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To the Graduate Council:

I am submitting herewith a thesis written by Edward Oliver Crandell IV, entitled "Voluntary Delay of Reinforcement Behavior in Hospitalized Alcoholic and Nonalcoholic Subjects." I recommend that it be accepted for nine quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Vocational Rehabilitation Counseling.

James H. Miller
Major Professor

We have read this thesis and recommend its acceptance:

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VOLUNTARY DELAY OF REINFORCEMENT BEHAVIOR IN HOSPITALIZED ALCOHOLIC AND NONALCOHOLIC SUBJECTS

A Thesis

Presented to

the Graduate Council of

The University of Tennessee

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

---

by

Edward Oliver Crandell, IV

March 1973

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ABSTRACT

The study investigated the preference of eight alcoholic and eight nonalcoholic subjects for voluntary delay of reinforcement behavior. Alcoholic and nonalcoholic subjects were matched on variables related to delay behavior. Three measures of delay behavior were given to each subject and the number of delay responses were compared. The effect of the length of psychiatric hospitalization on delay behavior was determined, and correlations among the three delay measures were made. Nonalcoholic subjects showed significantly greater preference for delay behavior. The effect of the length of hospitalization was not found to be significant, and a significant correlation was obtained between two of the delay measures.

Based on the results of the study it was recommended that the alcoholic client be exposed to fewer delay choice situations during the rehabilitation process. It was also proposed that future research examine baseline data on delay behavior in order to implement a behavioral approach to the treatment of the alcoholic's preference for immediate reinforcement.

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CHAPTER I

INTRODUCTION

An extensive amount of research in recent years has focused on voluntary delay of reinforcement behavior. Most of this research (Bochner & David, 1968; Mahrer, 1956; Mischel, 1958, 1961a, 1961b, 1961c, 1966; Mischel & Gilligan, 1964; Mischel & Metzner, 1962; Mischel & Staub, 1965; Shybut, 1968; Walls, 1970a, 1970b; Walls & Miller, 1970a) has utilized the experimental paradigm of the presentation of two choices. The first choice is a valued reward which is available to the subject immediately. The second choice is a more highly valued reward which the subject may only receive after a waiting period. Most of the research has dealt primarily with the functioning of delay behavior in children. However, Shybut (1968) used adult subjects in a study with hospitalized psychiatric patients. The question which these studies attempted to answer was: Do persons who are faced with the choice between a valued reinforcement immediately and a more valued reinforcement available later exhibit a preference for the delayed reinforcement?

Such a question is not new even though it has only recently been examined experimentally. Freud (1922) refers to the problem of the delay capacity in his discussions of ego development. The ability to postpone immediate gratification for the sake of obtaining a larger gratification at some future time was seen as a function of the level of maturity (Freud, 1922).

More recently, Mowrer and Ullman (1945) proposed that the inability to voluntarily delay reinforcement may result in certain forms of psychopathological behavior. Shybut (1968) confirms this in a study of the relationship between delay capacity and the severity of psychiatric disturbance. The more severely disturbed subjects showed a significantly greater preference for immediate reinforcement.

In regard to alcoholism, Shaw (1948) has stated that alcoholics seek the immediate reinforcement provided by drink in spite of the fact that the long term consequences of excessive drinking may be punishing, e.g., loss of job, marital problems, etc. This apparent contradictory behavior has been termed the "neurotic paradox [Mowrer & Ullman, 1945, p. 61]". Mowrer and Ullman (1945) explain the neurotic paradox by proposing a temporal gradient whereby the long range, future, punishing consequences of an action are ignored in favor of the immediate gratifying consequences of the action.

Statement of the Problem

The importance of delay behavior in the vocational rehabilitation process has been documented by Walls, Miller, and Cox (1970). When alcoholic clients are faced with a decision between obtaining an immediate but less valuable reinforcement will they select this reinforcement or delay gratification in order to obtain the more valued reward?

In view of the previously stated material it is important to examine the delay preferences of aocoholics for reinforcement other than alcohol. Would the alcoholic show less preference for delay choices?

Since alcoholics have exhibited the preference for the immediate reinforcement provided by alcohol, would they also exhibit a preference for other types of immediate reinforcement? Current published research has not examined the alcoholic's preference for voluntary delay of reinforcement using rewards other than alcohol.

The purpose of this study was to determine the preferences for voluntary delay of reinforcement by hospitalized alcoholic and nonalcoholic subjects.

Hypotheses

The following null hypotheses were proposed:

1. There will be no significant difference ($p < .05$) in the preference for voluntary delay of reinforcement between the alcoholic and nonalcoholic subjects.
2. There will be no significant correlation ($p < .05$) among all three of the measures of voluntary delay of reinforcement.
3. There will be no significant difference ($p < .05$) in the length of psychiatric hospitalization between the delay subjects and the nondelay subjects.

