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Concept Attainment Responses of Incarcerated Delinquent Adolescents as a Function of Differential Social Reinforcement

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CONCEPT ATTAINMENT RESPONSES OF INCARCERATED DELINQUENT ADOLESCENTS AS A FUNCTION OF DIFFERENTIAL SOCIAL REINFORCEMENT

by

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ABSTRACT

In order to test the hypothesis that positive verbal reinforcement is aversive to incarcerated delinquents, one of two equated groups of fifteen male Ss received encouragement for correct responses made during a concept attainment task. It was predicted that reinforced Ss would achieve a significant mean increase in concept attainment errors during the period of social reinforcement. The reinforced Ss, however, made a significant mean reduction in errors. Differences within the reinforced group of Ss indicated that Ss who made reductions in errors were identified as introverted and low risks for recidivism; Ss who made increased errors during social reinforcement were indentified as extraverted and high risks for recidivism. The findings, though not supporting the study hypothesis, were interpreted in the light of a recent theory of criminoginicity.

INTRODUCTION

Social reinforcers are a subclass of reinforcing events in the environment which, when following a given instance of behaviour, subsequently modify the frequency of occurrence of that behaviour. Since the majority of human reinforcements are mediated by another individual, social approval includes a wide range of favourable consequences supplied to a wide range of specific behaviours of the individual. The normal state of affairs therefore, would be one of maintaining the behaviour of listening, reading, seeking close contact, and supplying reinforcements designed to maximize further performance.

Common examples of generalized positive conditioned reinforcers are: smiling, paying attention, affection and, saying "right" or "correct". These prosocial response maintaining events operate as reinforcements because they are in a chain of events leading ultimately to a more basic consequence, primary reinforcement. This accounts for the label of conditioned reinforcers. Also reinforcement differs from the colloquial "reward" because reinforcement is usually the immediate environmental consequence of a specific performance. However, some investigators use the term reward, to classify a sub-group of social reinforcers, i.e., money, candy and cigarettes. Furthermore, some investigators have demonstrated that the class of social response and reinforcement procedures under

consideration here, is maintained by reinforcement procedures. For instance, even young children indicate a predictable preference for certain subclasses of social responses as reinforcement, i.e., a smile instead of a hug; a hand gesture instead of a kiss. Since most social reinforcement involves a human agent, social approval is itself undoubtedly a potent conditioned reinforcing procedure. The recent work on delineating characteristics of models and observers tends to support the assumed importance of social approval in shaping the incentive value of social reinforcers, as well as the hierarchy of responses of the individual observer.

However, there is a group of subjects who seem to respond as if the positive social stimuli described above were conditioned aversive stimuli. Some of these individuals have been found among populations of incarcerated delinquents. Although these individuals seek to obtain social rewards, i.e., money, cigarettes and automobiles illegally, they appear to regard social approval as aversive. The present study was undertaken to demonstrate the aversiveness of social approval for these subjects.

REVIEW OF LITERATURE

References to these reactions of incarcerated delinquents have been found scattered through the literature. Psychoanalytically oriented therapists have described the condition in detail (Schulman, 1956; Redl and Wineman, 1965). Psychiatrists and clinical psychologists have reported how the reaction created obstacles to successful therapy (Bloch, 1952; Sullivan, Grant and Grant, 1957; Grant and Grant, 1959). Evidence in studies from the literature on child development supports an hypothesis of an early onset of the delinquent's reaction to social reinforcement (Conger, Miller and Walsmith, 1965; Peck and Havinghurst, 1960).

Further support for this notion that social stimuli may be aversive is obtained from the observation that many delinquent subjects find it difficult to form relationships of friendship, love or permanent attachments with other people (Argyle, 1967; Maher, 1966). Thus, for some individuals positive social reinforcements may be aversive rather than having the usual functions necessary for social learning.

Bloch (1952) describes typical inmate behaviour: the individual had to avoid at all costs, seeing the interviewer as capable of some intimacy, closeness, or warmth. If the love or friendship demands were pressed, the delinquent's panic could only be alleviated by flight or homicidal assault. Sullivan, Grant and

Grant (1957) suggest that this avoidance of nurturance and human concern could lead to antisocial behaviour and an apparent lack of awareness of the consequences of illegal and antisocial acts. Bloch (1952) indicates that the hallmarks of the delinquent seem to be two characteristics: an inability to delay gratification of needs and a general shallowness in interpersonal relationships.

Grant and Grant (1959) tested the hypothesis that the shallowness and impulsiveness were part of the same mechanism of defence in the delinquent i.e., avoidance of positive social stimuli. They forced the incarcerated delinquent to participate in a program of intimate, close living in a small group. In social learning terms, this was an attempt to suppress the avoidance response to positive social reinforcement and force the subject to observe and to respond normally to the rest of the stimuli of the avoided chain. This might also be called a kind of reality testing therapy (Schulman, 1956). A control group enabled a comparison of rates of recidivism after release. It appears that this was one of the few reported successes in the treatment of delinquents (West, 1967). Recidivism was significantly less than expected among the treated compared to the untreated matched controls.

Other data on the delinquent's avoidance reaction comes from descriptions of the failures in Grants (1959) study. Most of these resistant subjects achieved scores on the California Personality Inventory which indicated that they were extremely immature. Whatever seems to initiate the delinquent's typical reaction of

avoidance to social stimuli, it was hypothesized that it must have occurred at an earlier age in these subjects and may have resulted in an arrest of further socialization. These inmates appeared to be resistant even to the most intensive psychotherapy and remained so. The Grants (1959) conclude that the more immature the subject as measured by the California Personality Inventory, the less likely that he would receive benefit from their treatment. In other words, the program of treatment advocated in this (Grant, 1959) study required some degree of earlier socialization to produce more social learning in the same individual.

Schulman (1956) gave much the same graphic picture of the delinquent's attempt to avoid prosocial stimulation, but Schulman (1956) differed in his approach to the therapeutic problem from Grant and Grant (1959). Instead of meeting the avoidance response "head-on", he suggested using the motivation in its intensity to make the delinquent more sociable, in spite of himself. In a manner of speaking, he said to the subject: "So you want to escape or get away? Very well, I'll arrange it but you must perform to my specification, or marçh to my drum". Schulman (1956) stated that he used this shallow, authority-dependency relationship to become a more omnipotent figure than the delinquent. He claimed that the inmate could then identify with him and develop a rudimentary superego or conscience. Schulman reported no quantitative data to support his hypothesis.

However, looking at the situation in terms of social learning, the therapist assumes the agency for dispensing social negative

reinforcement (Keller, 1965). The subject is still performing the avoidance behaviour and is forced to learn or make dependency responses in order to get the agent to turn off the noxious stimulus. A correct performance of a specified dependency response is a discriminative cue to successful avoidance. Schulman (1956) didn't claim any spectacular results with the method used but felt that given more time, delinquents might gain more control over their impulsivity. Unlike the Grants (1959) who attempted to suppress the avoidance response, Schulman seemed to have added some delay in performance of avoidance of social reinforcement.

A search of the literature did not uncover laboratory studies reporting data relevant to the delinquents' response to positive social stimuli. However, there is reason to believe that the delinquents' avoidance of positive social stimuli might be explored by an experimental analysis of the behaviour. For instance, some clinical observations seem to indicate that there may be quantitative relationships between t he social stimulus and the delinquent avoidance response (Schulman, 1956). An increase in frequency of the presentation of adequate positive social stimuli seems to be followed by an increase in frequency of the avoidance response. The response appears to have been well learned in terms of resistance to extinction as exemplified by the label, "incorrigible" (Grant and Grant, 1959). The response seems to have been stable over a relatively long time (Conger, Miller and Walsmith, 1965; Peck and Havighurst, 1960; West, 1967).

The delinquents' avoidance response seems not only apparent in conduct but also may be inferred from his cognitive activity. A number of writers and court officials (Ruben, 1958) agreed in their opinion that there seemed to be a lack of social and moral concepts in delinquents. Schulman (1958) noted that the incarcerated delinquent was deficient in such traits as fantasy, creative ideational activity, introspection and self-awareness. Several writers consider these traits to be characteristic of young children (Bruner, 1964; Kendler, 1961; Reese, 1962; Kendler and Kendler, 1962; Fowler, 1962), and some investigators consider these traits to be symptomatic of social immaturity and cultural retardation in the delinquent (Maher, 1966).

Several predictor variables have been associated with social conditioning of incarcerated delinquents. There are three which have been studied. These have been labeled: Extraversion - introversion (Eysenck, 1965), Neuroticism (Eysenck, 1965) and Institutional Adjustment (Marcus, 1960; Sherman, 1957).

The results of recent studies (Eysenck, 1965, Fitch, 1962; Marcus, 1960; Bartholomew, 1959) support a hypothesis which postulates that extraversion - introversion is a significant personality variable which influences conditionability (Eysenck, 1965) and the development of delinquent behaviour in particular (Franks, 1968). Extensive studies utilizing laboratory techniques (Eysenck, 1965; Lykken, 1957), drugs (Eysenck, 1965) and personality inventory survey methods (Marcus, 1960; Fitch, 1962; Little, 1963) have produced results indicating that this personality variable may have structural and genetic determinants. Therefore, it is probably of

considerable importance to measure Extraversion when evaluating the data derived from studies of social conditioning. The general hypothesis which has received support states that conditioning becomes increasingly more difficult with greater degrees of extraversion (Eysenck and Rachman, 1966). A more specific hypothesis derived from this general theory concerns "criminoginicity" and socialization in particular (Franks, 1968; Fitch, 1962; Bartholomew, 1959). This hypothesis states that there are two distinct groups of offenders related to the personality dimension of Extraversion - introversion and conditionability. One group is introverted, conditions easily (Franks, 1968; Franks, 1963; Fitch, 1962), and comes from a background of the "delinquent sub culture" (Marcus, 1960; Bartholomew, 1959; Wilkins, 1968). The second group is extraverted, conditions poorly and comes from any "subculture" (Franks, 1968; Marcus, 1960).

Neuroticism, the second predictor variable associated with conditioning of incarcerated delinquents and criminals, has been studied under various labels (Quay and Hunt, 1965; Eysenck, 1965; Franks, 1963); Cleckley's classification of neurotic psychopathy (Lykken, 1963); maladjustment (Rotter, 1964; Bieri, Blacharsky and Reid, 1955); instability (Marcus, 1951); and manifest anxiety (Taylor, 1966; Franks, 1963). The dimension of neuroticism has been studied by means of physiological tests and personality inventory methods (Eysenck, 1965; 1964), factor analysis (Marcus, 1951) and laboratory techniques (Franks, 1963). Some investigators have demonstrated a facilitating effect on conditioning with the presence

to some degree of this variable (Spence, 1958) and other investigators have reported results indicating that this variable is associated with an inhibiting effect on conditioning (Sherman, 1963). One hypothesis which has received some experimental support states that higher degrees of neuroticism interfere with conditioning particularly of higher cognitive functions (Sherman, 1963; Franks, 1963). In terms of the present thesis a negative correlation would be expected between social conditioning and neuroticism, when employing incarcerated delinquents as subjects. The stronger the negative attitude toward social stimuli, the greater would be the detrimental effect on the results of social conditioning (Rhine, 1958).

