1-1970

THE MODIFICATION OF A SPECIFIC INAPPROPRIATE BEHAVIOR BY USING VISUAL FEEDBACK

Stephen E. Jones
Kansas State College of Pittsburg

THE MODIFICATION OF A SPECIFIC INAPPROPRIATE BEHAVIOR BY USING VISUAL FEEDBACK

A Thesis Submitted to the Graduate Division in Partial Fulfillment of the Requirements for the Degree of Master of Science

by

Stephen E. Jones

KANSAS STATE COLLEGE OF PITTSBURG

Pittsburg, Kansas

January, 1970

ACKNOWLEDGEMENTS

The writer wishes to acknowledge his gratitude to Dr. H. P. Rumford, Dr. R. I. Strawn, and Dr. Doris Sindt, who granted their time for the evaluation and support of the present study.

Thanks are also due to the Audio-Visual Department of the Parsons State Hospital and Training Center, especially to Mr. Richard Lindsey, who so unselfishly devoted his time and energy in assisting with the technical aspects of the procedures used in the study.

Finally, thanks are due to the writer's employer, Dr. Dan Smith and to the staff of Parsons State Hospital and Training Center, who provided many helpful suggestions.

ABSTRACT OF THE THESIS

The study demonstrated the use of self-observation via video tape as a treatment technique. The specific behavior modified was the inappropriate sitting position of ten mildly and moderately retarded adolescent girls. A repeated measures design with two matched groups was used with the experimental group receiving visual feedback of their behavior and the control group a nonrelated visual presentation. The subjects in both groups were observed individually while participating in dyadic discussions with the experimenter. The dependent variable was the number of seconds the subjects exhibited the inappropriate sitting position per 15 minute discussion period. During the baseline and observation phases, the discussions were unstructured. In the treatment phase, both groups discussed ways they might improve their appearance; and following, the experimental group observed themselves and the control group watched an educational video tape. Statistical analysis of the data suggest that the use of self-observation was effective in significantly reducing the frequency of the inappropriate sitting position. This finding was compared with the results of a previous study in this area.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Statement of the Problem

The American Association on Mental Deficiency defines mental retardation as subaverage intellectual functioning associated with impaired adaptive behavior. Adaptive behavior is defined as the effectiveness with which an individual copes with the natural and social demands of his environment (Heber, 1961, p. 61). Leland (1964) considers adaptive behavior to be a reversible aspect of mental retardation. A goal of specialized training programs for the improvement of adaptive behavior is social invisibility; that is, the individual becomes less apparent to society as being mentally retarded because he has achieved a sufficiently high level of adaptive behavior. Thus, he is socially invisible. New training techniques leading to more rapid improvement in adaptive behavior, specifically the social skills, are needed. The purpose of this study was to explore the use of a relatively new treatment technique with the mentally retarded. This technique involved the presentation of visual feedback of the subjects' behavior via video tape recordings. The specific inappropriate social behavior to be modified was the subjects' inappropriate sitting position.

The principle of feedback is important in the learning of perceptual-motor skills (Deese & Hulse, 1967) and is directly

applicable to the learning of social behavior (Bandura & Walters, 1963). Feedback, in the learning of social behavior, may be in the form of direct perception of the adequacy or appropriateness of the performance, or it may be in the form of verbal information about the adequacy of performance. Feedback can have two functions: 1) It informs the subject about his responses and thus permits him to correct these in some way, and 2) it may provide reinforcement (Deese & Hulse, 1967). In the present study, feedback served both of these functions. As the visual feedback informed the subject of her responses, it reinforced her vicariously for her correct responses.

Hypothesis

With these feedback principles in mind, the following hypothesis was postulated: Through the use of a specific visual feedback technique (self-observation), the amount of time the subjects in the experimental group were engaged in an inappropriate sitting position would be significantly reduced.

Limitations of the Study

This study attempted to demonstrate, in a series of controlled observations, the effectiveness of self-observation in reducing inappropriate social behavior. The technique used for the diminution and/or extinction of the inappropriate position is applicable only in settings where

the necessary television equipment is available.

Another possible limitation of the study was the small number of subjects used. However, due to current ongoing educational, treatment and rehabilitation programs, only ten adolescent females were available for the study.

