

RESPONSIVITY OF TWO
TYPES OF INSTITUTION-
ALIZED DELINQUINETS....

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RESPONSIVITY OF TWO TYPES OF INSTITUTIONALIZED
DELINQUINETS TO SOCIAL REINFORCEMENT

A thesis submitted to the Graduate School of
the University of Wisconsin in partial fulfillment
of the requirements for the degree of Doctor of
Philosophy.

by

Berle Nahman Post

Degree to be awarded

January 19⁶⁸

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To Professors: Martin

Lang

McFall

This thesis having been approved in respect
to form and mechanical execution is referred to
you for judgment upon its substantial merit.

Robert M. Back
Dean

Approved as satisfying in substance the
doctoral thesis requirement of the University of
Wisconsin.

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DELINQUENTS TO SOCIAL REINFORCEMENTS

BY
BERLE NAHMAN POST

A thesis submitted in partial fulfillment of the
requirements for the degree of

DOCTOR OF PHILOSOPHY
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at the
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1968

INTRODUCTION

The aim of this study is to investigate differences between neurotic and pseudo-social delinquents in responsivity to positive and negative social reinforcement. Though much research on delinquency has considered delinquents to be a relatively homogeneous group, more recently there has been interest and effort directed toward delineating homogeneous subgroups in this obviously heterogeneous delinquent population. A frequent distinction made has been between pseudo-social delinquents who appear relatively free of emotional conflict and neurotic delinquents who appear conflicted and manifest a wide range of neurotic symptomatology. Both types of delinquents act out repeatedly in an antisocial manner and might then be considered to comprise a sociopathic population (Partridge, 1930). Factor analytic studies and clinical investigations of delinquent subtypes have suggested that one of the dimensions on which delinquents differ from each other is in the amount of guilt or emotional conflict present; the delinquent who shows little guilt or emotional conflict has been called psychopathic. Since, within this delinquent population, pseudo-social delinquents manifest relatively few signs of guilt, and neurotic delinquents appear emotionally conflicted, it will be assumed in this thesis that the pseudo-social delinquents have a greater amount of psychopathy than the neurotic delinquents. Both

early conceptions of psychopathy (Alexander, 1930) and very recent conceptions of psychopathy (Halleck, 1966) suggest that psychopathy is a continuous trait rather than a clinical entity.

Some research comparing psychopathic with neurotic criminals has found psychopaths to be relatively unresponsive in learning a shock avoidance task and in responding to positive social reinforcement conditions, and these researchers have concluded that psychopaths are not very conditionable irrespective of the type of conditioning. Others have found no differences between psychopaths and non-psychopaths in response to positive social reinforcement; still others have found that psychopaths learn even faster than normals in a shock avoidance learning task and in responding to positive social reinforcement.

The present experiment is intended to help clarify these contradictory findings and to further root the distinction between pseudo-social and neurotic delinquents in learning theory. Since some experimental work has indicated that pseudo-social and neurotic delinquents might respond differentially to peers and adults as agents of reinforcement, this variable will also be investigated. Following a discussion of approaches to classifying delinquents and an exposition of the concept of psychopathy, the studies of reinforcement of delinquents will be re-examined in more detail. The hypotheses of the present experiment will then be presented.

Classification of Delinquents

The bulk of the research in delinquency prior to 1950 compared delinquents with non-delinquents. This research implied that delinquents are a relatively homogeneous group in regard to personality variables or etiology. In the many studies which found no differences between delinquents and non-delinquents on personality variables it was often concluded that personality elements and criminality are not related. Schuessler and Cressey (1950) reviewed the literature comparing criminals and non-criminals, and found that in 58% of the comparisons made, no clear personality differences were found. They went on to say that in those studies which did find personality differences there were such obvious methodological weaknesses that their validity is doubtful. Peterson, Quay, and Cameron (1959) also noted the methodological inadequacies of the early studies, but concluded more hopefully that these inadequacies were the primary factors in the negative findings of the Schuessler and Cressey review. The more positive view of Peterson, Quay, and Cameron regarding the relationship between personality variables and crime is supported by the results of a number of well controlled MMPI studies done since 1950, in which differences between delinquents and non-delinquents were found on a number of scales (Ashbaugh, 1953; Hathaway and Monachesi, 1953; Caldwell, 1959; Stanton, 1956; Webster, 1954; Panton, 1958) and on the basis of skillful readings of MMPI profiles (Hathaway, Hastings, Capwell, and Bell, 1953; Hathaway and Monachesi, 1953). A fairly consistent finding has been that delinquents are higher on Pd and

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Ma scales than are non-delinquents, and that neurotic MMPI profiles are less associated with delinquent behavior than are more psychopathic MMPI profiles.