The third predictor variable, Institutional Adjustment, delineated by factor analysis, concerns the inmates' behaviour while incarcerated and is considered by some authorities to be an index of the individual's potential for reformation or rehabilitation (Marcus, 1960). Successful reformation is expected to correlate positively with good institutional adjustment. Therefore, it seems reasonable to assume that successful rehabilitation and institutional adjustment would be correlated with ease in conditioning or learning to adjust. However, one investigation (Sherman, 1963) produced results which supported the opposite hypothesis. Inmates who adjusted very poorly to institutional routine in a series of penal organizations, conditioned significantly better on a memory task than either well-adjusted normal or neurotic criminals. For the present study, it would be expected that those inmates with poor adjustment ratings derived from an

examination of their institutional conduct records, would probably produce good to excellent conditioning results following the presentation of positive social stimuli. In other words, significant positive correlations should occur between poor institutional adjustment ratings and high social conditioning scores.

The Halstead Category Test seems to fit the criteria for a task which has little or no social reinforcement contingency for its standard performance and administration, (Halstead, 1956; 1951 a; 1951 b; 1946; 1945; 1944; 1940). The test is used routinely in the psychiatric section of the reform institution where the present study was carried out. In the Category Test, groups of simple geometric figures are presented serially on slides to the subject in such a manner that he can infer recurrent principles of organization in the stimulus material (Halstead and Settlage, 1943; Shure and Halstead, 1958; Driver, 1968). Information as to the quality of response for each given set of items is fed back auditorially in the form of a chime registering correct responses and a buzzer indicating incorrect responses (Halstead, 1951 a; Halstead and Wepman, 1949). Normative data were derived from several hundred individuals, male and female, through the age range of 12 to 75, (Reitan, 1955 a; 1955 b; 1955 c) in various stages of health and disease (Apter et al, 1951; Chapman and Wolff, 1959; Fitzhugh, Fitzhugh and Reitan, 1960; 1961; Reitan, 1962; 1961; 1960; 1959 a; 1959 b; 1959 c; 1959 d; and 1959 e; 1958; 1956 a; 1956 b; and 1956 c; 1954; 1953; Ross and Reitan 1955; Russell and Reitan, 1955; Reed and Reitan, 1963; Reitan

and Tarshes, 1959). The functions involved appear to mature sometime between 12 and 14 years of age. (Klove, 1959; 1958; Klove, White and Taylor, 1959; Heimburger and Reitan, 1961). That they are relatively free from cultural considerations is further attested by their "determined" presence in Eskimos, Orientals, Negroes and Caucasians. In recent test runs they have been satisfactorily scaled remotely, i.e., "without any sensory contact between interpreter and subject", (Halstead, 1951, b). There do not appear to be studies involving incarcerated delinquents on the Halstead Category Test. A search of the literature did not reveal any investigation of the Halstead Category Test reliability.

No reports have been found using delinquents with apparati or problems similar to the Halstead Category Test studies, and very few studies have been reported employing delinquent subjects with inductive reasoning as the dependent variable. There are three studies (Payne, 1961; Quay, 1965), which suggest that delinquents can do sorting and picture completions tasks (Wechsler, 1944). These kinds of tasks are said to measure the ability to differentiate essential from nonessential details (Payne, 1961).

Tong (1955) employed a sorting test similar to the Wisconsin and Weigl Tests (Milner, 1963). There were 30 female and 131 male subjects who were inmates of a prison in England and consisted of 31 male psychotics and 130 nonpsychotics. The nonpsychotics tended to achieve the sorting criteria and their scores had a significant positive correlation with their Wechsler Vocabulary scores. This

latter relationship agrees with findings of other studies (Osler and Fivel, 1961). There was no significant difference between male and female total sorting scores.

Baker and Sarbin (1956) report a study comparing the sorting behaviour of a group of 41 incarcerated delinquents with a group ("roughly matched") of 48 non-delinquents. Each subject was asked to sort 10 sets of three stimuli, three times. The stimuli were magazine pictures of recreational and/or occupational activities. There was immediate feedback by the experimenter indicating the correctness or incorrectness of each response. Each of three repetitions of the test were related to three different criteria determining the principles of sorting. Prior to the sorting procedure, each subject was shown two four-minute filmed interviews. The one film depicted a delinquent boy being interviewed by one of the authors who asked non-directive questions about a film on flying which the delinquent boy had seen prior to the interview. The other four-minute film was about a similar interview but with a non-delinquent boy. Both these filmed boys had sorted through the experimental task immediately after their interviews.

Instructions to the delinquent and non-delinquent subjects were to imitate the sorting responses of the delinquent model, the non-delinquent model and finally to complete the sorting task a third time according to their own preferences. Although all subjects had had an opportunity to observe the behaviour of the two models, this did not include their sorting behaviour.

The authors' hypothesis was that the delinquent experimental subjects were socially retarded and would show less improvement in the sorting task than the non-delinquent subjects. Achievement, as measured by raw accuracy scores, failed to differentiate the delinquent from the non-delinquent group. This result was attributed to the unreliability of the sorting test with regard to its differentiating sensitivity on the continuum of the independent variable, role-taking ability.

However, it seems reasonable also that the experimental test may have had properties which were important for the sorting ability. For instance, the sets of three stimulus pictures (magazine ads in colour) may have had definitive attributes as simple as colour, form, or number. No data are offered in the report on which to make such an alternative hypothesis.

The third study on the sorting ability of delinquents was made by Jones, Livson and Sarbin (1955). A picture completion test (Street Gestalt Task) composed of 12 pictures (2 practice and 10 test) was administered individually to 41 incarcerated delinquent boys and 49 non-delinquent boys (14 to 18 years). The authors' hypothesis was that because delinquent boys have retardation of perceptual-cognitive development, they would have greater difficulty in the recognition of the incomplete pictures than would non-delinquents. The delinquents did in fact, make significantly fewer solutions during both the full 60 second exposure and the initial 10 second exposure for each stimulus picture.

However, no data were offered on the variable of psychometric intelligence. The authors argued that the picture completion test has no significant correlation with verbal intelligence scales but Wechsler (1944) noted that this test was found to be a very sensitive measure for differentiating intelligence at the lower levels. Wechsler stated that the Block Design Test and the Picture Completion turned out to be the most sensitive of the subtests on the Performance Scale (Wechsler, 1944). Thus the results of this study may reflect significant differences in a matching variable rather than an independent variable.

It seem, therefore, that there is some reliable evidence indicating that incarcerated delinquents without symptoms of psychosis but exhibiting clinical signs of social and perceptual-cognitive retardation, were able to do tasks involving inductive reasoning (Payne, 1961).

No reports were found which utilized incarcerated delinquents involving both inductive reasoning and verbal reinforcement of the type used in the present study. However, there are five studies which involved verbal conditioning of a relevant nature presented to incarcerated delinquents. Two studies were unsuccessful in making significant changes from the operant level following positive social, verbal reinforcement (Johns and Quay, 1962; Quay and Hunt, 1965).

These studies used the Taffel procedure (1955) in which the experimenter presents a verbal reinforcement "Good" following each response by the subject, which utilizes one of two personal pronouns (I or We) in a sentence. Eighty cards are presented to each subject

in succession and each card has a verb printed in the centre with six pronouns printed in the lower left or right corner of each card. None of the first twenty responses are reinforced and the number of "I" and "We" responses during that phase were used as the individual's base rate or operant level. The subject is instructed to make a sentence with the verb on each card and to use one of the six words in the bottom corner of each card, i.e., I, We, You, He, She, They.

In the earlier study (Johns and Quay, 1962) the Taffel procedure was used on 23 incarcerated neurotics and on 11 incarcerated psychopaths. The same procedure without verbal reinforcement was used on 17 incarcerated neurotics and on 13 incarcerated psychopaths. All subjects were matched on the variables of age, education and intelligence. The index of conditioning was the number of "I" and "We" responses occurring in the first block of twenty trials (operant levels) subtracted from the number of such responses in the fourth trial block of twenty trials (reinforced level). The authors concluded that psychopaths were less sensitive to secondary reinforcement because the index of conditioning of these subjects was not significantly different from zero. Neurotic subjects made a significant mean increase in reinforced personal pronoun responses.

The second verbal reinforcement study (Quay and Hunt, 1965) was a replication of the first study and employed 458 prisoners. Poor conditionability of the psychopaths in this second study was found to have a significant positive correlation with extraversion and no

correlation with neuroticism or anxiety, as measured by the E P I.

In both studies, the psychopaths did not exhibit an increase in frequency significantly different from that shown by unreinforced controls. The authors concluded that further research would be needed to determine whether this insensitivity to social reinforcement was the basis for psychopathic behaviour or the result of a psychopathic adjustment. They describe the latter as marked by unsocialized aggression, recidivism and resistance to profiting from experience. However, examination of the Taffel procedure (1955), reveals that only the responses relating to the experimental pronouns ("I" and "We") were reported. If the hypothesis of the present research is correct, namely that positive social stimuli are aversive to some incarcerated delinquents, then other or additional observations would seem to be appropriate. If an extrapolation from the work of Holz and Azrin (1962) is accepted, one might expect that if aversive stimuli are presented following certain responses, the availability of other responses might very well determine the incidence and frequency of both the responses which are followed by the aversive stimuli, and the responses which are not. For instance, the responses not followed by aversive stimuli may increase in relative frequency.

In contrast to the two studies (Johns and Quay, 1962; Quay and Hunt, 1965) which were unsuccessful in conditioning sociopaths to verbal stimuli, three studies were successful (Bernard and Eisenman, 1967; Bryan and Kapche, 1967; Stewart and Resnick, 1970). No

hypothesis was offered as a resolution for these contradictory results. It was stated in one conclusion that "the factors that affect the impact of such praise (positive social stimuli) remain obscure". (Bryan and Kapche, 1967). However, there were differences between the "successful" and "unsuccessful" studies which may be critical when related to the hypothesis of the present study. If social stimuli are aversive for some incarcerated delinquents (Bloch, 1952; Malmo, 1959) and aversive stimuli can become signals for positive reinforcement (Holz and Azrin, 1961), the data from the "successful" studies may support a hypothesis involving the discriminative function of an aversive stimulus.

The "grape-vine" or spontaneous communication system within prisons is generally known and some attempts have been made to control this variable when it might have differential effects on experimental results (Bernard and Eisenman, 1967). Nevertheless, the "grape-vine" seems to be efficient and news travels quickly. Reinforcements used in experiments and which can be used for inmate monetary exchange are in great demand. One "successful" study utilized a monetary reinforcement (nickels) as a control condition to compare with social reinforcement (Bernard and Eisenman, 1967). Another "successful" study (Stewart and Resnick, 1970) utilized experimenters of the opposite sex to the subjects. Although this condition may not fit the reinforcement criterion of immediateness (Bandura and Walters, 1963), the experimenters suggest that the sociopath may derive some reinforcement. The third "successful" study (Bryan and Kapche, 1967)

utilized two exconvicts as experimenter - reinforcers. It is difficult to explain this condition as an example of the hypothesis involving a discriminative function of an aversive stimulus. Nevertheless, there may be obscure reinforcement contingencies in the exconvict-inmate relationship for which verbal conditioning was a potent signal. These suggestions gain some plausibility also, from the fact that no subject in the three "successful" studies was able to state the reinforcement contingency.

If a study did not utilize experimenters of the opposite sex, or exconvicts, and did not utilize reinforcements (money), it might be surmised that subjects would respond to social stimuli in a manner comparable to the previously cited, "unsuccessful" studies. It might be expected that subjects would select available alternative responses when their correct responses were paired with an aversive stimulus (positive social reinforcement). The Taffel (1955) procedure presents a subject with a list of six pronouns from which to choose on each trial and reinforces only the personal pronoun, as a correct response. The Halstead apparatus gives a subject four levers from which to choose on each trial. Only one is correct (chime). If the assumption is correct that sociopathic subjects in the standard Taffel (1955) procedure were selecting alternative untabulated responses during the reinforcement trials, it seems reasonable to expect that similar subjects will select alternative, unreinforced responses on the Halstead Test. Errors should increase when positive social reinforcement is paired with the correct concept attainment responses, because the three alternative responses are all errors.