Definition of Terms

Appropriate sitting position. Appropriate sitting position was defined topographically as the subject having her knees and legs together or appropriately crossed while seated in a chair.

Inappropriate sitting position. An inappropriate sitting position was defined topographically as the subject having her legs and knees in any position other than together or appropriately crossed while seated.

Self-observation. The event of a subject seeing herself on a television monitor.

Structured discussion period. The initial 15 minute period of each 30 minute session during the treatment phase when the conversations of the subjects with the experimenter were centered around ways to improve the subjects' appearance.

Experimental group. In the present study, the experimental group consisted of 5 adolescent girls who were individually exposed to a structured discussion period followed by a self-observation period.

Control group. The control group consisted of 5 adolescent girls who were matched with the subjects in the experimental group on measured intelligence, adaptive behavior, chronological age and the dependent variable. The control group subjects were individually exposed to a structured discussion session, but instead of a self-observation period following the discussion period, they were allowed to view an educational video tape.

Dyad. A dyad is "a pair of individuals (as husband and wife, teacher and pupil) maintaining a sociologically significant relationship" (Webster's Dictionary, 1967).

CHAPTER II

REVIEW OF THE LITERATURE

The general idea as to the possible effectiveness of self-observation is not exactly new. As Ricker (1963) has written:

> We have probably all heard the parent of a teenager complaining of some example of the adolescent's socially immature behavior and then conclude by saying, 'If you could only see yourself doing that, you would stop doing it.'
>
> Robert Burns put it more poetically when he wrote:
>
> 'O wad some power the giftie gie us
> To see oursels as ithers see us!
> It wad frae monie a blunder free us,
> An' foolish notion.'

Perhaps the experience of seeing one's own behavior would provide additional information about this behavior. Information which would ordinarily be outside awareness in the young, especially, and that this added information would lead to rapid changes for the better. This has been found to be true in psychiatric patients experiencing the technique. The present study was done to determine if the same motivating effect would occur with mentally retarded adolescent girls.

The use of audio-visual feedback as an adjunct to psychotherapy was first explored by Carrere (1958) who reported improvement in several chronic alcoholics who were

shown motion pictures of themselves experiencing delirium tremens. However, Carrere used no specific standardized measures of improvement, nor did he utilize control groups.

Cornelison and Arsenian (1960) reported on the response of psychotic patients to photographic self-observation which they termed "self-image experience." The procedure was used with two groups of acutely ill patients; the first group was exposed to still photographs and the second group was exposed to both still photographs and motion picture images. All of the subjects judged to be improved in later sessions appeared to have been favorably changed in terms of ratings of mood and tension. Again, neither standardized measures of improvement nor control groups were used.

Reaction to self-observation was studied by Neilsen (1962) in an effort to obtain "retrospective data" and personal insight from the subjects who were filmed while in an intensive dyadic discussion with an interviewer about their life philosophy. The subjects later saw the film and the amount of time spent looking away and looking at themselves was recorded. Neilsen reported that the immediate response was extremely emotional, even shocking; however, no effort was made to objectively measure personality change as a result of the self-observation. In a later discussion of this study, Neilsen (1963) suggested that

employing a video tape recorded and immediate playback might have provided better information about inner subjective processes.

Video tape recordings were played back by Kagan, Krathwohl, and Miller (1963) to subjects in dyadic encounters to aid in recalling feelings and interpreting behavior. The authors called their technique "interpersonal process recall" and said that video tape could potentially accelerate psychotherapy. The authors reported only clinical impressions and no quantitative data was given.

Moore, Chernell, and West (1965) attempted a controlled experiment to evaluate the benefits of visual confrontation. The subjects in the experimental group were interviewed and video taped which was later played back to each subject. A control group, not matched with the experimental group, underwent the same interview but was not video taped. The experimental group was said to have shown statistically more clinical improvement than the control group. However, no standardized measures of improvement were employed.

Pascal, Cottrell, and Baugh (1957) used video tape replay with five male juvenile delinquents. Good behaviors were rewarded during the video taping of the session and again during the playback of the tape. Specific behavioral goals were set by the therapists for each subject to attain. When the sessions were terminated, the goals has been attained for most of the boys.