The studies comparing delinquents with non-delinquents failed to take into account one of the major factors contributing to the pessimistic conclusion of Schuessler and Cressey (1950), that is, that there is a great deal of variability of personality within the delinquent and non-delinquent groups compared. Assuming too much homogeneity of personality within the delinquent and non-delinquent groups could attenuate relationships and lead to unimpressively low correlations and small differences. It would follow that the low rate of successful treatment of delinquents, with recidivism averaging from 40% to 70% over a five year period following release (Block and Flynn, 1956), could in fact be due to trying to apply one basic therapeutic plan to a number of distinctly different delinquent personality syndromes.

Lindesmith and Dunham (1941) appear to have been the first to suggest that criminals range from social criminals at one extreme to individual criminals at the other. Social criminals were described as those having a criminal subculture which supports their behavior. Individual criminals were described as those whose criminal behavior is determined by unique personality aberrations, e.g. a psychotic acting out against fantasied aggressors. Social criminals generally committed their offenses in an organized way, often with companions; individual criminals tended to act alone on impulse.

Block and Flynn (1956) used similar criteria in classifying delinquents. They distinguished between neurotic delinquents as one type, socialized delinquents who are identified with a delinquent subculture as a second type, and immature, egocentric delinquents as a third type. The neurotic delinquent is described as being anxious, conflicted, having strong feelings of guilt, and unconsciously seeking punishment. The socialized delinquent is described as being basically a psychopath, having very little ability to experience guilt. The psychopathic delinquent gives little evidence of anxiety of any sort. Block and Flynn's basic distinction between socialized delinquents and neurotic delinquents, a distinction based on the amount of guilt and anxiety present, is essentially the same basis for classification that will be used in the present study.

Jenkins and Hewitt (1944) set up a functional typology of pre-delinquent and delinquent children frequently seen in child guidance clinics which is similar to the Block and Flynn classification. They termed one type the "over-inhibited" delinquent, describing him as tense, shy, anxious, and possessed of other symptoms of internal conflict such as nail-biting and sleep disturbances. Aggression on the part of the over-inhibited delinquent leads to anxiety, so that they are often inhibited in expressing hostility and in their relationships with others in general. Another type was called the "unsocialized" delinquent; he was described as uninhibited, hostile, defiant toward authority, and showing little guilt. "Unsocialized" delinquents have few close friends, and generally have a history of continual rejection

by parents. This type corresponds closely to psychopathic characters. A third type was termed "pseudo-social" delinquent. They tend to show the ability to identify with peers but not with adults or societal values, regarding all but other gang members as fair game. Unlike "unsocialized" delinquents, the "pseudo-social" delinquents seem to have the capacity to feel affection toward and identify with others, though they have a restricted range of people with whom they will identify.

Jenkins and Glickman (1945) also describe the behavior symptoms associated with each of the three types of delinquents noted in the earlier study by Jenkins and Hewitt (1944). They note that "overinhibited" delinquent females show feelings of inferiority, depression, crying spells, sensitivity, daydreaming, and seclusiveness. "Unsocialized" girls display violence, incorrigibility, temper tantrums, defiance, lying, unpopularity, and destructiveness. The "pseudo-socialized" grouping was characterized by truancy from home and school, lying, staying out late at night, sexual misbehavior, incorrigibility, bad companions, loitering, and stealing. Essentially the same characteristics were found in a later study by those authors (Jenkins and Glickman, 1947) in classifying 300 males committed to a state training school. They chose to rename the "overinhibited" grouping, calling them "disturbed" delinquents, noting that these boys did show as much gang activity as the average boy in the training school while what had been called the "overinhibited" delinquent did not show assaultive tendencies or gang activity.

Peterson, Quay, and Cameron (1959), and also Quay (1964), found three main factors in factor analyzing questionnaires and case history data of

delinquent boys. Quay (1964) labeled these factors "unsocialized psychopathic," "neurotic-disturbed," and "subcultural-socialized." The "unsocialized-psychopathic" factor involved unsocialized aggression, impulsive action, distrust of authority, and generally tough, amoral, rebellious qualities. It corresponds closely to Jenkins and Hewitt's "unsocialized" delinquent. The "neurotic-disturbed" factor involved anxiety and guilt, remorse, tension, depression, and discouragement, and sounds similar to the "overinhibited" delinquent described by Jenkins and Hewitt. The "subcultural-socialized" delinquent seemed to be able to develop adequate relationships with peers, but was defiant of authority and tended not to display much anxiety regarding his delinquency.