Although the Halstead apparatus offers the advantage over the Taffel procedure of the separation of the effects of informational feed-back and social reinforcement contingencies (Appendix A), the problem of confounding the effects of punishment and extinction remains (Holz and Azrin, 1962). It had been demonstrated that explicit task-incentive for all subjects ensured that responses of unpunished control subjects were reliable measures to compare with responses of punished subjects. A study that investigated awareness and verbal conditioning (Mandler and Kaplan, 1956) illustrated the effects of punishment and of extinction. The Taffel (1955) procedure was used to condition twenty-eight students at a summer school. When the subjects were interviewed following the conditioning session, it was discovered that none of the subjects was able to state specifically what the contingency was. However, some of the subjects had concluded that the experimenter's verbal responses meant that they were doing something wrong. The other subjects had concluded that the experimenter's verbal responses meant that they were doing the task correctly. The investigators found that the former or "negative" subjects tended to decrease their use of the reinforced plural pronoun responses compared to their initial operant level. On the other hand, the latter or "positive" subjects made significant mean increases in the frequency of the reinforced plural pronoun responses during the reinforcement phase. During the extinction phase, the "positive" subjects' plural pronoun response frequency declined to operant levels. These authors (Mandler and Kaplan, 1956) noted that the total group mean differences between

the operant, reinforcement and extinction phases, did not differ significantly from each other. It was only when the subjects' evaluative responses were considered that significant differences were apparent. The significant mean difference between the "positive" and "negative" groups during the reinforcement phase was due to the effects of at least two independent variables. Punishment effects were confounded with positive reinforcement effects during this phase. It seems likely that some kind of incentive motivation might have been a control for the punishment effects (Holz and Azrin, 1962; Burchard and Tyler, 1965; Schwitzgabel and Kolb, 1964; Slack, 1960). By offering a prize to be presented at the end of the summer school to the subject who does the best, Mandler and Kaplan (1956) would have placed the onus for performing on each subject. This would have permitted the quality of the experimenter's verbal reinforcement to exert its full effects. Also, this would have negated any discriminative function of the experimenter's verbal reinforcement. Therefore, it may be that the "unsuccessful" conditioning studies (Johns and Quay, 1962; Quay and Hunt, 1965) not only made inadequate data tabulation but also confounded the effects of punishment and positive reinforcement.

In his analysis of the disrupting effect of unpleasant emotions on behaviour, Hebb (1949) may be pointing to some antecedents of the delinquent's behaviour. He saw a necessity for explaining not only the disruptive effect of emotion but also the integrated and co-ordinated aspects of emotional behaviour. In the case of co-ordinated behaviour associated with unpleasant emotion, the individual

tends to put an end to the original stimulation. In avoidance and escape behaviour, the individual may not only exhibit physical withdrawal but also may eliminate any line of thought leading up to the situation. In this respect, the delinquent has been characterized as showing little if any awareness of, or concern for, the consequences of his anti-social behaviour. If it is correct that sociability and friendliness and personal interest are aversive stimuli to these individuals, it might well be expected that their avoidance responses would tend to include not thinking about social relationships and this would eliminate these concepts as learning sets or mediational processes (Kendler and Kendler, 1962). If it were argued that aversively conditioned concepts tended to be avoided by means of proactive facilitation or a Freudian repression (Slameka, 1967; Mandler, 1967; Talland, 1968; Rapaport, 1950) an increase in error on the Halstead Category Test might be expected either temporarily or intermittently.

Against this background of clinical reports and speculation about the motivational peculiarities of delinquents, the present study investigated the effect of encouragement on the concept attainment behaviour of incarcerated delinquents. It was hypothesized that encouragement would result in a significantly higher incidence of errors in the Halstead Category Test because of the aversive qualities of the reinforcement. Errors would be the consequence of the selection of available unreinforced responses.

METHOD

Subjects. Thirty, white male, incarcerated delinquents, eighteen years plus or minus six months of age, were selected from a population of approximately nine hundred inmates ranging in age from 16 to 24. The subjects were assigned alternately to an experimental or a control group. Each subject had an authorized history, medical examination, intelligence test (Otis Quick Scoring), personality test (Rotter Incomplete Sentences Test) and psychological interview upon admission to the correctional institution. Subjects were selected within narrow limits on age (17-6/18-6 months), education (completed grade 8), I.Q. (95 - 105), and were free of medical evidence of brain damage and were completing their first correctional incarceration.

Apparatus. 1. The Halstead Category Test was used. It is a concept attainment task (Appendix A). It is presented to the individual subject on a series of 208 slides divided into seven subtests. The first subtest has eight slides; second has twenty; third, fourth, fifth and sixth, each have forty; and seventh has twenty. The first six subtests each have a distinct sorting principle which is learned through trial and error and applied throughout the subtest to achieve correct category responses. Feed-back to the subject is a chime for correct and a buzzer for incorrect responses. The seventh subtest is a memory test composed of a selection from all the preceding subtests. Total errors on the Category Test is a subject's score. The test is usually completed in one hour

(Master tabulation Form in Appendix B).

2. The Eysenck Personality Inventory is a test consisting of 57 statements. The subject indicates either agreement or disagreement with each statement. The test is usually completed in 10-15 minutes. Three scores are derived: Extraversion, Neuroticism and LIE scale score. There are norms for the general population and significant test-retest reliability studies in the manual (Copy of the EPI in Appendix C).

Procedure. Each subject completed the following three routines in the same consecutive order. The Ss were tested individually.

1. The first consisted of an introduction, giving of information, and a vocal commitment by each subject to participate as a volunteer. After being seated on one side of a table holding the Apparatus for the Halstead Test, in an interviewing room, they were told: "I am doing research and am asking you to take part. There is a possibility of winning a prize of cigarettes". (A carton of cigarettes was exhibited and placed on top of the Halstead apparatus and left there during each session). Each subject was informed that the prize would be given to the one who performed the best and would be awarded after the research was completed. A cardboard shield prevented subjects from seeing the experimenter's manipulation of the slide changer and information feed-back controls.

2. The Eysenck Personality Inventory was administered to each subject in a standard manner.

3. The Halstead Category Test was administered in a standard manner (see Appendix A) with the exception that the experimental

subjects were presented with encouragement during subtest Five. The encouragement was presented following each of ten correct responses after each experimental subject achieved a learning criterion in subtest Five of ten correct responses. The encouragement was presented as a verbal, positively evaluative response by the experimenter coinciding with the Halstead Test bell signalling a correct category response. The list of words in the serial order used by the experimenter is given in Appendix G.

Predictor variables. The data for these variables as ordered by the Rotter Incomplete Sentences Test, the Wilkins Recidivism Potential and Institutional Adjustment were obtained from information in each subjects file. The sentence completions on the Rotter Test are matched against examples in the manual and rated to give a total test score. The Wilkins Recidivism Potential tabulates and rates answers to questions about where the inmate had been living (urban vs. rural), with whom he had been living (parents or others), how he had been living (income) and previous convictions, thus giving a quantitative measure of subject's behaviour prior to incarceration. The Institutional Adjustment is a rating of the inmates daily conduct by prison personnel according to criteria presented in Appendix F.

RESULTS

The total number of incorrect responses made in each consecutive half-subtest from subtest three to six of the Halstead Category Test, was tabulated for each of the thirty subjects. The consecutive half-subtest means and standard deviations are presented separately for control and for experimental subjects in Table 1 and the half-subtest means are illustrated in Figure I. Reliability coefficient (split-half) for the experimental group is +.75 and for the control group is +.78.

In order to test the significance of the difference between the half-subtest means of all subtests, an analysis of variance was made on all eight half-subtest means. This was organized as a three factor analysis to observe the variability between the two groups of subjects, between the eight consecutive half-subtests, and between all the first half-subtests and second half-subtests. A test for homogeneity of variance utilizing the Cochran C test was not statistically significant (Winer, 1962). The summary of the analysis of variance with repeated measure is presented in Table 2. The main effects of the differences between the two groups was not significant. However, the main effects of the variability over the eight consecutive half-subtests, and, between all first and second half-subtests, were significant. The interaction between consecutive half-subtests and all first and second half-subtests, was significant which justified a further analysis of simple effects.

TABLE 1

Consecutive half-subtest means and standard deviations for the Halstead Category Subtests three to six.

Groups	Consecutive half-subtests							
	3_1*	3_2	4_1	4_2	5_1	5_2	6_1	6_2
Experimental Group Means	6.13	3.86	8.53	7.00	8.73	4.66	2.86	3.53
Standard Deviations	3.94	3.81	5.55	6.92	3.86	3.26	2.74	1.67
Control Group Means	9.30	8.13	7.26	6.20	8.26	6.66	4.00	3.40
Standard Deviations	7.58	6.65	5.56	6.21	3.84	4.04	3.63	2.41

*For example: 3_1 is the first half of subtest 3; 3_2 is second half of subtest 3.

FIGURE I

Mean Subtest Concept Attainment Errors for Both the Experimental and Control Groups by Consecutive Half Subtests.

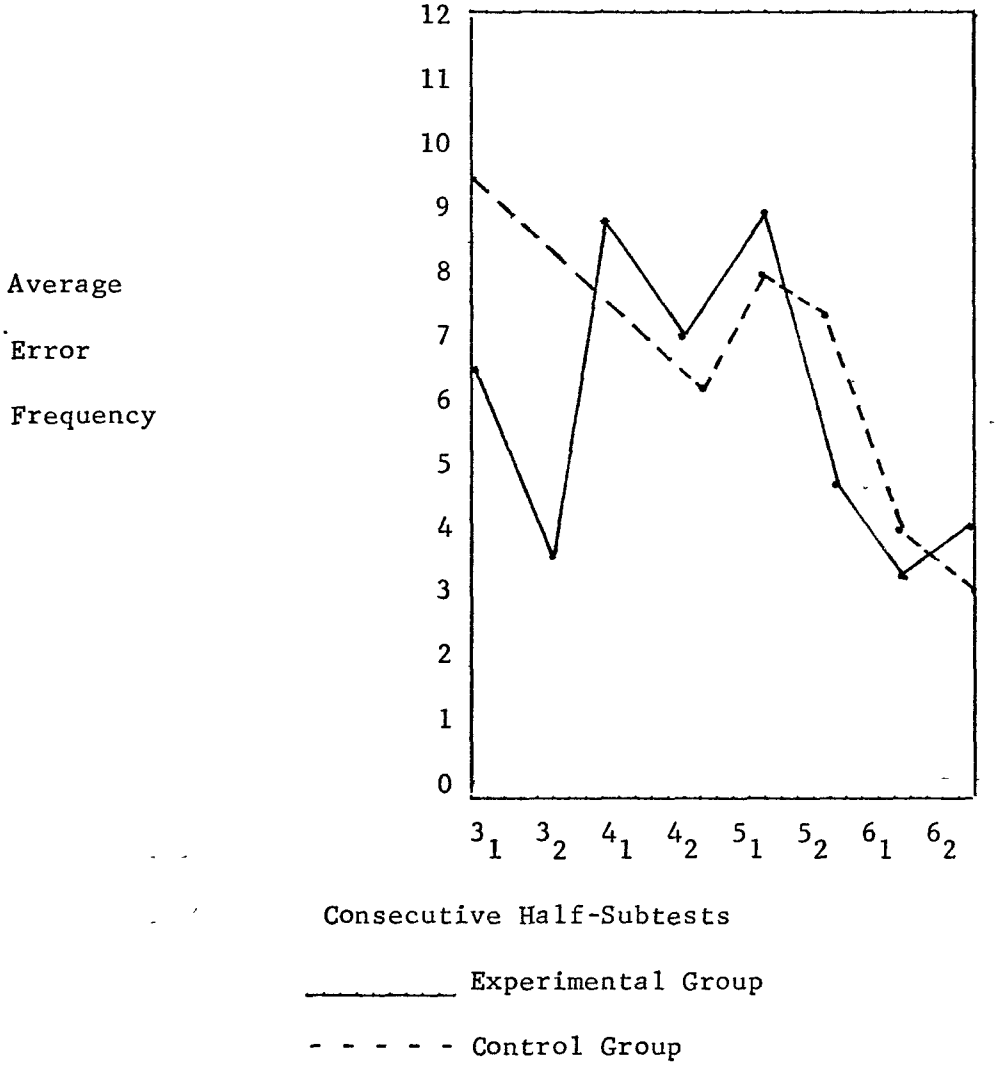


TABLE 2

Summary of Analysis of Variance of Halstead Error-Scores for Consecutive Half-Subtests Three to Six