A recent study by Ricker, Pinkard, Gilmore and Williams (1967) has the most relevance to the present study because mentally retarded adolescents were used as subjects, audio-visual techniques were utilized in changing behavior, and because the goals of treatment were somewhat similar to the present study. The purpose of the Ricker et al. study was to "develop and evaluate a new method of improving social skills of retarded adolescents with the ultimate purpose of discovering if this method would also improve the vocational success of these clients" (p. 3). This new method involved the use of group counseling plus audio-visual feedback of the clients' own social behavior by way of sound motion pictures. The 71 subjects were divided into three groups and were matched on age, sex, IQ, and "talkativeness" variables. In addition, each subject was given a plethora of tests, rating scales, and psychiatric interviews. Nearly 250,000 test and rating scale scores were collected.

One group saw themselves, via sound motion pictures, engaged in various social situations during group counseling sessions, another group saw motion pictures of other subjects (not themselves) similarly engaged in social situations, and the third group had no exposure to the motion pictures.

The experimenters hypothesized that the clients given audio-visual feedback of their own behavior as part of their

group counseling would show the best development of social-emotional maturity and social skills compared with the subjects given the other two types of treatment. However, when all the data were analyzed, this hypothesis was not supported in any statistically significant way. Some of the recommendations for future studies made by Ricker et al. were incorporated in the present study and are enumerated in Chapter V.

CHAPTER III

METHOD

This research was designed to investigate a technique for diminishing and/or extinguishing a specific socially immature behavior, inappropriate sitting position. The technique involved the use of vidual self-observation via video tape recordings.

Subjects

From a population of 16 mentally retarded adolescent girls, 10 subjects met specific criteria described below and were available for the study. All of the subjects reside in one section of one cottage at the Parsons State Hospital and Training Center (PSH&TC), Parsons, Kansas. The cottage houses girls from 14 to 16 years of age with measured intelligence (MI) levels and adaptive behavior (AB) levels I, II, and III, in accordance with the classification scheme set forth by Heber (1961) and modified by Leland (1964). The Chief Nurse in the cottage was requested to designate the girls in the cottage who exhibited inappropriate social behaviors such as fingernail biting, nose picking, and poor sitting posture. Those designated by the nurse were interviewed individually by the experimenter. Poor sitting position was found to be the inappropriate be-

havior common to the subjects chosen for the sample. The group means and standard deviations of the MI level, AB level, the ages of the subjects and the dependent variable measure are presented in Table I.

Table I

Group Means and Standard Deviations of the Matching Variables

Matching Variable	Exp. Grp. M	(N=5) SD	Con. Grp. M	(N=5) SD	t	p
MI	2.0	.6	2.2	0.4	0.5	NS
AB	2.0	0.0	1.8	0.4	1.0	NS
Age/Months	179.8	5.6	182.2	9.2	0.4	NS
Dep. Variable	755.4	155.4	697.4	240.5	0.4	NS

