilet-training and interpersonal-skills training methods (cf. Mountjoy, Ruben & Bradford, 1982).

The study presented here also employed an integrative therapeutic model. Treatment was in the form of educational training in central areas of human behavior frequently incompatible with addictive behaviors, such as problem-solving, time-management, assertiveness, relaxation, and general laws governing deprivation and reinforcement contingencies.
Another effect upon addictive behavior examined in this study was verbal behavior. Language that addicts use to describe how their actions interact with social consequences constitutes a verbal contingency, sometimes also called "rule-governed behavior" (cf. Catania, Mathews & Shimoff, 1982; Galizio, 1979; Lovaas, 1961; Sherman, 1964; Skinner, 1969; Zettle & Hayes, 1982). Verbal contingencies, in effect, communicate instructions on how a response can produce both positive and negative results. Transmission of these verbal contingencies through society frequently takes the form of verbal "attitudes." To say, for instance, that "soup is awful, it always tastes too cold" is to communicate a verbal contingency. This attitude about "cold soup" actually specifies an instruction: If cold soup is eaten, then the taste is awful. Both the if and then clauses (conditionals) make up a verbal contingency.

Thus, the goal of most attitudinal research in drug abuse has been primarily to alter the addict's attitudes or verbal contingencies through educational programs that introduce new attitudes or contingencies. While studies on educationally influenced attitudes (e.g., Swisher & Crawford, 1971) report some statistical significance, overall this approach has been relatively weak both with and without straightforward behavioral interventions (e.g., Warner, Swisher & Horan, 1973).

Two reasons for these results include the ambiguous definition of "attitudes" and the inadequate recording of other verbal behaviors directly related to new information learned in the program. Haring's (1974) concept of "pseudoegalitarian" attitudes, a sociological definition, for instance, holds that alcoholic abusers perceive equality in terms of human nature rather than through socio-economic opportunities. A variation of this theme
is the medical definition of attitudes, that perceptions form from resistance and noncompliance to physician or hospital interactions (cf. Vogler & Weissbach, 1977). So, clearly there is no uniformly acceptable explanation for attitudes.

Evaluations of verbal behaviors directly related to attitudinal change also have been ambiguous. Bateman and Peterson's (1971) examination of nonclinical factors influencing treatment outcome of alcoholism showed that total abstinence was correlated with statements about both the patient's mother being deceased or infrequent contact with a living mother. But direct measurements of this maternal influence were absent from their research. In general, nonclinical or related outcome phenomena that are verbally reported on interview or questionnaire surveys supposedly represent a sample of behavior learned and demonstrated during the educational program. However, rarely do these same measurements provide an explicit record of variability in the learned verbal response or tract its variability along different quantitative (metric) dimensions such as latency (time between event and response), frequency (number of responses), duration (time during response), inter-response time (time between responses), and magnitude (intensity of response) (cf. Risley & Hart, 1968).

Alternatively, measurement of attitudes in the present study involved several different recording techniques to detect direct and indirect responses to treatment outcome. Another reason for the measurement methods was to verify that attitudes about self-control increased from the presentation of programmed materials.
METHOD

Subjects and Setting

Participants of the study included 15 male inmates from local prisons and 23 male and female workers from a local private industry. All inmates selected for participation had substance abuse-related arrests, and currently resided in community (transitional) homes following release from prison. Under state regulations for release, inmates were required to enter outpatient substance abuse counseling. The educational program met this requirement as approved by the Michigan Department of Corrections. Participants from the local industry were already in an Employee Assistance Program (EAP). EAPs consisted largely of educational courses and referral services conducted by the same substance abuse agency in Southwestern Michigan who ran the present study. Lastly, informed consent was obtained from all participants during the selection process (see Appendix A). Regarding education, participants reported no prior therapy or training in the self-control techniques presented.

For the inmates, lecture sessions lasted 1 hour and were conducted once a week for 9 consecutive weeks in a room designated by the substance abuse agency which was conducive for instruction. By "conducive" we mean the room was sufficiently set apart from other therapeutic activity, contained enough tables and comfortable chairs, and had no guards present. Training for the industry group was held in a conference room located on their premises and ran 1 hour for 9 consecutive weeks.
Experimental Design

The designs employed in this study were a multiple-baseline across subjects (Baer, Wolf & Risley, 1968) and one-way repeated-measure design (cf. Huitema, 1980). The multiple-baseline across subjects design used in this study was only for the inmate groups for two basic reasons. First, having only 1 group for the industry subjects precluded an effective use of multiple-baseline. A second limiting factor was the extensive latency between running the industry and inmate groups without a sufficiently long or continuous overlap period.