Source	df	MS	F
Between subjects	29		
A (2 groups: experimental and control)	1	50.671	N S
Subj. w. groups	28	48.129	
Within subjects	210		
B (consecutive eight half-subtests)	3	197.6843	5.428 *
AB	3	62.323	
B x subj. w. groups (error (b))	84	36.4149	
C (first half subtests to second half subtests)	1	127.603	17.080 **
AC	3	5.113	
C x subj. w. groups (error (c))	28	7.4708	
BC	1	63.237	24.417 ***
ABC	3	6.197	2.39
BC x subj. w. groups (error (b))	84	2.5898	

* $F = (3,84), = 2.73$, $P = < .05$

** $F = (1,28) = 4.20$, $P = < .05$

*** $F = (1,84), = 3.97$, $P = < .05$

The Newman - Keuls procedure was used to test the significance of the differences between the half-subtest means. The means for each group presented in Table I were ordered according to magnitude beginning with the lowest on the left and are presented in Table 3 for the experimental group and Table 4 for the control group. Each table presents the ordered means and their differences in two dimensions. Critical values with which to test the significance of the mean differences are presented in Appendix D. Asterisks in Table 3 indicate several of the mean differences which are important for the hypothesis of the present study. The difference between the first half-subtest and second half-subtest of subtest five is significant. This indicated that the experimental stimuli tended to coincide with a reduced frequency of error in the second half-subtest for experimental subjects. Table 4 presents the same half-subtest mean differences for the control group. The figure of 1.60 in Table 4 indicated that the difference between the first half-subtest and second half-subtest of subtest Five was not significant for the control group. There are three other significant differences. Two of them concern the significant mean differences between the first half of subtest Five and the first half of subtest Six for both experimental and control groups. This finding is not unusual and probably represents a further learning effect because subtest Five and Six utilize the same concept attainment principle (Doehring and Reitan, 1962; 1961; Reitan, 1959 b). The third concerns the significant difference between the mean error of the last half of subtest Five and the last half of subtest Six achieved by the control group. The

TABLE 3

Neuman-Keuls Analysis of Halstead Category Test

Errors for the Experimental Group

Half Subtests

	6_1*	6_2	3_2	5_2	3_1	4_2	4_1	5_1
Means	2.86	3.53	3.86	4.66	6.13	7.0	8.53	8.73***
2.86		.67	1.00	1.80	3.27	4.14	5.67	5.87***
3.53			.33	1.13	2.60	3.47	5.00	5.20
3.86				.80	2.27	3.14	4.67	4.87
4.66					1.47	2.34	3.87	4.07**
6.13						.87	2.40	2.60****
7.0							1.53	1.73
8.53								.20

For example.

* 6_1 = First half-subtest of subtest Six

6_2 = Second half-subtest of subtest Six

** Significant difference between first half and second half of subtest Five

*** Significant difference between first half of subtest Five and first half of subtest Six

**** All mean differences above line are significant

TABLE 4

Neuman-Keuls Analysis of Halstead Category Test

Errors for the Control Group

Half Subtests

	6_2	6_1	4_2	5_2	4_1	3_2	5_1	3_1	
Means	3.4	4.0	6.2	6.66	7.26	8.13	8.26	9.3	
3.4		.60	2.80	3.26 *	3.86	4.73	4.86	5.90	
4.0			2.20	2.66	3.26	4.13	4.26	5.30	***
6.2				.46	1.06	1.93	2.06	3.10	
6.66					.60	1.47	1.60	2.64**	****
7.26						.87	1.00	2.04	
8.13							.13	1.17	
8.26								1.04	

* Significant difference between last half of subtest Five and last half of subtest Six

** Non-significant difference between first and second halves of subtest Five

*** Significant difference between first half of subtest Five and first half of subtest Six

**** All mean differences above line are significant

experimental group did not achieve this significant reduction of error. All other significant mean differences in Tables 3 and 4 were not meaningful in the sense that they did not employ the same concept attainment principle.

Scores on the Extraversion-introversion (E - I) and Neuroticism (N) scales of the Eysenck Personality Inventory (E P I) were obtained for each of the thirty subjects. Complete Rotter Incomplete Sentence scores (I S B), Wilkins Recidivism ratings and Institutional Adjustment rating were obtained for all experimental subjects but not for all control subjects because they were not available. Means and ranges are presented in Table 5.

The E P I means were very similar to those obtained for general population norms, i.e., adolescent and adult males (Eysenck and Eysenck, 1963). The mean for the E - scale norm is 12.07 and for the N - scale it is 10.52. The Rotter I S B mean as well as the lower limit of the range, are above Rotter's cut-off scores for adjusted and maladjusted subjects. The Wilkin's Recidivism rating mean matches the original value (Wilkins, 1968) for a fifty percent recidivism potential (Little, 1963; Marcus, 1960).

A significant positive Pearson product-moment correlation was obtained between the E P I: E - I scores and the concept attainment error totals of the second half of subtest Five of the Halstead Category Test for experimental but not control subjects. The correlation coeffecient for the experimental group was + .51 and for the control group was + .44 ($t(13) = .44$ $P < .05$). In other words, increasing

TABLE 5

Predictor variable Scores for experimental and control groups

Group	EPI: E - I	EPI: N	Rotter ISB	Wilkins	Institutional
Experimental Group Mean	13.86	10.26	154.6	25.16	13.6
Range	6 - 22	0 - 22	138 - 177	7.5 - 59	0 - 45
Control Group Mean	14.86	11.93			
Range	2 - 8	3 - 21			

N = 15 for all measures

extraversion scores correlated with increasing concept attainment errors for experimental subjects.

Since some experimental subjects increased their concept attainment errors during the presentation of the experimental stimuli, a further analysis of the data was made to observe the relation of error increase or decrease to predictor variable scores. Five tests of significance were made utilizing the t test for correlated measures. Biserial correlations were calculated for these tests on the five predictor variables for experimental subjects. The results of this analysis are presented in Table 6. Two t tests for correlated measure were made for control subjects. These data are presented in Table 7. The significant t-tests in Table 6 indicated that experimental subjects were divided into extraverted and introverted groups on the Extraversion-introversion scale and into high risk and low risk groups on Wilkin's Recidivism potential rating scale in terms of their performance on the last half of Halstead Category Test subtest Five. The Eysenck Personality Inventory Neuroticism Scale, Institutional Adjustment rating and Rotter Incomplete Sentences Test failed to indicate any relation to the increase or decrease of error frequency on Halstead Subtest Five for experimental subjects. The control subjects' scores on the Eysenck Personality Inventory Extraversion-introversion and Neuroticism Scales did not indicate any relationship to the increase or decrease of error frequency in the last half of the Halstead Category Test subtest Five.

TABLE 6

Predictor Variable Scores in Relation to Second Half of Halstead Subtest Five performance for Experimental Subjects

Variable	$S + \bar{X}$	$S - \bar{X}$	Biserial r	t Test*
Eysenck Personality Inventory (Extraversion)	18.5	13.15	.65	1.85**
Eysenck Personality Inventory (Neuroticism)	13.5	9.76	.32	.82
Wilkins (Recidivism Potential)	46.5	21.88	.94**	2.56II
Punishment (Institutional Adjustment)	27.5	11.46	.74**	1.01
Rotter Incomplete Sentences (Maladjustment)	147.0	155.84	.43	1.39

* t test of the difference between subjects who increased errors ($S+\bar{X}$) and subjects who decreased errors ($S-\bar{X}$) on the second half of subtest Five of the Halstead Category Test. This subtest involved the presentation of the experimental stimulus.

** Significant at the .05 l. of c.

TABLE 7

Predictor Variables compared with Halstead subtest Five performance for control subjects

Variable	$S + \bar{X}$	$S - \bar{X}$	Biserial r	t Test *
Eysenck Personality Inventory (Extraversion)	13.75	11.27	.25	.616
Eysenck Personality Inventory (Neuroticism)	15.75	14.54	.28	.644

* t test of the difference between subjects who increased errors ($S+\bar{X}$) and subjects who decreased errors ($S+\bar{X}$) on the second half of subtest Five of the Halstead Category Test. This subtest involved the presentation of the experimental stimulus.

Summary. 1. The statistical analysis indicated that experimental subjects increased the frequency of reinforced responses in the presence of social stimuli whereas control subjects who were not presented with social stimuli did not significantly increase the frequency of a similar response.

2. The frequency of error during the socially reinforced trials had a significant positive correlation with scores on the Extraversion-introversion scale of the E P I for experimental subjects.

3. When experimental subjects were divided into two groups according to their error scores during the socially reinforced trials, the groups differed in their mean predictor variable scores. One group who tended to show a decline in category response errors was found to score at the introversion end of the extraversion-introversion scale and to score at the "least likely" extreme of the Wilkins Recidivism Scale. The other group making increased errors scored at the Extraversion extreme of the E P I and also scored at the "most likely" extreme of the Wilkins Recidivism Scale. These effects were not found for the control Ss.

DISCUSSION

In order to support the experimental hypothesis that positive social stimuli are aversive to incarcerated delinquents, it had been predicted that the experimental group would have had to increase significantly their mean concept attainment errors during the presentation of the experimental stimuli. This did not occur. Instead, the experimental group made a significant reduction in their mean error frequency between the first and second halves of subtest Five of the Halstead Category Test. Since the control group did not achieve this significant reduction in mean error frequency, it seemed to imply that most of the experimental subjects responded "normally" to positive social reinforcement. Nevertheless, an explanation of this outcome based on clinical observations made during the study and an evaluation of the performance of both control and experimental groups in subtests subsequent to subtest Five coupled with theoretical considerations concerning the cue value of the experimenter's responses, tends to give some support to the experimental hypothesis.

Experimental subjects were unobtrusively observed by another experimenter to tremble and perspire freely during the presentation of the positive social stimuli. When these clinical observations are combined with the results of recent studies on the discriminative function of aversive stimuli (Azrin and Holz,

1966; Holz and Azrin, 1962) it suggests that the experimental subjects may have been responding to a discriminative cue associated with punishment. This seems reasonable because the experimenter was in fact, the agent who eventually would assign the rewards of cigarettes. Therefore, any response by the experimenter involving social approval could have been interpreted by the experimental subjects to be some kind of confirmation of future reward. Although interpretations of social approval by experimental subjects were not formally measured in the present study, spontaneous remarks by many of the subjects indicated that none seemed aware of the experimental contingency between the social stimuli and the object of the investigation. It seems unlikely that the improved performance represented an attempt to please the experimenter.