Significance of the Study

If the rehabilitation counselor is to effectively aid his client in formulating and obtaining a feasible vocational objective, it is necessary for the counselor to be aware of the client's capacity to voluntarily delay reinforcement. Frequently during the vocational

rehabilitation process the client is presented a choice between a valued reward available immediately and a more highly valued reward available at a future time. If a measure of the alcoholic client's preference for voluntary delay of reinforcement behavior can be obtained, the rehabilitation counselor will be better able to serve this type of client.

Definition of Terms

Alcoholic. For the purpose of this study an alcoholic was defined as a person scoring in the range of 4-8 on the alcoholism questionnaire.

Nonalcoholic. For the purpose of this study a nonalcoholic was defined as a person scoring three or less on the alcoholism questionnaire.

Voluntary delay of reinforcement. This concept has been defined as the willingness to wait for the larger reward when faced with the choice between a small reward immediately and a larger reward at a later time (Mischel, 1966).

Assumptions

The following assumptions were made:

1. The alcoholism questionnaire was assumed to be a valid criterion measure for the determination of alcoholic and nonalcoholic subjects.
2. The three methods for determining voluntary delay of reinforcement were assumed to be valid measures of the preference for delay of reinforcement.

Scope and Limitations

The study will be confined to an examination of the hospitalized alcoholic's preference for voluntary delay of reinforcement. This sample is, of course, a select group in that the subjects are seeking treatment for their condition.

Organization of Study

This chapter has provided an introduction to voluntary delay of reinforcement behavior as well as a statement of the problem studied. The remainder of this thesis will be concerned with the presentation of literature relevant to the study, the results obtained, discussion of the results, and recommendations.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The importance of postponing immediate gratification for the sake of later obtaining a larger reward has been discussed previously (Mischel, 1961a). Freud (1922) was among the first to give the delay of reward concept a substantial amount of attention. While Freud's work was nonexperimental, it nevertheless gave a systematic formulation of the delay capacity in such terms as the "pleasure principle" and "reality principle [Freud, 1922, p. 5]". The ability to postpone immediate gratification for the sake of a larger delay reward was seen as a function of the individual's level of maturity (Freud, 1922).

Variables Related to the Preference for Voluntary Delay of Reinforcement

More recent attempts have been made to experimentally examine the preference for voluntary delay of reinforcement through the use of the Rorschach "M" (human movement) responses (Levine, Spivack & Wright, 1959; Singer, 1955; Singer, Wilensky & McGraven, 1956). Spivack, Levine, and Sprigle (1959) observed a significant correlation between three measures of delay, i.e., Rorschach "M", time estimation, and the Stroop Test, and the general intellectual level and performance level of the Wechsler - Bellvue. Their results also suggested that I. Q. test performance and

personality variables be treated within a single theoretical framework. However, it has been noted (Mischel & Metzner, 1962) that the relationship between the Rorschach "M" responses and the delay capacity was inconclusive.

Current attempts to measure voluntary delay of reinforcement have used a more direct method of assessment. The method involved the choice between an immediate, smaller reward and a delayed, larger reward (Renner, 1964). Mischel (1958) used this method with Trinidad school children. The problem was examined on the basis that anthropological studies had found these children to be impulsive persons. Mischel concluded that age and father-absence influenced the preference for delayed reinforcement among these children (Mischel, 1958). Younger children without fathers selected fewer delayed reinforcements (Mischel, 1958).

Numerous other studies have correlated the preference for voluntary delay of reinforcement with other variables. Bochner and David (1968) found that a greater preference for the delay-choice existed among older aborigines with higher I. Q. scores. Shipe and Lazare (1969) noted that both age and socioeconomic status were positively related to the preference for voluntary delay of reinforcement. The study by Mischel and Metzner (1962) found no significant relationship between age and the delay preference. However the research by Bochner and David (1968), Shipe and Lazare (1969), and Mischel (1958) confirmed the relationship between age and the preference for delayed reinforcements.

Other variables such as need for achievement (Mischel, 1961b), social responsibility (Mischel, 1961a), the length of the delay interval (Mischel & Metzner, 1962), future time orientation (Klineburg, 1968),

motivation for the delay choice (Mischel & Gilligan, 1964), and social class (Seagull, 1966), have been found to have a significant, positive correlation to the preference for voluntary delay of reinforcement. These correlational patterns indicated that a complex personality trait, i.e., voluntary delay of reinforcement, had been found. However, Mischel (1966) noted that studies on voluntary delay of reinforcement have more to offer than merely the addition of another trait to the vast number of personality traits already in existence. The concept of voluntary delay of reinforcement has been seen to be a part of social learning theory (Mischel, 1966). Thus previous studies have sought to "investigate the effects of social learning variables that might be expected to play a particularly influential role in the establishment of delay-of-reward behavior, using delay measures as the dependent variables [Mischel, 1966, p. 87]."