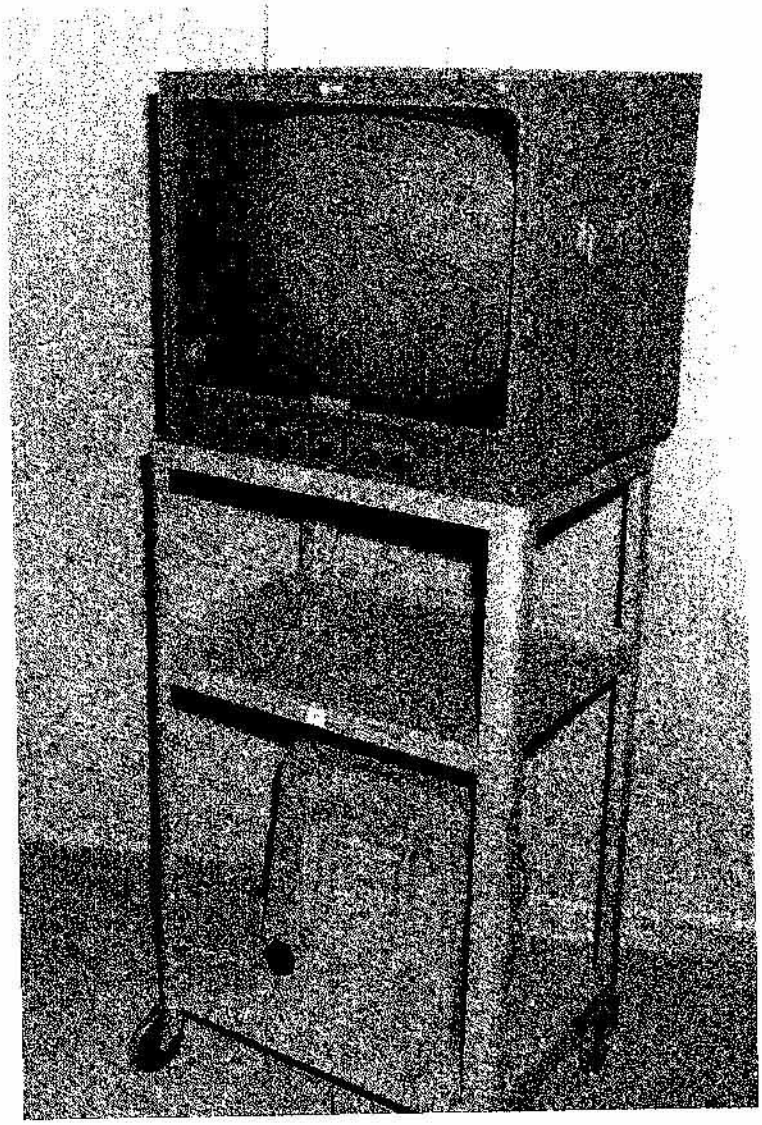
Apparatus

Television studio. The television studio at PSH&TC is a rectangular 14 by 18 foot room equipped with appropriate lighting and set materials. In the present study, two straight back desk chairs were used.

Television equipment. The television equipment consisted of a wired closed-circuit system employing one Dage 370 camera chain (camera, power supply, and control unit) which used an Elitar Soligar (25mm) lens. The audio portion of each session was received by an Electro-Voice 664 stand microphone (subject) and a lavalier microphone (experimenter)

FIGURE 1

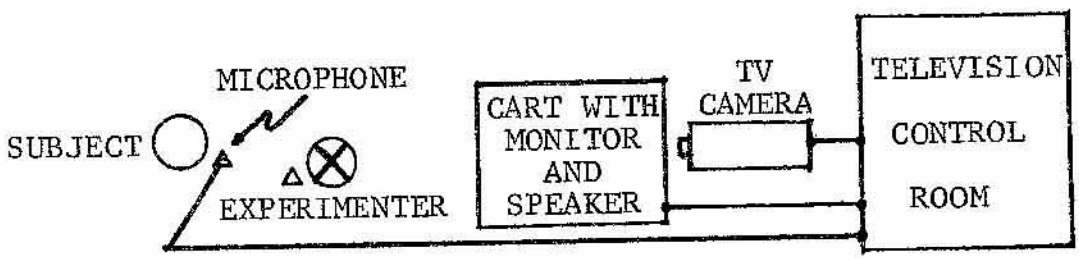
The Playback Equipment



and was amplified by an RCA BC5B amplifier. Both audio and video signals were recorded by a Sony BV120 Videocorder which used two inch helical scan tape. The video tape playback was on a 21 inch Miratel L21M monitor. This system was mounted on a movable cart (See Figure 1). One technician was needed to operate this equipment. A schematic outline of the entire television system is presented in Figure 2.

Figure 2

Schematic Outline of System



Design

The subjects were matched on MI level, AB level, chronological age, and the dependent variable of number of seconds engaged in the inappropriate sitting position was determined by a baseline count. Following this pairing, one member of each pair was assigned on the basis of a staggered order (ABBA) to a group; the other member of the pair went to the second group.

A toss of a coin decided the assignment of experimental or control to the two groups. The experimental group was

allowed to observe themselves on television and the control group was not allowed to observe themselves on television.

During the baseline, each subject received one 15 minute unstructured discussion session per day for three days. During the baseline phase, none of the subjects were matched and assigned to groups, each subject received one 30 minute session daily composed of a 15 minute structured discussion period centered around ways to improve the subject's appearance, and a 15 minute television viewing period for six days. During the three day observation phase, each subject received one 15 minute unstructured discussion period per day but no television viewing period.

Procedure

The subjects met individually with the experimenter in the television studio. The subject's chair was arranged to produce an unobstructed view for the television camera and also to maximize face-to-face contact with the experimenter. The camera was placed to the right and above the monitor on which the video tape was seen. A fixed shot of the subject was used to eliminate the distraction of the technician in the usual televised situation.