If the social stimuli had been largely rewarding, it seems likely that improved performance by most of the experimental subjects would have been sustained in subtest performance subsequent to subtest Five and significant differences between succeeding mean error reductions, would be the quantitative findings. On the other hand, if the social stimuli were dominantly aversive but had a discriminative function which was associated with a reward which might follow the stimuli at some future time, the improved performance associated with the presentation of the stimuli would probably return to control levels following the cessation of the stimuli. This impairment in performance would

occur because the arousal state (Malmo, 1959) accompanying the presentation of the aversive stimuli would be unpleasant and not likely to be sustained beyond the stimuli withdrawal (Bandura and Walters, 1963). The significant difference between the mean errors of the second half of subtest Five and the first half of subtest Six for the control group but not for the experimental group favours the interpretation that the social stimuli were aversive with a discriminative cue function of impending reward. The one instance in the Halstead Category Test results of a mean increase in errors between consecutive half subtests utilizing the same concept attainment principle, occurred for experimental subjects in the subtest following the presentation of the experimental stimuli. Although, this difference in half-subtest mean errors for the experimental group was not statistically significant, it is important to note that the performance of the experimental group did in fact regress to the level of performance of the matched control group.

Failure to control for the discriminative function of social stimuli may also be a reason for apparently contradictory results in recent studies of the verbal conditioning of incarcerated delinquents (Persons and Persons, 1965). In studies (Johns and Quay, 1962; Quay and Hunt, 1965) utilizing a standard verbal conditioning procedure (Taffel, 1955) where instructions were to

"say as many words as you can. Don't repeat words and don't say numbers or phrases", with experimenters of the same sex as the subjects, one class of incarcerated delinquents did not make a significant change on the dependent variable. However, when rewards of money and cigarettes were included in the method and/or experimenter social class or sex was varied, these incarcerated delinquents made significant changes in measures on the dependent variable (Bernard and Eisenman, 1967; Stewart and Resnick, 1970; Bryan and Kapche, 1967).

It has been stated previously that the standard verbal conditioning procedure under consideration (Taffel, 1955) is somewhat deficient for measuring some attributes of verbal conditioning. For instance, if the social stimuli ("mm - hmm" or "good") were aversive to some subjects and they did not produce significant increases in the reinforced response, they might be labeled as insensitive to social stimuli. Whereas, these subjects might be increasing the frequency of a response which was not being measured or observed by the experimenter. This possibility has been noted in one study (Johns and Quay, 1962) and included under a response category of "self-reinforced" responses. Therefore, it seems arbitrary to conclude that these incarcerated delinquents were insensitive to social stimuli in some cases (Johns and Quay, 1962; Quay and Hunt, 1965) and sensitive to social stimuli in other cases (Bernard and Eisenman, 1967: Bryan and Kapche, 1967: Stewart and Resnick, 1970). Rather, it seems more adequate to

design a study which would control both the reinforcing and discriminative functions of experimental stimuli. This suggestion applies to the present study, as well. Future studies utilizing the Halstead Category Test to investigate the aversive functions of social stimuli would need to incorporate a control for the discriminative function of these stimuli (Azrin and Holz, 1962).

Thus, evidence from clinical observations (trembling and perspiring of experimental subjects), animal experiments (Holz and Azrin, 1961), evaluations concerning the differences between the performances of the experimental and control groups, and comparisons between the present study and studies of verbal conditioning of incarcerated delinquents, tends to support the experimental hypothesis. Since the present study did not incorporate a control for the discriminative function of the experimental stimuli however, the quantitative experimental results of the social conditioning stand in contradiction to the experimental hypothesis.

Although the predictor variables do not convey information concerning the reinforcement valences of the experimental stimuli, they provide some assessment of the personality characteristics of the subjects of this study and some implications of the results of the conditioning to other studies involving incarcerated delinquents. As expected for the predictor variables of Extra-version-introversion and Neuroticism and in agreement with the

results of other studies (Quay and Hunt, 1965; Franks, 1963; Eysenck and Rachman, 1966: Franks, 1968), conditioning scores were significantly correlated with the Extraversion-introversion variable but not with the Neuroticism variable (Franks, 1968; Bieri, Blacharsky and Reid, 1961). The subjects of the experimental group who demonstrated difficulty in conditioning tended to make higher scores on the extraversion end of this personality dimension. This finding is important not only for theories of the origins of criminal and delinquent behaviour (Eysenck and Rachman, 1966; Franks, 1968), but also for future studies of the conditionability of incarcerated delinquents. For instance, a real possibility exists of erroneously attributing a decrement in performance (increased error) to some stimulus characteristic because of insufficient information about the subject's status on the dimension of Extraversion-introversion.

Selection of subjects without regard for their personality trait characteristics might eventuate in a control and an experimental group which are not adequately equated on relevant variables. The scores of the experimental group on the Extraversion-introversion dimension, were dichotomized on the basis of their performance during subtest Five on the Halstead Category Test (Table 6). However, not enough control subjects achieved relatively extreme Extraversion

scores to make a significant mean difference between those subjects who increased errors and those who decreased errors on subtest Five of the Halstead Category Test (Table 7). Neglecting to control this personality variable may be one of the reasons why there is conflicting evidence concerning the response to psychotherapy of "sociopaths" (Persons, 1965; Persons and Persons, 1965) and "psychopaths" (Johns and Quay, 1962). If psychotherapy is dependent to a large extent on conditionability, then a clinical diagnosis which did not adequately assess this variable might not have more than a chance relationship to outcome. Nevertheless, the results of the present study give partial support to a theory of "criminoginicity" which involves conditioning, personality traits and recidivism potential (Franks, 1968; Fitch, 1962). On the basis of individual subject's increase or decrease in category response errors on the Halstead subtest Five, the experimental group was divided into two groups on each of the three variables. The variables of conditionability and personality trait were in agreement with the theory but the variable of recidivism potential was not in agreement. Subjects who exhibited difficulty in conditioning operationally defined as increased errors also had extreme extraversion scores. Subjects who conditioned easily (decreased errors) had relatively extreme introversion scores. Since subjects who conditioned easily were expected to come from

a delinquent sub-culture where they had learned how to be delinquent, it was expected that these subjects would score on the Wilkins ratings as the most likely to recidivate. However, in disagreement with the theory, these subjects were rated as the least likely to recidivate. Only two experimental subjects had difficulty (increased error) while thirteen conditioned easily (decreased error) when the experimental stimulus was presented on Halstead Subtest Five.

The results of the present study indicate that many of these subjects can learn principles with which to guide their behaviour. Surely, we could expect them to be able to learn principles of guidance with a wider connotation, concepts with an evaluative dimension (Rhine, 1958), even if it was necessary to use a bell and buzzer for a feed-back arrangement (Halstead, 1956). It might be mentioned that the concept of conditionability was discussed in the light of data derived from both operant and respondent conditioning studies relevant to Frank's (1968) theory of criminoginicity.

In conclusion, it can be stated that a more adequate test of the hypothesis of the aversiveness of social stimuli, for incarcerated delinquents should include a control for the discriminative function of the social stimuli and the use of personality test of Extraversion-introversion and Wilkins Recidivism Potential scale for the selection of equated groups of subjects.

REFERENCES

Apter, N. S., Halstead, W. C., and Heimburger, R. F., "Impaired Cerebral Functions in Essential Hypertension", Amer. J. Psychiat., 1951, 107: 808 - 813.

Argyle, M., The Psychology of Interpersonal Behaviour. London: Penguin, 1967.

Azrin, N. H. and Holz, W. C., "Punishment". In W. K. Honig (Ed), Operant Behaviour: Areas of Research and Application. New York: Appleton-Century, 1966, pp. 380-447.

Baker, B. O., and Sarbin, T. R. "Differential Mediation of Social Perception as a Correlate of Social Adjustment", Sociometry, 1956, 19: 69-83.

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

Bartholomew, A. A., "Extraversion-Introversion and Neuroticism in First Offenders and Recidivists", Brit. J. Delinq., 1959, 10: 120-129.

Beech, H. R., Changing Man's Behaviour. London: Pelican A 1015, 1969.

Bernard, J. L. and Eisenman, R."Verbal Conditioning in Sociopathy with Social and Monetary Reinforcements", J. of Personality and Social Psychology, 1967, 6: 203-206.

Bieri, J., Blacharsky, E. & Reid, J. W., "Predictive Behaviour and Personal Adjustment", Journal of Consulting Psychology, 1955, 19: 351-356.

Bloch, D. A., "The Delinquent Integration", Psychiatry, 1952, 15: 297-303.

Bruner, J. S., "The course of cognitive growth", American Psychologist, 1964, 19: 1-15.

Bryan, J. H. and Kapche, R., "Psychopathy and Verbal Conditioning", J. Abnorm. Psychol., 1967, 72: 71-73.

Burchard, J. and Tyler, V., "The Modification of delinquent behaviour through operant conditioning", Behav. Res. Ther., 1965, 2: 245-250.

Chapman, L. F. and Wolff, H. G., "The Cerebral Hemispheres and the Highest Integrative Functions of Man", Arch. Neurology, 1959, 1: 357-424.

Conger, J. J., Miller, W. C. & Walsmith, C. R., "Antecedents of Delinquency: Personality, Social Class and Intelligence". In Mussen, P. H., Conger, J. J. & Kagan, J. (Eds). Readings in Child Development and Personality. New York: Harper & Row, 1965.

Doehring, D. G. & Reitan, R. M., "Concept attainment of human adults with lateralized cerebral lesions", Perceptual and Motor Skills, 1962, 14: 27-33.

Doehring, D. G. & Reitan, R. M., "Behavioural Consequences of Brain Damage Associated with Homonymous Visual Field Defects", J. Comp. Physiol. Psych., 1961, 54, 5: 489-492.

Driver, P. M., "An Ethological Approach to the Problem of Mind". In Corning, W. C. and Balaban, M. W. (Eds) The Mind: Biological Approaches to its Functions. New York: John Wiley & Sons, 1968, pp. 259-282.

Eysenck, H. J. & Eysenck, S. B. G., Manual of the Eysenck Personality Inventory. University of London Press Ltd., 1964.

Eysenck, H. J., Fact and Fiction in Psychology. London: Pelican a 696, 1965.

Eysenck, H. J. & Rachman, S., "Dimensions of Personality". In Semeonoff, B. (Ed.) Personality Assessment. London: Penguin, 1966.

Fitch, J. H., "Two Personality Variables and Their Distribut in a Criminal Population: An Empirical Study", Brit. Soc. Clin. Psychol., 1962, 1: 161-167.

Fitzhugh, K. B., Fitzhugh, L. P. & Reitan, R. M., "Adaptive Abilities and Intellectual Functioning in Hospitalized Alchoholics", Quarterly J. of Studies on Alcohol, 1960, 21: 414-423.

Fitzhugh, K. B., Fitzhugh, L. C. & Reitan, R. M., "Psychological Deficit in Relation to Acuteness of Brain Dysfunction", J. Consult. Psychol., 1961, 25: 61-66.

Fowler, W., "Cognitive learning in infancy and early childhood", Psychol. Bull., 1962, 59: 116-152.