Voluntary Delay of Reinforcement and Abnormal Behavior Patterns

The application of such research to the understanding of alcoholism has been seen by Mowrer and Ullman (1945). Shaw (1948) restated the belief that abnormal behavior results from the inability of the person to postpone the immediately gratifying behavior which has delayed, punishing consequences. For example, it was noted that the alcoholic finds immediate escape from his problems through alcohol but he also creates many other problems as a result of his drinking, e.g., marital, financial, and social (Shaw, 1948).

Shybut (1968) experimentally verified Mowrer and Ullman's hypothesis. In a study with hospitalized psychiatric patients, Shybut found that the severity of the psychiatric disturbance was significantly related to delay behavior. That is, the more severely disturbed patients made fewer delay choices than the less severely disturbed group (Shybut, 1968). Buss (1963) found that the number of delay choices made by a group of juvenile delinquents were significantly less than the number made by a comparable normal group.

A study of drinking patterns of chronic alcoholics (Mello, McNamee & Mendelson, 1968) found that certain delay choices were made by alcoholics faced with the choice between a small amount of alcohol immediately and a delayed larger amount. The alcoholics selected the delayed reinforcement in order to obtain more alcohol.

The Modification of Preferences for Immediate and Delayed Reinforcement

Due to the fact that the delay capacity has been considered to be a part of the well integrated person (Mowrer & Ullman, 1945), the modification of the preference for immediate reinforcement has been considered to be desirable (Buss, 1963).

The use of live and symbolic models by Bandura and Mischel (1965) was found to significantly alter the subjects' reinforcement schedule preferences. Live, high esteem models and video taped, high esteem models displaying a preference for voluntary delay of reinforcement were found to alter the preference of children selecting immediate

reinforcement (Bandura & Mischel, 1965). In addition, it was found that the models who displayed a preference for immediate reinforcement were able to significantly alter the preferences of those children who initially selected the delayed reward (Bandura & Mischel, 1965). Bandura and Mischel (1965) viewed this fact as being indicative of the power to change behavior through the use of role models.

Buss (1963) provided another example of the modification of the preference for immediate reinforcement. In a comparative study of preferences for delay behavior it was found that a juvenile delinquent group selected fewer delay responses than a normal group (Buss, 1963). Buss was able to significantly alter the delinquents' preference for immediate reinforcement by using a multiple behavioral experiences approach (Buss, 1963).

Walls and Smith (1970) provided further evidence that reinforcement schedule perferences could be altered. In a study using welfare and vocational rehabilitation clients, it was found that the subjects imitated, i.e., selected delay or immediate reinforcement, the particular video-taped model to which they were exposed (Walls & Smith, 1970).

Mello et al. (1968) observed that an alcoholic's motivation for alcohol may be modified by certain environmental contingencies such as the amount of alcohol available. However, behavioral treatment techniques such as modeling were not used in this study.

Summary

A number of significant studies concerning the antecedents and correlates of voluntary delay of reinforcement were cited. The relationship between the preference for immediate reinforcement and certain abnormal behavior patterns suggested the need to examine the alcoholic's preference for voluntary delay of reinforcement. Modification of the preference for immediate reinforcement has been effective using role models (Bandura & Mischel, 1965) and by using alcohol as a reinforcer (Mello, McNamee & Mendelson, 1968).

CHAPTER III

METHOD

Sixteen subjects were used in a study of voluntary delay of reinforcement behavior. Three delay measures were administered to an experimental group of eight alcoholics and a control group of eight nonalcoholics. Experimental and control subjects were matched by pairs on the basis of education, financial resources, race, and coded MMPI profiles. The total number of delay choices was analyzed using the Wilcoxon Matched-Pairs Signed-Ranks Test. Phi coefficients of correlation were obtained for each delay measure. The influence of the length of psychiatric hospitalization on the preference for voluntary delay of reinforcement was examined.

Subjects

An alcoholism questionnaire (see Appendix A) was administered to the total patient population above the age of sixteen (N = 125) in Georgia Regional Hospital at Augusta, Georgia during a three day period in November, 1972. The questionnaire which was based on the Alcoholism Scale (Davis, 1959) found in Appendix B was used to differentiate between the alcoholic and nonalcoholic subjects.