Following each day's sessions, the video tape made of each subject was shown to an observer (the experimenter) who recorded the amount of time (in seconds) each subject was in the inappropriate sitting position per 15 minute period.

During the 30 minute periods in the treatment phase, data were collected during the last 15 minute or viewing period.

The instructions presented to all subjects during the baseline phase were as follows:

> Hello, we are going to meet here every Monday, Wednesday, and Friday at this time. This is your time, and for the first few sessions you may talk about anything you like. Okay, _ _ _ _, what would you like to talk about today?

The instructions presented to each group during the treatment phase were as follows:

> Hello, let's talk about ways that you can improve the way you look to other people. Let's talk about such things as combing your hair, picking skirts and blouses that match, your posture, and washing your face so that you don't get blemishes. Okay, _ _ _ _, what can you do to make yourself look better?

Following the structured discussion period, each subject was given further instructions:

> Now, _ _ _ _, I want you to look at the television set because there is something there I want you to watch.

Following these instructions the experimenter quietly went into the television studio control room leaving the subject by herself to watch the television.

In the observation phase, both groups received the following instructions:

> Well, what would you like to talk about today? We can talk about anything you want. What would you like to talk about?

Statistical Methods

The Walsh test (Siegal, 1956, p. 83) was used for

statistical analysis because the data (unit of time) were interval data and were related. The mean amount of time spent in the inappropriate sitting position for each subject in each pair during the baseline and observation phases of study was the data used in statistical computations.

To reject the null hypothesis, the difference scores between baseline and observation period data for each subject in the experimental group must be significant. The 0.05 level of significance was adopted as the criterion for evaluation of the results.

To check the reliability of the experimenter's measurement of the dependent variable, an observer, who was naive of the subject's group placement and other factors which might bias his observation, was asked to record data on each subject at various times during the study. When an observer was enlisted, the observation periods were broken into 15 one-minute segments. Each of these one-minute segments was subsequently divided into six 10-second intervals. Agreement between the experimenter's and the observer's data sheets was checked interval by interval. Reliability was calculated by scoring each interval as agree or disagree (match or mismatch) and by dividing the total number of agreement by 90, which was the number of 10-second intervals in 15 minutes (Lambert, 1960, p. 905). This procedure yielded the percentage of interobserver agreement.

CHAPTER IV

RESULTS

It was hypothesized that the amount of time the subjects in the experimental group were engaged in an inappropriate sitting position would be reduced under a strategy of self-observation. In order to show a reduction in the amount of time, it was necessary to obtain data during the baseline and observation phases of the study.

By analysis of this data with the Walsh test, the different scores for the experimental subjects were shown to be significant at the 0.03 level. The amount of time the experimental subjects were in the inappropriate sitting position was significantly reduced and the null hypothesis cannot be accepted (See Table II).

TABLE II

Difference Scores and Ranks of Baseline and Observation Data for Experimental Subjects

Subject	Mean of Baseline Data	Mean of Observation Data	Difference	Rank
1	900.0	878.0	+22.0	d_1^*
2	861.3	388.0	+473.3	d_4
3	755.0	617.6	+137.4	d_3
4	801.0	108.3	+692.7	d_5
5	460.0	324.3	+135.7	d_2

*P = <.03 Walsh test

As can be seen in Table II, there appears to be much inter-subject variability of length of time engaged in an inappropriate sitting position. Subject 1, for example, was in an inappropriate sitting position during the entire baseline phase while Subject 5 was in the inappropriate sitting position only one-half of the total time (2700 seconds) in the baseline phase.

It should be noted that Experimental Subject 1, who had the highest baseline rate and who had the least difference score (22.0 seconds), was the lowest functioning subject in the present study in terms of intellectual functioning (MI Level III).

The difference scores also had considerable variability from a score of only 22.0 seconds to a difference score of 692.0 seconds.