The multiple-baseline design also employed a variation by Hall, Cristler, Cranston and Tucker (1970). That is, the behavior of inmate group members was summed and hence treated as a single organism (p. 253). Specifically, eight of the inmate subjects were assigned to Group A and another 7 to Group B. Both groups began simultaneous Baselines. Following Baseline, 9 phases of programmed instructional units were staggered across both groups, with each group receiving the same units at different times. That is, while inmate Group A began a new instructional unit, inmate Group B continued to work on an earlier instructional unit.

Using single-case designs alone, however, was inadvisable. It required that maximum control be exerted over "subtle" changes across all sequential phases. Subtleties in variability caused by nontreatment effects such as by age and sex characteristics, for instance, also had to be accounted for. To do this, specific data from all three groups underwent an additional analysis using a statistical or "unit" test (Whaler & Fox, 1981), thereby allowing for control over variability. Statistical tests were computed for two pre- and posttest instruments. One was a proficiency
performance evaluation (see Appendix B) and the other was an attitudinal scale (see Appendix C). The performance evaluation contained items taken directly from the programmed text and scored by criterion reference. That is, scores were derived from a key that provided answers to specific questions. This made it possible to measure a subject's development of particular skills in terms of absolute levels of mastery. The attitudinal scale, by contrast, asked for ratings on 20 statements determined to represent the greatest variation on attitudes for the samples under study (see Appendix D for more details). All the subjects then proceeded through each instructional unit in sequence with lectures. Following treatment interventions, subjects in all three groups took another attitudinal scale and performance evaluation. Scores earned on each instrument were then computed through a one-way analysis of variance (ANOVA).

Data Collection

Additional methods of data collection used in this study included (a) a frequency count on discrete behavior occurrences, and (b) a permanent product assessment. Behaviors recorded using a frequency count included (1) attendance at sessions and (2) verbal participation.

Attendance

Previous research on absenteeism rates (e.g., Barber & Kagery, 1977; Turner & Vernon, 1976) offered distinctions among tardiness, diverse forms of excusable absences, and punctuality (see also Hermann, Montes & Dominquez, 1973). Defined herein, attendance was simply the presence or absence of participants within 5 minutes after the session began. Arrival of participants after 5 minutes, for example, was scored as "0" by the instruc-
tor and their verbal responses were not added into the recording total.

**Verbal Participation**

Recording verbal participation involved the use of two definitions derived from both Minkin, Braukmann, Minkin, Timbers, Fixsen, Phillips and Wolf's (1976) three reliable components and Skinner's (1957) treatment of autoclitics. The resulting categories were also similar to Ruben's (1977) delineation of relevant from irrelevant verbalizations in a study with preschool children. Relevancy was defined as responses either to "closed" or "open" questions. Closed questions (instructions) were those pertaining directly to specific subjects (e.g., John, what is an urge?), whereas open questions pertained to every subject in attendance (e.g., who knows what an urge is?). Characteristics of both open and closed questions were further broken down into containing "variables" and "properties of variables." Variables were words or phrases that defined the theme or ongoing topic (e.g., urges, control, etc.). Properties of variables were words or phrases that related to or were extensions of those words that defined the topic (e.g., drinking, smoking, tolerance, etc.). Finally, variables and property of variables were both aspects of "direct relationships" and "indirect relationships." A direct relationship (relevant verbalizations) consisted of replies whose content included the same variables or property of variables as heard during the ongoing discussion. By contrast, indirect relationships (irrelevant verbalizations) were verbal replies whose content included neither the same variables nor properties of those variables during the discussion (see Table 1).
Table 1. Schematic distinctions in the operational definitions of verbal relevancy and irrelevancy.