Franks, C. M., "Recidivism, Psychopathy and Personality". In Quay, H. C. (Ed.) Children's Behaviour Disorders. Toronto: Van Nostrand, 1968.

Franks, C. M., "Conditioning and Personality: A Study of Normal and Neurotic Subjects". In Quay, H. C. (Ed.) Research in Psychopathology. Toronto: Van Nostrand, 1963, pp. 31-48.

Grant, J. D. & Grant, M. Q., "A group dynamics approach to the treatment of nonconformists in the navy", Annals of the of the American Academy of Political and Social Science, 1959, 322: 126-135.

Halstead, W. C., Brain and Intelligence: A Quantitative Study of the Frontal Lobes. Chicago: University of Chicago Press, 1956.

Halstead, W. C., "Biological Intelligence". J. Personality. 20, 1951 (a), 118-130.

Halstead, W. C., "Brain and Intelligence". In Jeffress, L. A. (Ed.) Cerebral Mechanisms in Behaviour. New York: John Wiley & Sons, 1951 (b) 244-268.

Halstead, W. C., "A Technique for Charting Neurosurgical Lesions", J. Neurosurg., 1946, 3: 453-268.

Halstead, W. C., "A power Factor (P) in General Intelligence: the Effect of Brain Injuries", Journal of Psychology, 1945, 20: 57-64.

Halstead, W. C., "The Frontal Lobes and the Higher Levels of Consciousness", Arch. Neurol. Psychiat., 1944, 52: 252-253.

Halstead, W. C., "Preliminary Analysis of Grouping Behaviour in Patients with Cerebral Injuries by the Method of Equivalent and Non-equivalent Stimuli", Am. J. Psychiat., 1940, 96: 1263-1294.

Halstead, W. C. & Settlage, P. H., "Grouping behaviour of normal persons and of persons with lesions of the brain", Arch. Neurol. Psychiat., 1943, 49: 489-506.

Halstead, W. C. & Wepman, J. M., "The Halstead-Wepman Aphasia Screening Test", J. of Speech and Hearing Disorders, 1949, 14: 9-15.

Hebb, D. O., Organization of Behaviour. New York: John Wiley, 1949.

Heimburger, R. F. and Reitan R. M., "Easily Administered Written Test for Lateralizing Brain Lesions", J. Neurosurg., 1961, 18: 301-312.

Holz, W. C., and Azrin, N. H., "Interactions between the Discriminative and Aversive Properties of Punishment", J. of Experimental Analysis of Behaviour, 1962, 5: 229-234.

Holz, W. C. And Azrin, N. H., "Discriminative properties of Punishment", J. of Experimental Analysis of Behaviour, 1961, 4: 225-232.

Johns, J. H. and Quay, H. C., "Response to Verbal Reward", J. Consult. Psychol., 1962, 26: 217-220.

Jones, D. S., Livson N. H., and Sarbin T. R., "Perceptual completion Behaviour in Juvenile Delinquents", Perceptual and Motor skills, 1955, 5: 141-146.

Keller, F. S., Learning, Reinforcement Theory. New York: Random House, 1954.

Kendler, T. S., "Concept Formation", Ann. Rev. Psychol., 1961, 13: 447-472.

Kendler, H. H., & Kendler, T. S., "Vertical and Horizontal Processes in Problem Solving", Psychol. Rev., 1962, 69: 1-16.

Klove, H., "Relationship of differential Electroencephalographic patterns to Distribution of Wechsler - Bellevue scores", Neurology, 1959, 9: 971-876.

Klove, H. and Reitan R. M., "Effect of Dysphasia and Spatial Distortion on Wechsler - Bellevue Results.", Arch. Neurol. Psychiat., 1958, 80: 708-713.

Klove, H., White P. and Taylor R., "Correlation of EEG and neuropsychological studies in organic brain disease", Electroenceph. Clin. Neurophysiol., 1959, 11: 844.

Little, A., "Professor Eysenck's Theory of Crime: An Empirical Test on Adolescent Offenders", Brit. J. of Criminology, 1963, 4: 152-163.

Lykken, D. T., "A study of anxiety in the sociopathic personality". In Quay, H. C. (Ed), Research in Psychopathology. Toronto: Van Nostrand, 1963.

Maher, B. A., Principles of Psychopathology. New York: McGraw-Hill, 1966, pp. 208-237.

Malmo, R. B., "Activation: A Neurophysiological Dimension", Psych. Review, 1959, 66: 376-386.

Mandler, G., "Verbal Learning", in New Directions in Psychology III, 1967. Holt, Rinehart and Winston, pp. 1-50.

Mandler G. and Kaplan, W. K., "Subjective Evaluation and Reinforcing Effect of a Verbal Stimulus", Science, Sept. 1956, 124: 582-583.

Marcus, B., "A Dimensional Study of a Prison Population", Brit. J. of Criminol., 1960, 1: 130-155.

Milner, B., "Effects of Different Brain Lesions on Card Sorting", Arch. Neurol., 1963, 9: 90-100.

Osler, S. F., & Fovel, M. W., "Concept Attainment: 1. The role of age and intelligence in concept attainment by induction", Journal of Experimental Psychology, 1961, 62: 1-8.

Payne, R. W., "Cognitive Abnormalities". In Eysenck, H. J. (Ed) Handbook of Abnormal Psychology, New York: Basic Books, 1961, pp. 193-261.

Peck, P. F., & Havighurst, R. J., The Psychology of Character Development. New York: Wiley, 1960.

Persons, R. W., and Persons, C. E., "Some Experimental Support of Psychopathic Theory: A Critique", Psych. Reports, 1965, 16: 745-749.

Persons, R. W., "Psychotherapy with sociopathic Offenders" An Empirical Evaluation", J. of Clinical Psychol., 1965, 21: 205-207.

Quay, H. C., "Personality and Delinquency", In Quay, H. C. (Ed.) Juvenile Delinquency. Toronto: Van Nostrand, 1965. pp. 139-169.

Quay, H. C. & Hunt, W. A., "Psychopathy, Neuroticism and Verbal Conditioning: A Replication and Extension", J. Consult. Psychol., 29, 3: 283.

Rapaport, D., Emotions and Memory. New York: Science Editions, 1950.

Redl, F. & Wineman, D., Children Who Hate. New York: Free Press, 1965.

Reed, H. B. C. & Reitan, R. M., " A comparison of the Effects of the Normal Aging Process with the Effects of Organic Brain-Damage on Adaptive Abilities", J. Gerontol. 1963, 18: 177-179.

Reese, H. H., "Verbal mediation as a function of age level", Psychol. Bull., 1962, 59: 502-509.

Reitan, R. M., "Psychological Deficit", Ann. Rev. Psychol., 1962, 13: 415-444.

Reitan, R. M., "Psychological Deficits in Relation to Acuteness of Brain Dysfunction", Jour. of Consulting Psychology, 1961, 25: 61-66.

Reitan, R. M., "The significance of dysphasis for intelligence and adaptive abilities", Journal of Psychology, 1960, 50: 355-376.

Reitan, R. M., "The Comparative Effects of Brain Damage on the Halstead Impairment Index and the Wechsler - Bellevue Scale", J. of Clin. Psychol., 1959, (a) 15: 281-285.

Reitan, R. M., "Impairment of Abstraction Ability in Brain Damage: Quantitative Versus Qualitative Changes", J. of Psychology, 1959, (b), 48: 97-102.

Reitan, R. M., "Effect of Brain Lesions on Adaptive Abilities in Human Beings", Mimeograph, 1-128, Neuropsychology Laboratory, Indiana University Medical Center, Jan. 1959 (c).

Reitan, R. M. "Correlations between the Trail Making Test and the Wechsler - Bellevue Scale", Percep. Motor Skills, 1959, (d) 9: 127-130.

Reitan, R. M., "Effects of Brain Damage on a Psychomotor Problem Solving Task", Percep. Motor Skills, 1959, (e) 9: 211-215.

Reitan, R. M., "Qualitative Versus Quantitative Mental Changes Following Brain Damage", J. of Psychology, 1958, 46: 339-346.

Reitan, R. M., "Investigation of Relationships between 'Psychometric' and 'Biological' Intelligence", Jour. of Nervous and Mental Dis., 1956, (a) 123: 536-541.

Reitan, R. M., "The Relationship of the Halstead Impairment Index and the Wechsler - Bellevue Total Weighted Score to Chronological Age", J. Gerontol., 1956 (b) 111: 447.

Reitan, R. M., "The Distribution according to Age of a Psychologic Measure Dependent upon Organic Brain Functions", J. Gerontol., 1955, (a) 101: 338-340.

Reitan, R. M., "Certain Differential Effects of Left and Right Cerebral Lesions in Human Adults", J. Comp. Physiol. Psychol., 1955, (b) 48: 474-477.

Reitan, R. M., "Investigation of the Validity of Halstead's Measures of Biological Intelligence", Archives of Neurology and Psychiatry, 1955, (c) 73: 28-35.

Reitan, R. M., "Intellectual and Affective Changes in Essential Hypertension", Amer. J. Psychiat., 1954, 110: 817-824.

Reitan, R. M., "Intellectual and Affective Functions in Chronic Brucellosis", Amer. J. Psychiat., 1953, 110: 19-28.

Reitan, R. M. & Tarshes, E. L., "Differential Effects of Lateralized Brain Lesions on the Trail Making Test", J. Nerv. Ment. Dis., 1959, 127: 257-262.

Rhine, R. J., "A Concept-Formation Approach to Attitude Acquisition", Psychological Review, 1958, 65: 362-370.

Ross, A. T. and Reitan, R. M., "Intellectual and Affective Functions in Multiple Sclerosis", Archives of Neurology and Psychiatry, 1955, 73: 663-677.

Rotter, J. B., Social Learning and Clinical Psychology. New Jersey: Prentice - Hall Inc., 1964.

Rubin, S., Crime and Juvenile Delinquency. New York: Oceana Publications, 1958.

Russell, J. R. and Reitan, R. M., "Psychological Abnormalities in Agenesis of the Corpus Callosum", J. Nerv. Ment. Dis., 1955, 123: 205-214.

Schulman, I., "Delinquents". In Slavson, S. R., Eds. The Fields of Group Psychotherapy. New York: John Wiley & Sons. 1956.

Schwitzgebel, R., and Kolb, D. A., "Inducing Behaviour Change in Adolescent Delinquents", Behav. Res. Ther. 1964, 1: 297-304.

Sherman, L. J., "Retention in Psychopathic, Neurotic and Normal Subjects". In Quay H. C. (Ed.) Research in Psychopathology, Toronto: Van Nostrand, 1963.

Shure, G. H., & Halstead, W. C., "Cerebral Localization of Intellectual processes", Psychol. Monogr. 1958, 72, No. 12, (Whole No. 465).

Slack, C. W., "Experimenter - Subject Psychotherapy: A new Method of Introducing Intensive Office Treatment for Unreachable cases", Ment. Hyg., 1960, 44: 238-256.

Slameka, N., Human Learning and Memory. New York: Oxford University Press, 1967.

Spence, K. W., "A theory of emotionally based drive (D) and its relation to performance in simple learning situations", Amer. Psychol., 1958, 13: 131 - 141.

Stewart, D. J. & Resnick, J. H., "Verbal Conditioning of Psychopaths as a Function of Experimental-Subject Sex Differences", J. Abnorm. Psychol., 1970, 75: 90-92.

Sullivan, C., Grant, M. Q. & Grant, J. D., "The Development of Interpersonal Maturity: Applications to Delinquency", Psychiatry, 1957, 20: 373-385.