Usually when a design such as used in the present study is employed, that is, the use of baseline, treatment, and baseline or observation phases, one would expect the behavior treated to return to the same rate of occurrence in the observation phase. However, as Table II indicates, the inappropriate behavior remained at a lower frequency than was observed in the initial baseline phase. This reduced rate, which was maintained over the three observation sessions, had evidently come under extra-experimental reinforcement within the subjects' environment. In this particular institutional environment, the Parsons State

Hospital and Training Center, extra-experimental reinforcements may have come from various sources such as from cottage personnel, teachers, and other adjunctive therapy personnel. Baer, Wolf and Risley (1968) stated that once a behavior has come under such extra-experimental reinforcement conditions then that behavior is no longer dependent upon the experimental conditions which created or modified it.

Table III shows the difference scores and ranks of the paired subjects. In all cases, the amount of time engaged in an inappropriate sitting position was reduced significantly more for the experimental subjects than for the control subjects.

TABLE III

Difference Scores and Ranks of Paired Subjects

Subject Pair	Exp.	Con.	d.	Rank
1	22.0	0.0	22.0	d_1^*
2	473.3	22.3	451.0	d_4
3	137.4	-16.0	153.4	d_3
4	692.7	-13.0	705.7	d_5
5	135.7	- 5.0	140.7	d_2

*P = <.03 Walsh test

The negative numbers in the control subject column indicate

that for three subjects the amount of time engaged in the inappropriate sitting position increased following the television viewing or treatment phase.

Periodic reliability checks made during each phase of the study indicated that agreement of observation of the dependent variable ranged from 93 to 98 percent.

CHAPTER V

DISCUSSION, SUMMARY AND RECOMMENDATIONS

The purpose of the present study was to demonstrate that the frequency of occurrence of a specific behavior, inappropriate sitting position, could be significantly reduced or extinguished by allowing the subjects to see themselves exhibiting the inappropriate behavior by means of video tape recordings. The review of literature contained several studies reporting both the successful and unsuccessful use of self-observation with a variety of different types of subjects. The only unsuccessful report was by Ricker et al. (1967) who used borderline and mildly retarded adolescents as subjects. The present study attempted to demonstrate that self-observation techniques could be used successfully with mildly and moderately retarded adolescents.

Discussion and Conclusions

The hypothesis presented in Chapter I proposed that the amount of time the subjects in the experimental group were engaged in the inappropriate sitting position would be reduced under a strategy employing self-observation procedures. The results presented in Chapter IV suggest that this hypothesis cannot be rejected.

Although the relatively small number of subjects used in the present study has been presented as a limitation of the study, the decreases in the frequency of the inappropriate sitting positions of the experimental subjects did occur significantly more than would be expected by chance. Thus, the procedures used in the study should not be discounted but considered as a possible treatment technique to be included in the clinician's armamentarium.

In comparing the results of the present study to Ricker et al. (1967), there were some striking differences. For example, Ricker et al., in hypothesizing the possible reasons for their generally negative results stated that the treatment time (17 weeks) was probably too short. They suggested that perhaps "half-hour sessions occurring four or five days a week for at least eight months would be a reasonable treatment time. . ." (p. 153). In the present study it should be remembered that actual treatment time consisted of a single 30 minute session which occurred on only six consecutive days. Although the present study dealt with subjects individually, while Ricker et al. dealt with groups, there exists some similarity in the audio-visual procedures used in both studies. That is, one group of subjects in each study was allowed to see themselves. The major difference between the two studies was in the behaviors to be modified. It may be recalled that the final behavioral goal of Ricker et al. was to "improve the

vocational success of the subjects" (p. 3) while the present study sought to decrease or extinguish the frequency of an objectively defineable and directly observable behavior, inappropriate sitting position. It seems logical to conclude that if one wishes to use audio-visual procedures in modifying behavior, one must define behavioral goals in terms of what can be seen and/or heard; not in terms of poorly defined constructs such as improved vocational success. This is similar to the position taken by Baer et al. (1968) regarding definition of treatment goals.

Certain other recommendations by Ricker et al. did prove more useful. For example, they suggested that more homogeneous group composition, the use of a more directive, focused, problem-centered counseling approach, and the possible value of immediate audio-visual feedback would probably lead to more positive results. These factors were all considered in the design and implementation of the present study.