Alcoholic subjects were matched with nonalcoholic subjects on the variables of education, race, financial resources, and psychological data from the Minnesota Multiphasic Personality Inventory. The influence

of these variables on the preference for voluntary delay of reinforcement has been discussed elsewhere (Mischel, 1958, 1966; Shipe & Lazare, 1969; Shybut, 1968). The subject's education, race, and financial resources were obtained from an information sheet attached to the alcoholism questionnaire. Financial resources were determined by asking the subjects to indicate the amount of money they usually spent in the hospital canteen. It was assumed that those subjects who had more money available would be better able to delay reinforcement than those subjects who had less money.

The subjects' MMPI profiles were coded using the Hathaway Code (Hathaway & Meehl, 1951). The coded profile of each alcoholic subject was matched with a profile having a similar code and belonging to a nonalcoholic. All MMPI tests were administered by the Psychology Department at Regional Hospital and had been given no earlier than three months prior to this study. Recent research (Shybut, 1968) has shown that more severely disturbed psychiatric patients selected fewer delay choices. Consequently, it was considered essential to match the alcoholic and nonalcoholic subjects on their respective MMPI profiles.

As a result of these matching procedure, 13 matched pairs were obtained. Prior to the administration of the delay measures it was necessary to eliminate five of the pairs due to one or both subjects in a pair leaving the hospital against medical advice. Consequently eight matched pairs were involved in the study.

Procedure

In order to obtain a measure of the subjects' preference for voluntary delay of reinforcement, it was decided that all subjects would be told that they were participating in a study of problem solving behavior. The problem task selected was the Revised Beta Examination (Lindner & Gurtz, 1946). The Revised Beta was followed by an individual interview.

At the beginning of the testing session the hypothetical choice method of determining the subjects' delay preference was administered, and all subjects were then given the Revised Beta. At the completion of the test each subject was seen individually to determine his history of previous psychiatric hospitalizations. At the end of this interview the subject was given the behavioral choice measures.

In order to prevent a tested subject from influencing the decision of an untested subject all subjects were seen in groups made up of individuals from their hospital unit. The size of these groups varied from four to eight subjects. When only a few subjects from a unit were to be tested these subjects were combined with subjects from another unit. At the conclusion of the testing and the interview the subject was sent back to his unit in order to prevent him from discussing the choices with the remaining subjects.

Description of Measures

Alcoholism Questionnaire

A questionnaire was developed from the eight items of the Alcoholism Scale (Davis, 1959) and was used as the criterion measure to differentiate between the alcoholic and nonalcoholic subjects.

Eight behavioral categories are contained in the scale: (1) amount of alcohol consumed; (2) variety of alcohol consumed; (3) rate of drinking; (4) time between drinking periods; (5) immediate behavioral changes with the onset of drinking; (6) after-effects of drinking; (7) conditions of drinking; and (8) long range consequences of drinking (Davis, 1959).

A score of zero or one was given to each of these categories. A total score of eight was possible with a high score being indicative of alcoholism (Davis, 1959). Davis (1959) reported a mean score of 7.2 for the alcoholics in the study and a mean score of 0.7 for the nonalcoholics. While no other validity or reliability data was available, it was assumed that the scale was an adequate measure of alcoholism for the purpose of this study. The scale may be found in Appendix A.

The determination of alcoholism was made in the following way:

1. Score of 4-8: Alcoholic
2. Score of 0-3: Nonalcoholic

In this study a mean score of 6.3 for the alcoholic sample and a mean score of 1.3 for the nonalcoholic sample was obtained. In addition a comparison of each subject's clinical records revealed that all of the alcoholic subjects had received a clinical diagnosis of alcoholism.

None of the nonalcoholic subjects had been given a diagnosis of alcoholism.

Measures of Voluntary Delay of Reinforcement

Three measures of delay behavior were given to each subject. Each measure consisted of presenting the subject with a choice between a valued reward available immediately and a more highly valued reward available at a future time. Previous research has confirmed the success of this approach (Renner, 1964).

For the purpose of this study the measures of delay behavior were adapted from Shybut (1968). Delay behavior was measured by using a hypothetical choice and two behavioral choices.

The hypothetical choice consisted of placing four tokens in front of the subjects and saying:

> Does everyone understand what it means to have a token which is redeemable for money? (The experimenter clarified any misunderstandings.) I want you to pretend that each of these tokens is worth a certain amount of money. Give a value to the tokens. (The subject's response was noted.)
>
> If I were to offer you one token now or all four tokens in one week, which would you select? Remember we are assuming that you could redeem the tokens for money. Place a "1" or a "4" on your test booklet depending on whether you would choose one token now or four tokens later.

The experimenter made sure that each subject understood the question and marked his test booklet according to his choice.

The first behavioral choice was a decision between one dollar available immediately and two dollars available after four days. The following remarks were made to each subject individually:

The hospital has authorized me to give away some money to each patient who helps me with this study.