Taffel, C., "Anxiety and the Conditioning of Verbal Behaviour", J. Abnorm. Soc. Psychol., 1955, 51: 496-501.

Terman, L. M., & Merrill, M. A., Measuring Intelligence. New York: Riverside, 1937.

Talland, G. A., Disorders of Memory and Learning. London: Penguin, 1968.

Tong, J. E., "Abstraction Ability and Impairment", Brit. J. Med. Psychol., 1955, 28: 19-28.

Wechsler, D., The Measurement of Adult Intelligence. Baltimore: Wilkins, 1944.

West, D. J., The Young Offender. London: Pelican A 872, 1967.

Wilkins, L. T., "Criminology". In Welford, A. T., et al (Eds) Society, London: Routledge, 1968.

Winer, B. J., Statistical Principles in Experimental Design. Toronto: McGraw - Hill, 1962.

APPENDIX A

HALSTEAD CATEGORY TEST

INSTRUCTIONS FOR ADMINISTRATION

The Task of the Halstead Category Test and Subject Instructions

The subject is required to respond to stimulus figures presented on a series of slides by depressing one of four levers for each slide or stimulus presentation. An automatic, immediate feedback arrangement of a bell for correct category responses and a buzzer for incorrect category responses, is part of the apparatus (Doehring and Reitan, 1962).

There are 208 slides divided into seven subtests. Subtest One has eight items for a test warm-up. Subtest Two has twenty slides. Subtests Three to Six, each have forty items or slides. Each of these subtests illustrates one method or principle of abstraction or grouping. Subtest Seven has twenty items and these are a sampling from the preceding six subtests. Halstead (1956) labeled subtest Seven a "recognition test", and claimed with others (Talland, 1968) that it was an important part of concept attainment. A picture of the apparatus is included in this Appendix. The usual scoring procedure on the Halstead Category Test is to total the errors.

However, in more detail, the Halstead Category Test is comprised of a slide projector, 208 slides and a screen in one end of a painted plywood box. The projector is placed in the opposite end of the box to the screen in such a way that the slide image will be projected on the inner side of the translucent screen. The subject and experimenter sit at the screen end of the plywood box. Four response levers are situated in a row beneath the screen to enable the subject to make his category responses. The experimenter has a small box (with two

small levers exposed on top) in front of his position. One lever is a remote control slide-changer and the other lever is to pre-set the subject's four levers so only one will be the correct response and ring the feed-back bell signal while the others would sound the buzzer. The pre-setting is from a master sheet exposed only to the experimenter's vision. (Copy is in Appendix B). When the test commenced, the experimental room light was dimmed to allow the light of the screen and stimulus figures to be more readily perceived.

Reitan (1960) stated that there appears to be no doubt that this test is a complex "abstraction" test requiring fairly sophisticated ability in noting similarities and differences in stimulus material. The test necessitates postulating hypotheses that appear reasonable with respect to recurring similarities and differences in the stimulus material. It involves the testing of these hypotheses with respect to reality considerations (the bell and the buzzer), and learning through adaptation of the hypotheses in accordance with the positive and negative reinforcement accompanying each response.

It would certainly seem that this test requires thinking ability and perhaps even thinking ability of quite a high order (Reitan, 1960; Halstead, 1951). Highly reliable differences between control groups and groups with brain damage have been consistently presented in previous studies. These studies suggest that the Category Test is one of the most sensitive psychological tests to the effects of cerebral dysfunction that has ever been devised. The results suggest that the abilities the Category Test measures are seriously impaired by organic brain damage but that the presence or absence of dysphasia per se is not specifically relevant to the results obtained. There was no

difference between the brain damaged dysphasic group suffering from organic impairment of abilities in reading, writing, calculating, and naming of common objects, and the brain damaged group without dysphasia (Reitan, 1960).

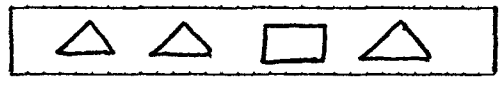
The Category Test does not appear to have any elements of artificiality or nonsense. Subjects made comments that could be interpreted to mean that the test was both challenging and enjoyable. The validity and reliability data (Halstead and Settlage, 1943; Halstead, 1947; Shure and Halstead, 1958; Reitan, 1960) indicate that the test can be administered to subjects ranging in age from eleven years to eighty-five years, and ranging in I.Q. scores from 70 to 145 (Terman-Merril and Wechsler-Bellevue). The Halstead Category Test seems to fit the primitive, conjunctive and disjunctive and relational rules for grouping stimuli during the various subtests.

In Subtest I (eight slides), a Roman numeral I, II, III, or IV, is presented, and the correct response is depression of the lever whose number corresponds to the Roman numeral. On Subtest Two (20 slides) a horizontal series of 1, 2, 3 or 4 figures is presented, and the correct response is depression of the lever whose number corresponds to the number of figures presented. On Subtest Three (40 slides) four figures are presented on each stimulus, one of which differs from the other three in colour, size, shape, outlined or solid figure, or a combination of these attributes, and the correct response is depression of the lever whose horizontal position corresponds to that of the figure which differs most among the four

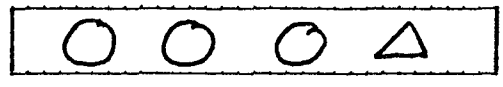
stimulus figures. On Subtest Four (40 slides) each stimulus can be divided into quadrants and the correct response is depression of the lever which corresponds to the number of segments in the figure.

Test instructions consisted in directing the subject's attention toward the screen of the Halstead Category Test on which was showing slide number one, a Roman numeral two. The subject was instructed to look at the row of four levers below the screen which are numbered one to four from left to right and was told that what he saw on the screen should remind him of a number. The number of the lever which corresponded to what he saw on the screen should be pressed down. The subject moved the appropriate lever and a bell sounded. The subject was informed that the bell meant that he was correct. He was asked to move any other lever and when this was done, a buzzer sound occurred. The subject was told that the buzzer meant that he was incorrect and that he would get only one chance for each slide he would be shown. This first subtest was for practice and warm-up and consisted of eight slides and the experimenter exposed each slide by operating a lever on his console following a response by the subject.

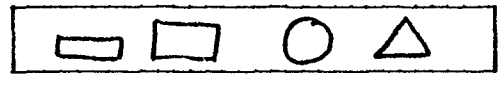
Examples of slides from Subtest Three exposed serially to subjects:



(Third Lever Correct)



(Fourth Lever Correct)



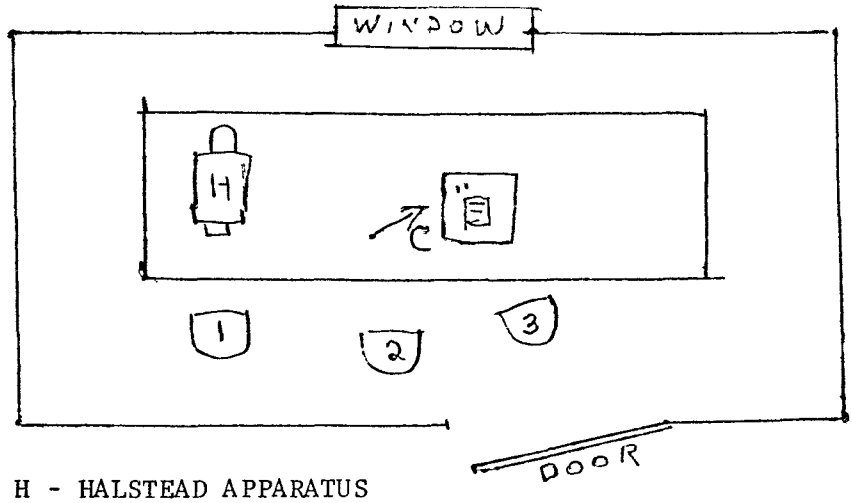
(First Lever Correct)

In this Subtest Three, the odd figure in each set indicates which one of the four levers should be pressed for correct response.

When subtest number One was completed, the subject was informed that this was finished and that subtest Two was about to begin. The subject was instructed to try to find out what the principle for sub-Two was and that it might be the same as subtest One or it might be different.

Subtest Two consisted of twenty slides and when these were completed, the subject was told. Subtest Three consisted of forty slides and was introduced in the same manner by instructing the subject to try to find out the principle and that it might be the same as or different from the preceding subtest. Subtests numbers Four, Five and Six each consisted of forty slides and followed in the same manner. Subtest Seven, the last in the test, consisted of twenty slides which were a selection of copies of slides from the preceding subtests and was a test of recognition or memory function. The subject was informed that subtest Seven was a test to see if he could remember what the different principles were for each slide and was asked to make the same answer again.

PLAN OF EXPERIMENTAL ROOM AND FURNISHINGS



H - HALSTEAD APPARATUS
C - EXPERIMENTER'S CONSOLE
1,2,3 - CHAIRS

APPENDIX B

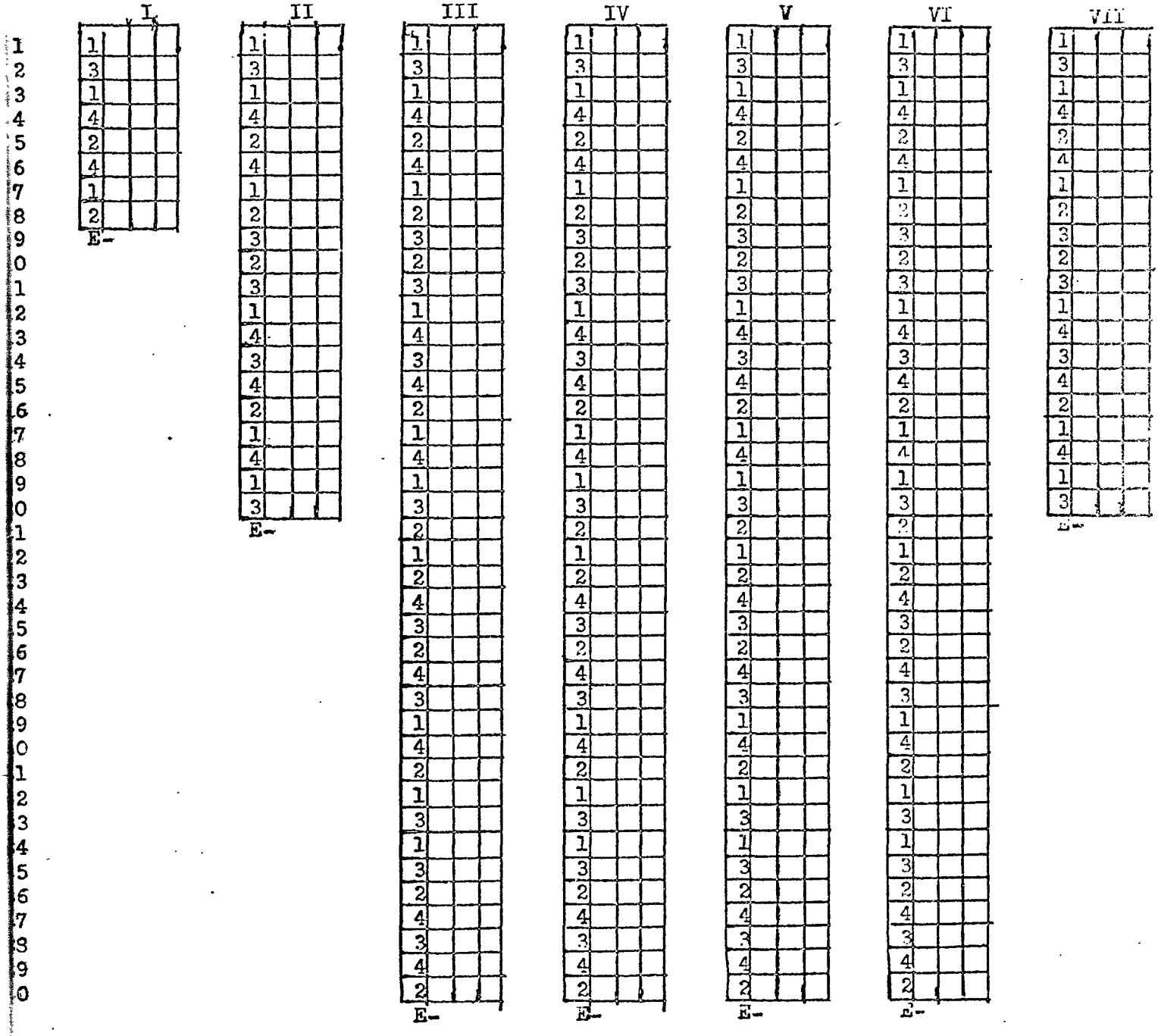
HALSTEAD CATEGORY TEST

MASTER SHEET

Adult Form

Halstead Category Test (MASTER SHEET)