Summary

The present study attempted to investigate the hypothesis that the amount of time a subject was engaged in a specific social behavior could be significantly reduced through the use of a specific visual feedback technique. A two-matched group design was used with five subjects in each group. The groups were matched on MI level, AB level,

chronological age, and the dependent variable of number of seconds engaged in the inappropriate sitting position during the baseline phase. During this phase all subjects received one 15-minute unstructured discussion session per day; moreover, none were allowed to see themselves on television. During the treatment phase, all subjects received a 15-minute structured discussion session centered around ways the subjects could improve their appearance which was followed by a television viewing period. The experimental subjects were allowed to see themselves while the control subjects did not see themselves but instead were shown an educational video tape. The observation phase which followed the treatment phase was identical to the baseline phase.

The results revealed that the amount of time the subjects in the experimental group were engaged in the inappropriate sitting position was significantly reduced beyond that expected by chance alone. The use of visual feedback of one's behavior via video tape was found to be effective in reducing a specific inappropriate behavior.

The results were discussed in terms of a comparison with a previous, though unsuccessful, study in the area. The previous study contained various procedural recommendations that were discussed and evaluated in terms of the present study.

Recommendations

The following recommendations are made on the basis of the findings of the present study:

1) In future studies in which the techniques cited in the present study are to be used, longer periods of baseline and observation would be desirable. Also, a follow-up of several weeks duration should be attempted.

2) The number of subjects in each group should be increased in future research. Also, group treatment procedures should be explored.

3) The independent variable (self-observation) should be further manipulated to find what other effects it might have on behavior. For example, both groups could see themselves on television but only one group would receive the audio portion.

4) There are many types of behaviors that potentially could be modified using the techniques described in the present study. The only requirement that these behaviors must meet would be that they be directly observable.

REFERENCES

Baer, D. M., Wolf, M. M., and Risley, T. R. Some current dimensions of applied behavior analysis. Journal of Applied Behavior Analysis, 1968, 1(1), 91-97.

Bandura, A. and Walters, R. Social Learning and Personality Development. New York: Holt, Rinehart & Winston, 1963.

Carrere, J. Psychogenesis of alcoholism and psychotherapeutic attitude. Annals of Medical Psychology, 1958, 1162, 481-495.

Cornelison, F. S. and Arsenian, J. A study of the responses of psychotic patients to photographic self-image experience. Psychiatric Quarterly, 1960, 34, 1-8.

Deese, J. and Hulse, S. The Psychology of Learning. New York: McGraw-Hill, 1967.

Heber, R. (ed.). Manual on terminology and classification in mental retardation. American Journal of Mental Deficiency, 1961 (Monogr. Suppl.).

Kagan, N., Krathwohl, D. R. and Miller, R. Stimulated recall in therapy using video tape - a case study. Journal of Counseling Psychology, 1963, 10(3), 237-243.

Lambert, W. Interpersonal behavior. In P. H. Mussen (ed.), Handbook of Research Methods in Child Development. New York: John Wiley & Sons, 1960, 854-917.

Leland, H. (ed.). Conference on Measurement of Adaptive Behavior. Parsons, Kansas: Parsons State Hospital and Training Center, 1964.

Moore, F. J., Chernell, E., and West, M. J. Television as a therapeutic tool. Archives of General Psychiatry, 1965, 12, 217-220.

Neilsen, G. Studies in Self-Confrontation. Copenhagen: Munksgaard, 1962.

Neilsen, G. The method of self-confrontation. In R. W. White (ed.), The Study of Lives. New York: Atherton Press, 1963.

Pascal, F. R., Cottrell, T. B., and Baugh, J. R. A methodological note on the use of video tape in group psychotherapy with juvenile delinquents. International Journal of Group Psychotherapy, 1967, 17, 248-251.

Ricker, L. H. Use of audio-visual feedback in improving social skills of mentally retarded young adults. In J. H. Criswell (Chm.), Audio-visual methods of training the mentally retarded. Symposium presented at the American Psychological Association, Philadelphia, August, 1963.

Ricker, L., Pinkard, C., Gilmore, A. and Williams, C. A comparison of three approaches to group counseling involving motion pictures with mentally retarded young adults. Tampa, Florida: MacDonald Training Center

Foundation, 1967 (Vocational Rehabilitation Administration Project No. RD-989).

Siegel, S. Nonparametric Statistics. New York: McGraw-Hill, 1956.

Webster's New International Dictionary. (3rd ed., unabridged), Springfield, Massachusetts: G & C Merriam, 1967.