**RESPONSE DEFINITIONS**

<table>
<thead>
<tr>
<th>Relevant</th>
<th>Irrelevant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DIRECT RELATIONSHIP</strong></td>
<td><strong>INDIRECT RELATIONSHIP</strong></td>
</tr>
<tr>
<td><strong>RESPONSE</strong></td>
<td><strong>RESPONSE</strong></td>
</tr>
<tr>
<td><strong>VERBAL SD</strong></td>
<td><strong>VERBAL SD</strong></td>
</tr>
<tr>
<td><strong>Variables</strong></td>
<td><strong>Variables</strong></td>
</tr>
<tr>
<td><strong>Property of Variables</strong></td>
<td><strong>Property of Variables</strong></td>
</tr>
<tr>
<td><strong>Words or phrases repeated or stressed by the instructor during the discussion that define the &quot;theme&quot; or &quot;topic&quot; for that lecture</strong></td>
<td><strong>Words or phrases that are neither spoken by the instructor nor heard by the recording observers</strong></td>
</tr>
<tr>
<td><strong>Related to or extensions of those words or phrases (variables) unprompted during the discussion or in response to open and closed questions</strong></td>
<td><strong>Unrelated or tangential words or phrases (variables) unprompted during the discussion or in response to open and closed questions</strong></td>
</tr>
<tr>
<td>&quot;Jack, what are urges?&quot;</td>
<td>&quot;Jack, what are urges?&quot;</td>
</tr>
<tr>
<td>Urges are physical or social needs</td>
<td>Things you play with</td>
</tr>
<tr>
<td>Speaking of which, I lack total patience</td>
<td>Did you hear my wife is ill</td>
</tr>
<tr>
<td>&quot;Who feels relaxation is helpful?&quot;</td>
<td>&quot;Who feels relaxation is helpful?&quot;</td>
</tr>
<tr>
<td>Relaxed people get more work done</td>
<td>Relaxation is unhealthy</td>
</tr>
<tr>
<td>Tension is harmful</td>
<td>Yesterday I lost my temper it felt good</td>
</tr>
<tr>
<td>&quot;Let's talk about time-management.&quot;</td>
<td>&quot;Let's talk about time-management.&quot;</td>
</tr>
<tr>
<td>I can use some structured time</td>
<td>I'd rather talk about ways to manage guards</td>
</tr>
<tr>
<td>My day is so busy that it wears me down</td>
<td>I don't care about it</td>
</tr>
</tbody>
</table>

Verbal behaviors observed in a direct relationship to the instructor's statements were recorded as "relevant," while indirect relationships were "irrelevant." A final operational point was that, since every lecture stressed alternatives to addiction, all relevant verbal replies had to also show "interest" in these alternatives. For instance, a reply such as "I'll quit drinking" to the question, "who wants to quit drinking?" illustrated relevant verbal behavior. Accordingly, refusal replies such as "drinking is the best thing I ever did" scored as irrelevant verbal behavior.

Relevant and irrelevant verbal participation in all three groups were recorded as a summed score rather than as a separate score for each participant. Two independent observers naive to the purposes of the study...
and tested on both operational definitions took turns recording data with a wrist counter (model by Behaviordelia, Inc., 1977). Reliability taken by a third observer was calculated by dividing the number of agreements by total number of agreements plus disagreements, and then multiplying by 100 for a percentage.

Homework Assignments

Behaviors recorded using a permanent product assessment were the instructional homework assignments that were completed after every unit and submitted at the lecture session. Assignment questions were drawn directly from questions in the text but without the answers provided. Noteworthy is that completed assignments were only intended to demonstrate "compliance," rather than actual "learning." This was because memorization and totally independent (nongroup) work efforts were not requirements for finishing assignments and thus many reasons besides individual effort might explain completed work.

Programmed Instructional Manual

A successive series of 9 units comprised the programmed instructional text on self-control (Ruben & Perra, 1982). Units 1 through 9 arranged concepts and principles in order to facilitate cumulative acquisition of new material. Unit 1 was an introductory chapter outlining the training model. Unit 2 covered problem-solving techniques. Units 3 and 4 covered social and interpersonal guidelines for making assertive statements. Unit 5 examined how to gain control over urges. Unit 6 gave step-by-step instructional lessons on exercises for muscular relaxation. Unit 7 provided
an elementary course on time-management skills. Unit 8 examined interpersonal conflict. And Unit 9 advanced the participant's background in self-control techniques.