Name_____ Date_____ Examiner_____ Score_____



APPENDIX C

EYSENCK PERSONALITY INVENTORY

EP1

. Do you often long for excitement? . . . . . Yes No

. Do you often need understanding friends to cheer you up? . . . . . Yes No

. Are you usually carefree? . . . . . Yes No

. Do you find it very hard to take no for an answer? . . Yes No

. Do you stop and think things over before doing anything? . . . . . Yes No

. If you say you will do something do you always keep your promise, no matter how inconvenient it might be to do so? . . . . . Yes No

. Does your mood often go up and down? . . . . . Yes No

. Do you generally do and say things quickly without stopping to think? . . . . . Yes No

. Do you ever feel "just miserable" for no good reason? Yes No

. Would you do almost anything for a dare? . . . . . Yes No

. Do you suddenly feel shy when you want to talk to an attractive stranger? . . . . . Yes No

. Once in a while do you lose your temper and get angry? . . . . . Yes No

. Do you often do things on the spur of the moment? . . . Yes No

. Do you often worry about things you should not have done or said? . . . . . Yes No

. Generally do you prefer reading to meeting people? . . Yes No

. Are your feelings rather easily hurt? . . . . . Yes No

. Do you like going out a lot? . . . . . Yes No

. Do you occasionally have thoughts and ideas that you would not like other people to know about? . . . . . Yes No

. Are you sometimes bubbling over with energy and sometimes very sluggish? . . . . . Yes No

. Do you prefer to have few but special friends? . . . . . Yes No

. Do you daydream a lot? . . . . . Yes No

. When people shout at you, do you shout back? . . . . . Yes No

. Are you often troubled about feelings of guilt? . . . . . Yes No

. Are all your habits good and desirable ones? . . . . . Yes No

. Can you usually let yourself go and enjoy yourself a lot at a gay party? . . . . . Yes No

. Would you call yourself tense or "highly-strung"? . . . Yes No

. Do other people think of you as being very lively? . . . Yes No

. After you have done something important, do you often come away feeling you could have done better? . . . . . Yes No

. Are you mostly quiet when you are with other people? Yes No

. Do you sometimes gossip? . . . . . Yes No

31. Do ideas run through your head so that you cannot sleep? . . . . . Yes No

32. If there is something you want to know about, would you rather look it up in a book than talk to someone about it? . . . . . Yes No

33. Do you get palpitations or thumping in your heart? . . . Yes No

34. Do you like the kind of work that you need to pay close attention to? . . . . . Yes No

35. Do you get attacks of shaking or trembling? . . . . . Yes No

36. Would you always declare everything at the customs, even if you knew that you could never be found out? . . Yes No

37. Do you hate being with a crowd who play jokes on one another? . . . . . Yes No

38. Are you an irritable person? . . . . . Yes No

39. Do you like doing things in which you have to act quickly? . . . . . Yes No

40. Do you worry about awful things that might happen? . . Yes No

41. Are you slow and unhurried in the way you move? . . . Yes No

42. Have you ever been late for an appointment or work? . Yes No

43. Do you have many nightmares? . . . . . Yes No

44. Do you like talking to people so much that you would never miss a chance of talking to a stranger? . . . . . Yes No

45. Are you troubled by aches and pains? . . . . . Yes No

46. Would you be very unhappy if you could not see lots of people most of the time? . . . . . Yes No

47. Would you call yourself a nervous person? . . . . . Yes No

48. Of all the people you know are there some whom you definitely do not like? . . . . . Yes No

49. Would you say you were fairly self-confident? . . . . . Yes No

50. Are you easily hurt when people find fault with you or your work? . . . . . Yes No

51. Do you find it hard to really enjoy yourself at a lively party? . . . . . Yes No

52. Are you troubled with feelings of inferiority? . . . . . Yes No

53. Can you easily get some life into a rather dull party? . Yes No

54. Do you sometimes talk about things you know nothing about? . . . . . Yes No

55. Do you worry about your health? . . . . . Yes No

56. Do you like playing pranks on others? . . . . . Yes No

57. Do you suffer from sleeplessness? . . . . . Yes No

APPENDIX D

NEWMAN - KEULS PROCEDURE

FOR MEAN DIFFERENCES

OF HALSTEAD SUBTESTS

APPENDIX D

Experimental Group Halstead Category Test Errors:
Tests on Means using Newman - Keuls Procedure
(Winer, 1962, page 309)

Half-subtests (see Table 1)	6_1	6_2	3_2	5_2	3_1	4_2	4_1	5_1
Ordered means for experimental subjects	2.86	3.53	3.86	4.66	6.13	7.0	8.53	8.73

Differences between pairs

	2.86	3.53	3.86	4.66	6.13	7.0	8.53	8.73	
2.86		.67	1.00	1.80	3.27	4.14	5.67	5.87	***
3.53			.33	1.13	2.60	3.47	5.00	5.20	
3.86				.80	2.27	3.14	4.67	4.87	
4.66					1.47	2.34	3.87	4.07	**
6.13						.87	2.40	2.60	
7.0							1.53	1.73	
8.53								.20	

Critical values:

	r =	2	3	4	5	6	7	8
S_{BC} = .4155								
q.95 (r,28)		2.90	3.50	3.86	4.12	4.32	4.48	4.62
S_{BC} q.95 (r,28)		1.20	1.45	1.60	1.71	1.79	1.86	1.92

Significant Differences Between Pairs

	6_1	6_2	3_2	5_2	3_1	4_2	4_1	5_1	
6_1				*	*	*	*	*	***
6_2					*	*	*	*	
3_2					*	*	*	*	
5_2						*	*	*	**
3_1							*	*	

* Half-subtest Numbers:
3_1 & 3_2 = First and Second half of subtest Three
4_1 & 4_2 = First and Second half of subtest Four

** Significant Difference between first half and second half of subtest Five

*** Significant Difference between first half of subtest Five and first half of subtest Six

APPENDIX D

Control Group Halstead Category Test Errors:
Tests on Means using Newman - Keuls Procedure
(Winer, 1962, page 309)

Half subtests (see Table I	6_2	6_1	4_2	5_2	4_1	3_2	5_1	3_1
Ordered Means for control subjects	3.4	4.0	6.20	6.66	7.26	8.13	8.26	9.30

Difference between means	3.4	4.0	6.20	6.66	7.26	8.13	8.26	9.30	
3.4		.60	2.80	3.26	3.86	4.73	4.86	5.90	
4.0			2.20	2.66	3.26	4.13	[4.26]	5.30	***
6.2				.46	1.06	1.93	2.06	3.10	
6.66					.60	1.47	[1.60]	2.64	**
7.26						.87	1.00	2.04	
8.13							.13	1.17	
8.26								1.04	

Critical values							
S_{BC} = .4155 r =	2	3	4	5	6	7	8
q. 95 (r,28)	2.90	3.50	3.86	4.12	4.32	4.48	4.62
S_{BC} q. 95 (r,28)	1.20	1.45	1.60	1.71	1.79	1.86	1.92

Significant Differences Between Pairs

	6_2	6_1	4_2	5_2	4_1	3_2	5_1	3_1	
6_2			*	*	*	*	*	*	
6_1			*	*	*	*	[*]	*	***
4_2						*	*	*	
5_2							[ns]	*	**

* Half-subtest Numbers:
3_1 & 3_2 = First and second half of subtest Three
4_1 & 4_2 = First and second half of subtest Four

** Non-significant difference between first and second halves of subtest Five

*** Significant difference between first half of subtest Five and first half of subtest Six.

APPENDIX E

HALSTEAD CATEGORY TEST

RAW DATA

APPENDIX E

Control Group Halstead Category Test half-subtests error score

Subjects	3_1*	3_2	4_1	4_2	5_1	5_2	6_1	6_2
S 1	6	5	8	3	12	7	8	11
2	15	13	14	17	4	4	1	3
3	14	3	0	2	14	9	9	4
4	2	1	4	3	6	2	2	2
5	14	15	10	8	10	2	0	3
6	17	18	6	3	6	1	3	2
7	16	20	6	1	3	2	0	3
8	12	7	2	2	8	9	6	4
9	4	6	16	17	3	4	0	6
10	6	5	9	6	10	13	11	2
11	2	2	5	3	6	6	3	3
12	4	3	1	0	12	7	3	2
13	0	0	0	0	5	11	3	1
14	13	10	17	15	13	12	2	2
15	15	9	11	13	12	11	9	3

For example *3_1 represents first half of sub test 3; 3_2 represents second half.

APPENDIX E

Experimental group Halstead Category Test half-subtests error scores

Subject	3_1 *	3_2	4_1	4_2	5_1	5_2	6_1	6_2
S 1	5	1	15	17	10	11	9	4
2	13	17	6	2	7	0	0	2
3	3	2	4	3	12	4	6	4
4	5	2	13	16	17	11	7	4
5	12	5	15	15	8	4	3	3
6	6	2	10	3	9	2	2	4
7	4	3	3	1	5	2	0	2
8	6	3	3	8	5	3	0	3
9	3	4	0	0	5	3	0	1
10	15	5	16	6	9	4	4	5
11	4	4	15	16	4	9	4	8
12	4	2	5	1	12	6	2	5
13	2	4	2	0	15	5	3	2
14	6	2	12	16	7	3	1	3
15	4	1	9	1	6	3	1	3

* 3_1 represents first half of subtest 3; 3_2 represents second half.

APPENDIX F

INSTITUTIONAL ADJUSTMENT

RATING SCALE

Rating Scale for Institutional Adjustment *

Rating Points	Conduct Category
0	Excellent
1	Good
2	Average
3	Poor (including admonition and periods of probation)
4	Record of loss of priviledges or loss of specified number of days of good conduct remission.
5	Record of indefinite segregation.
6	Record of indefinite segregation on special diet.
7	Record of indefinite close confinement.

* Data on which to base ratings was obtained from the daily conduct cards.

APPENDIX G

LIST OF EXPERIMENTAL STIMULUS WORDS

APPENDIX G

List of stimulus words used by experimenter. Serial presentation was the same for each experimental subject.

1. "Good"
2. "Yes"
3. "Great"
4. "O K"
5. "Fine"
6. "Very Good"
7. "Good"
8. "Yes"
9. "Great"
10. "O K"