The only problem is that I can only give away a certain amount of money each day. Therefore, as a reward for taking the test I can give you one dollar now or two dollars in four days. The choice is up to you. You can have one dollar now or two dollars in four days, but you cannot have both. (The experimenter noted the subject's response on the test booklet and paid the subject accordingly.)

Since the experimenter was a staff member at the hospital it was assumed that the subject could feel reasonably sure that he would receive the two dollars if he chose it. However, in order to further circumvent the trust variable a second behavioral choice was administered.

The second behavioral choice was a coupon booklet which the subject could redeem for items in the hospital canteen. Each booklet contained 12 coupons and each coupon was coded for identification. The value of each coupon depended on when the subject spent it. Initially each coupon was worth five cents, but its value increased to 20 cents after a four day waiting period. Thus the total initial value of the booklet was 60 cents but its final value was two dollars and 40 cents. The booklet was given to the subject during the interview with the experimenter saying:

This coupon booklet is a way of thanking you for your help in the study. (Experimenter gave the booklet to the subject.)

Open up the booklet and you will see that it contains 12 coupons that are worth 5¢ each. You will also notice that each coupon will be worth more the longer you keep it. If you were to spend all of the coupons today the value of the booklet would be 60¢, but if you wait four days the value of the booklet will be $2.40.

You must redeem the booklet before the date indicated or it will be worth nothing. Do you have any questions?

The experimenter clarified any misunderstandings. The staff of the canteen was instructed regarding the redemption of the coupons, and the experimenter collected the coupons at the end of each day.

After all coupons were redeemed the experimenter recorded the total number of delay responses for each subject.

Statistical Treatment

The Wilcoxon Matched-Pairs Signed-Ranks Test was used to determine the significance of the difference observed in the number of delay choices between the alcoholic and nonalcoholic subjects. The test was also used to determine the significance of the difference in the length of psychiatric hospitalization between the delay and nondelay subjects. The Wilcoxon test has been described by Siegel (1956) as being useful whenever it is possible to determine both the direction of the difference between pairs and the relative magnitude of this difference. The steps in the Wilcoxon test are:

1. For each matched pair, determine the signed difference (d_i) between the two scores.
2. Rank these d_i's without respect to sign. With tied d_i's, assign the average of the tied ranks.
3. Affix to each rank the sign (+ or -) of the d which it represents.
4. Determine T = the smaller of the sums of the liked-signed ranks.
5. By counting, determine N = the total number of d's having a sign . . . [Siegel, 1956, p. 83].

The significance of T was found by referring to tabular values of significance found in Siegel (1956). The selected level of significance was .05.

The correlation between the three delay measures was determined using a phi-coefficient described by the formula:

$$\phi = \frac{ad - bc}{\sqrt{(a + b)\ (c + d)\ (a + c)\ (b + d)}}$$

where a, b, c and d represent the frequency of the data cast into a 2×2 contingency table. Yates' correction was applied to the numerator of each coefficient by subtracting $\frac{N}{2}$ from the absolute value of ad - bc. The significance of phi was tested by referring the product of phi and the square root of N to a table of normal probability (Walker & Lev, 1953).

CHAPTER IV

RESULTS AND DISCUSSION

Results

Three measures of voluntary delay of reinforcement were administered to a sample of eight matched pairs of hospitalized alcoholic and nonalcoholic subjects. Three null hypotheses were tested and one of these was rejected at the .05 level of significance.

The first null hypothesis stated that there would be no significant difference in the preference for voluntary delay of reinforcement between the alcoholic and nonalcoholic subjects. Using the Wilcoxon test the number of delay responses made by the alcoholic and nonalcoholic subjects were compared. Table 1 contains the number of delay responses for each subject pair.

TABLE 1

Number of Delay Choices for Each Subject Pair

Subject Pair	Number of Delay Choices	
	Alcoholic	Nonalcoholic
1	1	3
2	2	3
3	1	3
4	1	3
5	0	3
6	3	3
7	3	2
8	2	3

The first null hypothesis was rejected at the .05 level of significance. The nonalcoholic subjects displayed a significantly greater preference for the delay choice. This finding confirms the major premise of the study. When faced with a choice between a valued immediate reward and a more valuable delayed reward the alcoholic subjects made significantly more immediate choices.

The second null hypothesis stated that there would be no significant correlation among the three measures of voluntary delay of reinforcement. The correlations of each of the three delay measures with each other were obtained by using the phi coefficient. The phi coefficient is a product moment correlation used to test the relationship between two dichotomous categories (Walker & Lev, 1953). Table 2 contains the number of delay and immediate choices for each of the three delay measures.