Lecture Sessions

All group participants met once weekly for 9 lecture sessions. Instructions concentrated on achieving one goal. This was to expand and clarify concepts and other information pertinent to the programmed instruction. Discussion also occasionally involved modeling and imitation exercises. To illustrate principles of conditioning, for instance, the instructor might ask for a volunteer who then repeated specific behaviors or described consequences that could follow them. The instructor also presented material on a chalk board and would arbitrarily solicit open and closed questions to prompt group participation.

Group participation in the form of relevant versus irrelevant verbal behavior was deliberately put on a noncontingent schedule in order to reduce treatment bias. By "noncontingent" is meant that no intentional and consistent reinforcers followed single or multiple statements about self-control. Rather, sources of attention such as smiles, head-nods, and verbal agreement were arbitrarily or inconsistently given for both addiction-related (irrelevant) and self-control (relevant) statements. Noncontingent reinforcement thus minimized the chance that changes in posttest scores would be due to treatment effects beyond the instructional units or lectures.
RESULTS

Use of the programmed text for all three groups yielded an improvement from pre- to posttest scores and in recorded observations of relevant verbal behavior. Validity results attesting to this positive modification in "attitudes" are presented under four categories: Group statistical analysis; analysis of verbal participation; attendance and homework completion; and readability evaluation. Following the presentation of data, interpretations are offered regarding the trainability of verbal contingencies or attitudes within outpatient substance abuse treatment.

Group Statistical Analysis

Attitudinal Scale

Pre- and posttest measures on the attitudinal scale and proficiency performance evaluation are compared here with respect to mean differences (ANOVA). Pretest attitudinal scores the industry showed a range from 2 to 10 correct answers (M=4.9, SD=1.79) out of 20 possible correct answers. Comparative differences in the range for the posttest scores (4 to 11) yielded a significance, f(4.17)=4.41, p<.05. This meant there were apparently more self-control statements on the posttest. A shift toward more self-control responses was also significant for pre- and posttest scores in Group B inmates, f(5.12)=5.21, p<.01, whereas for Group A inmates, the nonsignificance was evident by the similarity in ranges (pretest=3 to 9; posttest=4 to 8).
Proficiency Performance Evaluation

On the proficiency performance evaluation, all three treatment groups achieved significantly higher results over pretest measures. The industry group, in particular, obtained a range of only 1 to 5 correct answers (out of 18 possible) on the pretest ($\bar{x}=2.63$, $SD=1.32$) as compared to 6 to 9 ($\bar{x}=7.33$, $SD=11$) correct answers following treatment, thus a significance of $f(4.17)=86.87$, $p<.05$. Groups A and B inmates also performed comparatively higher on the posttest evaluation. Although pretest scores for Group A were fairly low ($\bar{x}=3.42$, $SD=1.51$), significant advances toward more correct answers on the posttest ($\bar{x}=8.28$) indicated some training effects. So, too, could training possibly explain at least some of the statistical improvement over pretest performance for Group B inmates, $f(5.12)=7.02$, $p<.05$. Evidently, then, the material presented in each unit was retained to produce higher scores.

Analysis of Verbal Participation

Observations of verbal behavior for all three groups revealed that increases in relevancy varied with the different units. During the first 3 units, verbal relevancy in the industry group represented 21% to 46% of all spoken comments, with the highest increment of 55% occurring in Units 7 and 9, respectively. Similar variations were seen in inmate Groups A and B (see Fig. 1). Figure 1 first displays the pattern of responses in both groups during simultaneous Baselines, and then graphically represents the divergence in data as relevant responses increased in frequency. The five sessions in Group B's Baseline period were primarily for 'control' purposes, in that participants received neither instructions nor programmed
materials during this time. In Group A, relevant responses fluctuated a minimum of only 20 responses in Session 5 and 8 and were as high as 90 responses by Session 9. Also shown in Fig. 1 is the rapid decline in irrelevant responses in relation to Group A's progression through the sequence of units. This decline was again visible across units for Group B, dropping to 0 by the last day of data collection. Here, too, higher scores in verbal relevancy fluctuated between Sessions 7 and 11, and although on the decline by Sessions 12 and 13, total verbal relevancy always remained greater than irrelevancy by at least 20 responses.