Cowden's study of female delinquents (1960) classified delinquents into two of the three general types noted by all of the previous researchers, i.e. the overinhibited or disturbed delinquents, which he labeled "individual" delinquents, and the "pseudo-social" or "subcultural-socialized" delinquents, which he labelled "social" delinquents. Cowden found that individual delinquents experienced more guilt and anxiety than social delinquents. With the population from which he sampled, then, there appeared to be no clear distinction between the psychopathic or unsocialized delinquent and the pseudo-socialized delinquent. Current theories of psychopathy, which will be discussed in the next section, suggest that the category of "psychopathic" delinquent does not exist in that even among adults the pure psychopath is a construct or abstract condition (Alexander, 1930; Halleck, 1966). Psychopathy then is considered to be present in differing degrees, related to capability to be loyal and amount of anxiety and guilt. Experimental support for this approach is

found in studies (Hetherington & Klinger, 1964; Warren and Grant, 1955) of "normals," college students, which indicate that subjects with high Pd scores on the MMPI differ from subjects with low Pd scores in responsiveness to reinforcement, just as the Lykken (1957) and Schacter and Latane (1964) and Quay studies would predict from their theories regarding the nature of psychopathy.

Following Cowden's (1960) classification in working with essentially the same population a few years later, Lewis (1962) discriminated between girls whose delinquent behavior is seen as the product of a neurotic or disturbed personality organization and girls who show noticeable sociopathic features, primarily a relative absence of anxiety, based on psychological reports, projective tests, and interviews. He termed the two types "neurotic" and "social" delinquents, noting that the "neurotic" group is very similar to Cowden's "individual" delinquent. The "social" delinquent group seems identical to Cowden's group of the same name.

While "neurotic" might denote a specific crystallized syndrome, in the present study this term will be used to denote the presence of emotional conflicts as manifest by symptoms associated with neuroses (somatic complaints, depression, obsessive rumination, overt anxiety, etc.), recognizing that the defensive structure of adolescents is not well crystallized, so that disturbed adolescents may exhibit a wide range of symptoms. Delinquents who manifest relatively little guilt and anxiety will be called "pseudo-social delinquents", as in the Jenkins and Hewitt (1944) typology. The pseudo-social delinquents would correspond to what Lewis and also Cowden have called "social" delinquents. It is felt that the term "pseudo-social" is descriptive in that it suggests a rejection of societal

or adult values, yet implies that within the delinquent subculture social values do exist. It could be that the delinquents whom Jenkins and Hewitt would classify as "unsocialized" and "pseudo-socialized" are not clearly separable in the particular population studied by Cowden, by Lewis, and in the present study, and so these hypothetically distinct groups are combined. It does seem that pseudo-social delinquents in this institution are not yet clearly psychopaths, but do tend to be a combination of the psychopathic and pseudo-socialized distinctions made in earlier studies. In all the studies the basic distinction between what will be called "neurotic" and "pseudo-social" delinquents has been made primarily on the basis of the amount of inner conflict present, with pseudo-social delinquents appearing to exhibit less guilt, i.e., assumed to be having more psychopathy than neurotic delinquents. A more thorough exposition of the nature of psychopathy, which is crucial to the hypotheses to be generated in the present study, will follow.

Psychopathy

Pinel, in the 18th century, was the first to suggest that people who seemed unable to avoid repeatedly breaking the law might be mentally ill. Prichard (1837) described a condition which he labelled "moral insanity" which seems similar to current descriptions of the sociopathic or psychopathic personality. By the latter part of the 19th century psychiatrists were becoming more ready to define some antisocial behavior as an illness, and were describing some criminals as being "constitutional psychopathic inferiors," a phrase which suggested a medical rather than

a moralistic approach. Kraepelin (1892) introduced the term "psychopathic personality," and strengthened the constitutional position, which has been maintained by some to the present day.