TABLE 2

Subject Group Responses to the Three Delay Measures

	Measure					
	Hypothetical Choice		Behavioral Choice #1		Behavioral Choice #2	
Group	Delay	Immediate	Delay	Immediate	Delay	Immediate
Alcoholic	6	2	2	6	5	3
Nonalcoholic	8	0	7	1	8	0

The hypothetical choice and the second behavioral choice elicited more delay responses in both the alcoholic and nonalcoholic subjects. While the first behavioral choice elicited seven delay responses from the nonalcoholic subjects, this measure elicited two delay responses from the alcoholic subjects.

Table 3 contains the phi coefficients for each delay measure. A single significant correlation was obtained between the hypothetical choice and the second behavioral choice ($p < .01$).

TABLE 3

Phi Coefficients for the Three Delay Measures

Measure	Behavioral Choice #1	Behavioral Choice #2
Hypothetical Choice	.42	.66
Behavioral Choice #1	--	.35

The correlation between the hypothetical choice and the first behavioral choice was moderate ($p = .06$) but not significant ($p > .05$). The correlation between the first behavioral choice and the second behavioral choice was not significant ($p > .10$). Based on these results, the second null hypothesis was not rejected.

The third null hypothesis stated that there would be no significant difference in the length of psychiatric hospitalization between the

subjects who exhibited a preference for voluntary delay of reinforcement and the subjects who exhibited a preference for immediate reinforcement. In order to test this hypothesis, it was necessary to classify delay subjects as those who selected at least two delay choices. Using this criterion 12 subjects were classified as delay subjects. Of these 12 subjects, four were alcoholic and eight were nonalcoholic. The four subjects who selected less than two delay choices, i.e., preference for immediate reinforcement, were alcoholic. A comparison of the delay-preference subjects and the immediate preference subjects using the Wilcoxon test revealed that there was no significant difference ($p > .05$) between the delay-preference subjects and the immediate-preference subjects. The third null hypothesis was not rejected. The length of time which a subject had spent in a psychiatric hospital did not significantly influence the preference for voluntary delay of reinforcement.

Discussion

It was determined that the nonalcoholic subjects exhibited a greater preference for delay behavior. This result supports the previous discussion of the relationship between alcoholism and the desire for immediate gratification (Blum & Blum, 1969; Mowrer & Ullman, 1945; Renner, 1964; Shaw, 1948). The alcoholic tended to prefer the immediate, less valuable, reward. The "neurotic paradox [Mowrer & Ullman, 1945, p. 61]" appears to have validity for the subjects in this study. It

seems that the alcoholic subjects who chose the immediate, less valuable, reward did so without regard for the more valuable reward which they could receive later.

The influence of the subject variables of education, race and financial resources were minimized because the alcoholic and nonalcoholic subjects were matched on these variables. However, other variables could have influenced delay behavior.

The fact that only two delay measures correlated significantly indicated that other variables could have influence on the subjects' preference for the delayed reinforcement. It was observed that more alcoholic subjects selected the delayed reinforcement on the second behavioral choice than they did on the first behavioral choice. Shybut (1968) proposed that the subject's trust in the experimenter could affect the decision between the delayed and immediate reinforcement. It is conceivable that the trust variable may have caused the selection of fewer delayed reinforcements on the first behavioral choice. However, it has also been observed that the value of the reinforcement (Grusec, 1968) and the length of the delay interval (Mischel & Metzner, 1962) affect the preference for voluntary delay of reinforcement. The value of the delayed reinforcement in the second behavioral choice was four times as great the value of the immediate reinforcement. This fact coupled with the short delay interval (four days) could have operated to elicit an increased number of delay responses.

The length of time which a person spent in a psychiatric hospital did not significantly affect the preference for the delayed reinforcement.

Subjects who selected the delayed reinforcement had not received significantly less hospitalization than the subjects who selected the immediate reinforcement. The fact that the null hypothesis was not rejected in this case further substantiates the hypothesis concerning the influence of alcoholism on a subject's delay behavior. Kerlinger (1964) stated that the testing of at least one alternate hypothesis is recommended for all ex post facto research. In this study the influence of the length of psychiatric hospitalization was selected as an alternate hypothesis. Kerlinger (1964) adds that the failure to reject a null alternate hypothesis strengthens the case of the major hypothesis.

Summary

The major hypothesis of this study was that alcoholic subjects would demonstrate a significantly greater preference for immediate reinforcement than would nonalcoholic subjects. The hypothesis was substantiated. A significant correlation ($p < .01$) was obtained between the hypothetical delay measure and the second behavioral choice measure. However, the correlations between the other delay measures were not significant, and the data failed to reject the second null hypothesis. The data concerning the effect of the length of psychiatric hospitalization failed to reject the third null hypothesis.