Figure 1. Frequency of total relevant and irrelevant verbal responses across sequential units for inmate Groups A and B.
Reliability

Inter-observer reliability taken on three separate occasions during the study with Groups A and B inmates (Sessions 4, 6, and 8) all indicated that agreement was between 89% and 95%. The author would periodically review operational definitions of relevant and irrelevant verbal behavior with both recording observers. A paraphrase or extension of some statement heard in a recent session provided a sample that observers scored either as relevant or irrelevant.

Attendance and Homework Completion

Attendance records taken on all three groups showed a consistent trend toward the groups increasing as the sessions progressed. Two participants in Group B inmates, however, did drop out after the second session because of parole violations that resulted in re-incarceration. Attendance rates observed in the industry group, however, fell as low as 35% in Session 6 due to the lectures overlapping the rotation from Morning to Afternoon work shifts. After lecture sessions were rescheduled, attendance rates increased by 50% over the next 3 sessions.

Homework assignments consisted of 15 to 40 questions drawn directly from a larger sample of questions in the unit. Assignments given at the end of each lecture session were due the following session and then immediately scored. Noteworthy is that the only contingencies or condition regulating homework completion was that all the assignments be received by the last lecture session in order for participants to graduate from the program. In this respect, "natural" (not contrived) contingencies played a more significant role. That is, inmates in Groups A and B would
face the almost certain admission into either inpatient or outpatient substance abuse treatment, while industry participants would possibly be required or encouraged to seek "outside" treatment if they failed the program. Considering these options, homework assignments were ultimately received by every participant in the study.

Readability Evaluation

Four randomly chosen sections from the programmed text were measured for grade-level readability by the Department of Educational Leadership at Western Michigan University. The mean sentence length ran from 15 to 18 words, and the percentage of unique words per sample ("unique" meaning single syllable as different from multiple syllable words) was 83%, 85%, 71%, and 77%, respectively. Totally, the book was scored as readable for 11th grade through college levels.
DISCUSSION

Results from the validity measures clearly indicated some degree of treatment efficacy using a programmed text combined with lecture sessions. Current behavioral treatment approaches to substance abuse (e.g., Callner, 1975; Krasnegor, 1979, 1980) stress the incorporation of specific target behaviors described either by instructions (bibliotherapy) or through simulated exercises (e.g., Ruben, 1983a). Warner et al. (1973), in addition to instructions, employed peer or "social" contingencies as a tactic for changing attitudes. Unlike their study, the present study omitted specific and consistent contingencies during the lecture sessions to avoid bias intrusion from nontreatment effects. Furthermore, differences in the present study over against most educational substance abuse courses (e.g., Miller, Becker, Foy & Wooten, 1976) lay in the utilization of continual recording measures. Data on attendance, verbal behavior, and assignments were taken throughout the entire study and then comparisons of pretest and Baseline measures with treatment and posttest measures allowed for greater precision in determining validity.

Granted, a disadvantage with using this variation of multiple-baseline was that group sums were presented rather than individual scores, thereby showing only group fluctuation. However, an advantage to this strategy was that group fluctuation was significantly more traceable to changes in treatment (educational units) than would be possible to detect through exclusive use of conventional group statistical designs. In other words, experimental control was demonstrated without having to remove unwanted
sources of variation in the dependent variable (cf. Michael, 1974).

Two other issues relating to the sensitivity of the design include reading ability and the correspondence between acquisition of new material, verbal behavior, and performance (e.g., Risley & Hart, 1968). Regarding the first one, level of readability, some doubt may arise as to whether the instruments measured literacy. Participants were reportedly literate on the measured reading levels, and for text clarification could consult the glossary of terms located at the back of the book. Lastly, language complexity was shown to be minimal both on the samples tested for readability and from the consistent pattern of assignments submitted. However, completed homework assignments are frequently a poor or unreliable measurement of textual reading. This is because it is hard to determine (a) who actually wrote out the assignment, (b) how much time was spent reading the assignment, and (c) what relationship existed between completed assignments and relevant verbal behavior. Solutions to problems (a) and (b) are difficult in most "outpatient" educational training programs and require either reliance upon both self-reports and reliable reports by significant others, or direct control over contingencies at home. In this study, reports by two probation officers who frequently visited inmates at their homes and, for the industry group, foremen and supervisors of the participants, confirmed that all the criteria were met for completed assignments.