Others stressed that motivational and environmental factors lead to the psychopathic disorder. Birbaum (1914) noted that the psychopath had a pathological lack of affect. Freud (1924) noted a relationship between acting out of conflicts through the commission of antisocial acts and the lack of anxiety; he called the antisocial acting out of conflicts an "alloplastic" disorder, as differentiated from "autoplastic" disorders which are characterized by the presence of anxiety, repression, and guilt. Alexander (1930) did the most to develop the psychoanalytic interpretation of psychopathy. He described certain persons as "neurotic characters" whom he said were conflicted individuals who resolved their conflicts through alloplastic activity rather than through developing psychic symptoms. This alloplastic activity was seen as being self-destructive, or self-injurious, so that this person was seen as suffering from guilt and punishing himself just like the neurotic. Alexander did posit the possibility of the guilt-free antisocial person, calling this unconflicted criminal a "pure criminal." However, he doubted that the pure criminal existed, insisting that a closer inspection would reveal a neurotic character. The neurotic character was described as having a defective super-ego which allows excessive release of primitive id impulses; however, he does feel guilt later, following his enactment of conflicts and the actualization of his fantasy world (Alexander, 1930).

In an early review of the literature on psychopathy Partridge (1930) concluded that the concept was a wastebasket because of the extensive disagreement between theories as to the symptoms. He concluded that there is no disease entity which might be called psychopathy, though, "relative psychopathy" in the sense of antisocial behavior relatively free of great anxiety might exist. Partridge suggested a separate diagnostic entity, "sociopathic," characterized by difficulty in adapting to the demands of society.

Karpman (1948) considered the true psychopath to exist, describing him as a person in whom there is a lack of guilt or anxiety. However, he felt that only 15 to 20% of people diagnosed as psychopaths are true psychopaths. The others, he felt, should be more correctly diagnosed as schizoid personalities, or brain damaged, or acting out psychotics.

Cleckley (1964) disagrees with Karpman in that Cleckley considers all psychopaths to be psychotics, yet allows that psychopaths comprise a separate disease entity from schizophrenia as it is commonly diagnosed. Cleckley feels that psychopathy is somewhat like simple schizophrenia because the basic difficulty is a dissociation of feeling, though in a psychopath this dissociation of feeling is not as pervasive as to disrupt the surface of personality. Cleckley considers the psychopath to have "semantic dementia"; while he intellectually understands words and phrases he lacks the common emotional responsivity to words and phrases.

While a dissociation of overt anxiety from antisocial behavior appears in most of the preceding conceptualizations of psychopathy, Cleckley broadens the definition to include a dissociation of any affect from

behavior or words. He then is justified in considering psychopathy to be a form of simple schizophrenia, since a basic criterion for the presence of schizophrenia is abnormal affective responses to reality. However, the apparent parsimony gained is probably of doubtful benefit. Psychopaths are discovered through their antisocial behavior, behavior which in normals would be accompanied by and followed by anxiety. It would seem then that it is the apparent lack of anxiety accompanying antisocial behavior, and not necessarily other affective disorders, which defines the psychopath. Adding that he also has other abnormal affective responses is an interesting hypothesis and has generated research (Kadlub, 1956; Johns and Quay, 1962; Quay and Hunt, 1965) but both from an historical viewpoint and in terms of increasing the descriptive value of the diagnostic category, it would seem more valuable to focus upon the lack of the particular affective responses, i.e. anxiety and emotional conflict, which ordinarily accompanies antisocial behavior. This lack of anxiety leading to "moral ignorance" has been noted throughout the developing conceptualization of the psychopath.

The most recent and "official" description of psychopathy appears in the Diagnostic and Statistical Manual of Mental Disorders (1965). What had previously been classified as "constitutional psychopathic state" and "psychopathic personality" is now called "Sociopathic Personality Disturbance Antisocial reaction." They are described as ". . . chronically antisocial individuals who are always in trouble, profiting neither from experience or punishment, and maintaining no loyalties to any person, group, or code" (p. 83). The category is distinguished

Sociopathic Personality Disturbance-Dyssocial reaction in that individuals in the latter category disregard social codes "as the result of having lived all their lives in an abnormal moral environment. They may be capable of strong loyalties" (p. 38). The other distinction made between the antisocial reaction and dyssocial reaction categories is that the person diagnosed as Antisocial reaction appears to have other disturbances, i.e., "callous and hedonistic, showing marked emotional immaturity, with lack of senses of responsibility, lack of judgment, and an ability to rationalize their behavior so that it appears warranted, reasonable, and justified" (p. 38). Dyssocial reaction individuals however, are said typically not to ". . . show significant personality deviations other than those implicit by adherence to the values or code of their own predatory, criminal, or other social group" (p. 38). It is clear that in both Antisocial and Dyssocial sociopaths antisocial behavior is present. Also, the Antisocial sociopath's ability to do a good job rationalizing his behavior, combined with the Dyssocial sociopath's also exhibiting a lack of responsibility, callousness, and a lack of good judgment from the viewpoint of society if not from the viewpoint of his social group, tend to make the distinction between these categories difficult.