CHAPTER V

SUMMARY, IMPLICATIONS, RECOMMENDATIONS

Summary of Study

The purpose of this study was to determine if hospitalized, nonalcoholic subjects would exhibit a significantly greater preference for voluntary delay of reinforcement behavior. The study was conducted at the Georgia Regional Hospital in Augusta, Georgia using a total of 16 subjects (eight alcoholic and eight nonalcoholic) matched on variables related to delay behavior. Three measures of delay behavior (a hypothetical choice and two behavioral choices) were administered to the sample and the resultant frequencies of delay behavior were tested for significance. Nonalcoholic subjects were found to exhibit a significantly greater preference for delay behavior.

A correlation among the three delay measures revealed that only the hypothetical choice and the second behavioral choice were significantly correlated. Thus the second null hypothesis was not rejected.

A third hypothesis concerning the effect of the length of hospitalization on the subjects' preference for delay behavior was not rejected.

Implications

Experimental support was obtained for the hypothesis that the alcoholic prefers immediate reinforcement rather than delayed

reinforcement. These results may be broken into two groups of implications depending upon how the counselor chooses to deal with the alcoholic's nondelay behavior: (1) working around the alcoholic's preference for immediate reinforcement; (2) working to modify the alcoholic's preference for immediate reinforcement.

If the counselor decides to work around the alcoholic client's preference for immediate reinforcement, it will be necessary to minimize the number of delay-choice decisions which the client will experience during the rehabilitation process. For example, the length of time required to complete a vocational training program should be considered before the alcoholic client is enrolled. The inability to delay gratification coupled with a long-term training program would probably result in the failure to complete the program. Both the counselor and client would need to select a realistic vocational objective which would not require too much time to attain.

In a society which places emphasis on the ability of an individual to delay gratification, it is only appropriate that part of the rehabilitation effort should be directed toward the development of delay behavior in the alcoholic client. The rehabilitation counselor working with the hospitalized alcoholic client is in a unique position to effect a change in the alcoholic's preference for immediate reinforcement. Through behavior modification techniques such as role modeling it has been demonstrated that nondelay behavior can be modified (Bandura & Mischel, 1965). The counselor working with the hospitalized alcoholic could use

behavioral approaches to alter the patient's preference for immediate reinforcement. Such an approach might be developed within a group counseling framework where selected subjects who had exhibited delay preferences would serve as role models. In addition, other forms of behavior modification could be implemented to modify the nondelay behavior of alcoholics while the client participated in vocational evaluation and work adjustment situations.

Recommendations

The study demonstrated the existence of a preference for immediate reinforcement by hospitalized alcoholic subjects. When presented a choice between a valuable, immediate, reinforcement and a more valuable, delayed reinforcement, the alcoholic subjects made significantly more choices for immediate reinforcement than did the nonalcoholic subjects. Based on this finding it is possible to delineate recommendations for future research.

The present research design did not attempt to establish baseline data on delay behavior. The design did seek to determine the alcoholic's preference for voluntary delay of reinforcement using three delay-choice situations. Further analyses of the alcoholic's immediate reinforcement behavior is needed before attempting to modify the preference for immediate reinforcement. The additional studies would require examination of baseline data on delay and immediate choices.

Future studies employing multiple delay-choice situations should consider the reinforcement value and the length of the delay interval.

It is also necessary to consider the effect of the trust variable in future research. Ideally, the payment of delayed reinforcements should be under the control of the subject in order to eliminate the influence of the trust variable.

The major limitation of the present study was the relatively small sample involved. According to Siegel (1956) the power of a statistical test increases as the sample size increases. Before coming to definitive answers regarding the alcoholic's preference for voluntary delay of reinforcement, further research with a larger sample is recommended.

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APPENDIXES

APPENDIX A

NAME_____

Please circle the correct answer

AGE: under 20 years 20-30 years 30-40 years

over 40 years

SEX: Male Female

How much money do you usually spend in the hospital canteen in a one week period?

a) $.50 or less

b) $.50 - $1.00

c) more than $1.00

Highest grade in school completed:

a) 9th grade or less

b) 10th grade

c) 11th grade

d) 12th grade

e) some college

f) college degree

This is a questionnaire designed to determine what happens to people when they drink alcohol. Even though you may not drink alcohol, please answer these questions. There are no right or wrong answers but only answers which you feel apply to you. For all of the questions assume that alcohol is available to you. Please answer accurately and truthfully.