Problem (c), however, brings us to the second issue regarding the sensitivity of the design. The results suggest that textual materials and completed assignments produced more relevant verbal statements in every unit. But why did this experimental control occur? For one thing, the home-
work questions consisted of words or phrases topographically similar to the statements about self-control. That is, questions contained key words that were repeated or explained during the lecture session so participants would use them in their comments. Words or phrases that originally appeared in the book and were later spoken in the lecture session by subjects indicated a correspondence between assignments and relevant verbal behavior. Toward this end, relevant verbal behavior shown in Fig. 1 actually represents the degree to which group participants either repeated exact words or phrases from the text, or paraphrased and extended them (a direct relationship).

Another related concern deals with performance. The implications of increasing relevant self-control statements (attitudes) are that those (nonverbal) behaviors being described can be actually done in the future. This study relied on the same conclusions reached by Catania et al. (1982) that verbal behavior was more likely to determine subsequent nonverbal behavior when it was shaped than when it was only instructed (p. 246). While no specific contingencies "shaped" classroom participation, contingencies did shape assignment completion and attendance—which we already explained were critical causal determinants.

Shaping new verbal behavior, then, plays a facilitative role in drug abuse treatment but only if it is precursory or concurrent to the action it describes. When the action eventually occurs, statements that describe both the action and events surrounding it become the "reason," "rule," or, simply, the explanation for that behavior. In other words, these statements become verbal contingencies. Skinner (1969) suggested that "contingencies of reinforcement are 'reasons' for acting, and when an analysis of these
reasons give rise to rules which govern effective action, it is not a pun to equate the result with reason in general" (p. 171). Verbal contingencies or "attitudes" are hence nothing more than statements about some preceding, current, or successive event or action, or "linguistic phenomena [consisting] of the interactions of persons with stimulating objects" (Kantor, 1977, p. 42). It would thus seem impractical to divorce "the act of speech" from other acts of the speaker.

Relatively few studies exploring this verbal-nonverbal connection appear in the attitudinal and drug abuse literature. Future work to expand on these concepts is thus advisable for two reasons. First, the economics of clinical and counseling practice dictate that fewer hours be spent on describing the reasons for change than on actual behavior-change interventions. Secondly, use of verbal instructions that closely correspond to actions or behaviors in the treatment plan reduce this amount of wasted description. This is because the emphasis is on defining new behavior rather than on analyzing previous or inappropriate behavior. All in all, this combination of closely corresponding verbal instructions with current behavior therapy techniques has the advantage of preparing clients for development of more productive skills.
APPENDIX A

Informed Consent
INFORMED CONSENT

Instructions: Please read carefully the following statements. They describe some features about this training program you have a right to know. Then, if you understand and accept the statements, please write your signature on the line below them.

(a) This training program uses a textbook which is still fairly new. We need more proof that the ideas in it are valid. We need your assistance to obtain this proof.

(b) One way to test validity is with pre- and post-tests. These have questions on them about the textbook. Taken before and after the training program, we can figure out how much you learned. The pre- and post-tests here ask you questions about addictive habits.

(c) Your assistance is also needed with homework assignments. At the end of each unit are questions that you can answer quickly and return to us. We will talk about when these assignments are due.

(d) Finally, another way to validate the book is by listening to your comments. Instructors would like to keep track of certain words and phrases you say. We do this with a wrist counter.

(e) Since what goes on in training is confidential, we ask you not to discuss it outside of training. Your assignment can be done outside of training.

(f) The words and phrases we keep track of are also confidential and do not represent you in any way possible. In fact, there is no way we can trace to whom certain words or phrases belong. This is because we "pool" the data.

(g) You may, at any point, decide not to participate. This decision will have no influence on how we treat you as a person.

I fully understand and accept Statements (a) through (g) and give my informed consent to participate in this training program.

Participant _______________________________ Date __________

Witness _______________________________ Date __________
APPENDIX B

Proficiency Performance Evaluation
General Information Questions:

Instructions: Below are a series of questions from the book we plan to use in training. Please answer these questions as best you can. Your cooperation helps us to show areas of your improvement after training.