The only discriminating factor left in classifying sociopaths as Antisocial or Dyssocial is the inability of the Antisocial psychopath to feel any loyalty, while the Dyssocial psychopath appears to feel loyal to other members of his criminal subculture. This factor of the ability to feel loyalty also appears to be a crucial criterion used by Jenkins and Hewitt (1944) and by Quay (1964) and Quay and Peterson (1964) in

distinguishing between psychopathic and pseudo-socialized delinquents. Yet, in the experience of this researcher and also in the opinions of Cowden (1960) and Lewis (1962) very few delinquent girls are found who exhibit both no emotional conflicts and no loyalty, i.e., there are few "pure psychopaths" if any found among delinquent girls. Halleck (1966) goes further and argues that the need for loyalty, for dependency, is always present even in the well crystallized adult psychopath, so that the pure psychopath is only an abstraction. Since it is so rare that the female juvenile offender would appear to display no loyalty, the distinction between Antisocial sociopaths and Dyssocial sociopaths, or the distinction between unsocialized delinquents and pseudo-socialized delinquents, will not be made in this experiment. Instead, the classification of pseudo-social delinquent will be used, which would be the combination of the hypothetically distinct unsocialized and pseudo-socialized delinquents. To the extent that the pseudo-social delinquents would have the trait of psychopathy, they would not profit from experience, according to the definition given in the Diagnostic Manual. This would imply that they would not respond normally to positive or negative reinforcements. Cleckley, and also Quay, would make this prediction, i.e., that psychopaths would respond less than non-psychopaths to both positive and negative reinforcement. Lykken, and Schacter and Latane, using the anxiety construct, might not hypothesize differences in response to positive reinforcement. Studies in responsivity of delinquents and criminals to various types of reinforcement will now be reviewed in more detail.

Social Reinforcement of Psychopaths

Lykken (1957), noting that Cleckley (1950) cites the chief clinical characteristic of psychopaths as being a deficit in emotional reactivity, chose to test Cleckley's observation through comparing psychopaths and non-psychopaths in their relative ability to condition anxiety and their relative ability to respond to an avoidance learning task. Cleckley's theory would suggest that the psychopath does not respond with anxiety to stimuli which would elicit anxiety in non-psychopaths. Since Cleckley would also predict that psychopaths would not respond affectively to stimuli which elicit pleasurable emotions in non-psychopaths, Lykken's study actually provides a less complete test of Cleckley's theory than is implied in the study. Lykken selected twelve male and seven female inmates of Minnesota correctional institutions as being primary psychopaths on the basis of a list of fourteen criteria drawn from Cleckley (1950, pp. 355-392). A second group of thirteen males and seven females, inmates who did not meet Cleckley's criteria, called "neurotic sociopathic," and a third group of ten males and five female non-institutionalized "normals" were also selected. An avoidance learning task in which an electric shock was administered for incorrect responses was used. Lykken assumed that avoiding the incorrect responses was reinforced through anxiety reduction. He found that the primary psychopaths showed less avoidance learning than the normals. The neurotic sociopaths also showed significantly less avoidance learning than the normals. Differences between primary psychopaths and neurotic sociopaths were not significant. Despite this, Lykken claims that the groups are "remarkably well separated" (p. 9), and concludes that the primary sociopath demonstrates defective avoidance

learning, implying that a real difference does exist between his samples of primary sociopaths and neurotic sociopaths. Unfortunately, regarding the avoidance conditioning task, the results may only reflect a difference between institutionalized law breakers and non-institutionalized non-breakers of the law.

A second part of Lykken's study involved conditioning a GSR response by pairing a shock and a buzzer. During the conditioning trials the psychopathic subjects showed weaker GSR reactivity than normals, and the psychopathic group also conditioned more slowly than the normals. Again, however, no significant differences were found between the sociopathic law breakers and the neurotic law breakers. While the study suggests a relationship between emotional reactivity and the ability to inhibit punished responses, it provides little support for Lykken's hypothesis that psychopaths are incapable of developing conditioned emotional reactions. Furthermore, this research does not indicate that clear differences exist in emotional reactivity between those classified as institutionalized psychopaths and those classified as institutionalized neurotics. It could be that the differentiation between the two groups of prisoners, based on Cleckley's criteria, was not effective. The differences which were found between prisoners and non-prisoners in emotional reactivity and conditionability are clear; if both psychopathic and neurotic sociopaths can be considered to be more psychopathic than normals, then Lykken's study does indicate that psychopaths are deficient in avoidance learning and in developing conditioned emotional reactions.