QUESTIONNAIRE

1. When drinking do you usually drink:

   a) 3 pints or more of alcohol other than beer along with a case of beer or more per week

   b) no beer but 5 pints or more of liquor per week

   c) one 6 pack of beer per week

   d) none of the above

2. Have you ever drunk any of the following?

   a) moonshine

   b) bathtub gin

   c) varnish thinner

   d) Bay Rum

   e) canned heat

   f) shoe polish

   g) another nonstandard brand of alcohol

   h) none of the above

3. How fast do you drink alcohol?

   a) as fast as possible

   b) one-half pint of liquor in 30 minutes or less

   c) six swallows or less per one-half pint of liquor

   d) none of the above

4. How long is the time between drinking periods?

   a) less than one week

   b) less than two weeks

   c) less than one month

   d) none of the above

5. Which of these things happen to you when you drink?

   a) talk more than usual around people

   b) fighting

   c) increased desire for sex

   d) talk less than usual around people

   e) none of these changes occur

6. When do you usually drink?

   a) anytime of the day

   b) only in the morning

   c) only in the evening

   d) not at all

7. Which of these things happen at least half of the time when you drink?

   a) pass out

   b) loss of balance

   c) can't remember things

   d) severe hangover

   e) shakes

   f) makes more than one of these happen

   g) none of these happen

8. Which of these things happened to you as a result of drinking?

   a) arrest

   b) hospitalization

   c) loss of job

   d) loss of family

   e) loss of friends

   f) at least 3 of the above

   g) none of the above

APPENDIX B

ALCOHOLISM SCALE

W. O. Jenkins H. C. Davis

The University of Tennessee

TO THE EXAMINER:

The scale is to be used in conjunction with an interview of the subject concerning his alcohol drinking behavior. The examiner's task is to obtain sufficient information from the subject to rate with confidence. In each case, specific instances of behavior should be obtained as a basis for judgment. Do not confuse the subject's opinion with your rating of his actual behavior.

For example: Do not ask the subject of he "drinks a lot" and accept his answer of "yes". Rather, have him report in detail how many pints, quarts, etc., and the kinds consumed per week WHEN ALCOHOL IS AVAILABLE. This same kind of behavioral evidence is necessary for all other items.

The scale is two-point, forced-choice, the subject being judged either poor or good on each item. If the judgement is poor, the score is one (1). If the judgement is good, the score is zero (0). A high score on the total scale is indicative of alcoholism. For each item in the space provided, write in either a zero (0) or one (1). In rating all these items, assume that the subject has the opportunity to procure alcohol.

_____ 1. Amount consumed. Give a rating of poor (1) if the subject usually drinks three pints or more of alcohol other than beer along with a case of beer or more per week; also give a rating of poor (1) if the subject drinks no beer but five pints or more of other liquor per week.

_____ 2. Variety of alcohol. Give a rating of poor (1) if the subject drinks any alcoholic beverage that is not a standard brand (excluding beer and wine made by the subject), for example, moonshine, bathtub gin, varnish thinner, Bay Rum, canned heat, shoe polish, etc.

_____ 3. Rate of drinking. Give a rating of poor (1) if the subject's rate of drinking is: (a) as fast as possible; (b) one-half pint of hard liquor in 30 minutes or less; (c) six swallows or less per one-half pint of hard liquor.

_____ 4. Time between drinking periods. Give a rating of poor (1) if the interval between drinking periods for the subject is less than one week.

_____ 5. Behavioral changes with drinking. Give a rating of poor (1) if the subject shows any abrupt and marked behavioral changes with onset of drinking, such as greater approach to people (more talking or fighting with them, increase in sexual behavior, etc.) or greater avoidance of people (decrease in talking and other withdrawal behaviors, etc.).

_____ 6. Conditions of drinking. Give a rating of poor (1) if the subject drinks any time of the day under any environmental circumstances.

_____ 7. After-effects of drinking. Give a rating of poor (1) if one or more of the following symptoms occur once a week or more frequently or half the time the subject drinks: passing out, inability to locomote, lack of recall, severe hangover (shakes, nausea, and weakness), or DTs.

_____ 8. Long-range consequences of drinking. Give a rating of poor (1) if the subject has a total of three or more occurrences of the following in connection with drinking: arrest, hospitalization for drinking, loss of job, loss of family, or loss of friends. Fill in all of the above that have occurred and the number of times.

_____

_____

_____

VITA

Edward Oliver Crandell, IV was born in Fayetteville, Arkansas, on January 27, 1949. He graduated from Humboldt High School in Humboldt, Tennessee in 1967. Following his freshman year at the University of Arkansas he transferred to the University of Tennessee where he received a Bachelor of Science in Psychology in June, 1971.

He enrolled in the Graduate School at the University of Tennessee in September, 1971, and received the Master of Science degree in Rehabilitation Counseling in March, 1973. He is a member of the National Rehabilitation Association, the National Rehabilitation Counseling Association, the Georgia Rehabilitation Association, and the Georgia Rehabilitation Counseling Association.

He is married to the former Elizabeth Lytton of Humboldt, Tennessee, and they have one child, Bethany Paige.