1. One type of internal cue is a ____________________.

2. Many feelings we experience occur shortly after a ____________________.

3. What is it called when we think up many alternatives and assume each one is a likely solution? ____________________.

4. Assertiveness consists of statements that ________ or ________ whatever rights people deny us.

5. An assertive person is one who can express his or her feelings in a way that does not ________________ another person.

6. We must be reasonable in our requests and expect that only __________ changes can be made fairly.

7. Slouching in a chair or while standing indicates ________ self-esteem.

8. Urges you feel growing in intensity are because of a ________ dosage, a high ________, and a short ____________________.

9. The first step to relaxation is to __________ the muscles.

10. The first step in time-management procedure is to __________ every activity you wish done on a given day.

11. In all cases, every hard task — however long it takes — should follow with some __________ task.

12. When bad memories are recalled they remind you of ________ things associated with them.

13. Self-control methods are a way for you to __________, __________, and changes in your behavior causing personal difficulty for you.

Thank you.
APPENDIX C

Habit Attitudes Inventory
HABIT ATTITUDES INVENTORY

Instructions: Below is a series of 20 statements that deal with many reasons why people have addictive habits. Please indicate your particular attitude toward a given item by circling the appropriate number. Numbers range from "0" (Strongly Disagree) to "4" (Strongly Agree). Your time and honesty are deeply appreciated.

Abbreviations for categories are: "SD" means Strongly Disagree; "D" means Disagree; "A" means Agree; and "SA" means Strongly Agree.

<table>
<thead>
<tr>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A person able to relax is an ideal person.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. People in today's society must resort to &quot;painkillers&quot; whey they have a headache.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Refusal to participate in illegal acts means you're a weakling.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. It is false to think we deserve happiness.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Being insulted makes you more prone to anger than stress.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Not wanting to speak on your own beliefs is your own fault.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. We ought to take full advantage of drugs.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. Doing things at the last minute is sometimes healthy.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. Stress on an everyday basis is physically harmful.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. Taking pills when you are sick makes good sense.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. Failure to meet certain deadlines is no excuse for feeling anxiety.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12. Faced with lazy workers, the average employer is prone to frustration.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13. Medicine to help relieve constipation should only be prescribed.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14. Disrespectful people are easy to handle.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15. People who give in to urges are unhealthy.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16. You are most helpless being an &quot;individual.&quot;</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17. The more we resist temptation, the less flexible we are.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18. People hit the booze whenever they have personal problems.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>19. We can only figure out answers to hard questions by taking tranquilizers.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>20. People who rush are in need of help.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
APPENDIX D

Attitudinal Scale Analysis
The "Habit Attitudes Inventory" scale constructed for pre- and posttest purposes was a measure of sentiments, or interests, preferences, personal attractions, values, and so forth. Sentiments may also be defined as verbal responses indicating one's perception of the contingencies in control over his or her behavior. When these perceptions evoke behavior without any consequences being present, functionally we can describe them as "verbal contingencies" or "rule-governed" phenomena. Attitudes measured using this scale, then, reflected verbal contingencies in the subjects' past history of learning or "cumulatory repertoire" (Ruben, 1983b).

Construction of this attitudinal scale was a three-step process adapted from both the Thurstone (see Edwards, 1957) and Likert (1932) models. First, sentiment items were arbitrarily selected that corresponded to each of the conceptual areas covered by the programmed text. Second, selected items (N=62) were arranged into two nonmonotonic systems of analysis and run concurrently. The Thurstone system involved the use of independent referees (N=80) ranking items along a 4-dimensional scale, from negative to positive. Ranked items were then computed by a summation procedure, yielding correlational coefficients for each item that showed its amount of variability. The Likert system of analysis involved a separate inventory form of 62 items also administered to subjects (N=30). This time, items were rated by degree of agreement versus disagreement. Summation scores were again put into correlational form for detection of items with high variability. Sampling groups for both the Thurstone and Likert methods consisted of drug users and nonusers ranging in age from 20 to 50 years. Finally, 2 to 4 high variability items from each conceptual unit of the book were selected for the construction of a final attitudinal inventory.
form. Correlational scores on each selected item then determined a "correct" from an "incorrect" answer and this provided the "key" for scoring subjects' responses.


Ruben, D.H. Methodological and philosophical adaptations in assertiveness training programs designed for the blind. Presented at the Eighth Annual Meeting of Association for Behavior Analysis, Milwaukee, WI April 1982.