Schacter and Latane (1964) replicated Lykken's experiment, using exactly the same equipment. They also found the psychopaths learned less on the avoidance conditioning task than normals. In addition, they found that sociopaths and normals did not differ in response to positive reinforcement on a maze task, and they point out that Lykken found the same to be true in a more complete report of his experiment than was published. Schacter and Latane also tested the sociopaths and normals after injecting adrenalin, and found that under this condition sociopaths learned the avoidance task well, while the normals now learned poorly. While this marked interaction between degree of psychopathy and the effects of sympathetic arousal on avoidance learning ability suggested that sociopaths have an initially low arousal level, further testing found that in fact sociopaths had a higher autonomic level during rest than did normals. They note that most of the literature on the relationship of anxiety to autonomic arousal (Martin, 1961; Duffy, 1962) argues against sociopaths having greater autonomic reactivity than non-sociopaths, though on the other hand they cite some research (Valins, 1963) which also found greater physiological reactivity in high sociopathic Ss than in low sociopathic. They suggest that perhaps sociopaths are responsive to almost any event, and that their generalized, indiscriminate reactivity is almost the equivalent of no reactivity at all, since if every event provokes strong autonomic discharges then, in terms of internal cues, the sociopath feels no differently during times of danger than during tranquil times. Perhaps, they suggest, only intense states of autonomic reaction, as with adrenalin, are differentiable from the

psychopath's normal reactions and so only intense autonomic reactions can acquire emotional attributes for the psychopath. The authors note an alternative explanation suggested by Jones (1950), Block (1957), and Learmonth, Ackerly, and Kaplan (1959), that autonomic reactivity might be inversely related to the degree of overt expression of emotionality. However, rather than to become involved in Schacter and Latane's fascinating results using adrenalin, for the purposes of this thesis it is important to note only that their results are similar to Lykken's, and so support the contention that psychopaths are deficient in avoidance learning.

Testing Cleckley's notion of semantic dementia, Kadlub (1956) gave psychopathic and non-psychopathic criminals a serial learning task on a memory drum. He reinforced correct responses positively in two ways, with concrete rewards (cigarettes) and secondary social rewards (praise from the experimenter). He found no differences between psychopaths and non-psychopaths in learning this task in response to either type of positive reinforcement, thereby giving no support to Cleckley's theory.

Johns and Quay (1962) criticize Kadlub's methodology, pointing out that in a serial learning task the subjects are aware of the "rightness" or "wrongness" of their responses independently of the experimenter's reinforcements. Subjects are then able to give themselves rewards of some kind, e.g., self-approval. Thus it could be that psychopaths are relatively insensitive to the rewards of the experimenter but might be learning well by responding to their self-reinforcements. Johns and Quay (1964) set out to test Cleckley's hypothesis anew, correcting for

the weaknesses they saw in Kadlub's study. They used a Taffel type procedure (Taffel, 1955) in which each subject was required to make up a sentence starting with one of six personal pronouns. E reinforced the use of two of these pronouns, "I" and "We", by saying the word "good". Because Cleckley posits that psychopaths would not respond affectively to this word though normals would, the reinforcing word "good" was said "in a flat unemotional tone" (Johns and Quay, 1962, p. 218). Subjects were sixty-four prisoners in a military stockade who were divided into psychopaths and neurotics on the basis of questionnaire scales developed by Peterson, Quay, and Cameron (1959) and Peterson, Quay, and Tiffany (1961). Johns and Quay found that the psychopathic group showed significantly less increase in the reinforced category than did the neurotic group. Since Johns and Quay used positive reinforcement and found a difference in conditionability between psychopaths and neurotics, and citing Lykken's (1957) results as suggesting that the psychopath is deficient in avoidance conditioning, Johns and Quay conclude that the combined evidence "might be taken as evidence for a general factor of poor conditionability" (p. 220). They note that a secondary reinforcement interpretation of Cleckley's theory is thus supported.

Quay and Hunt (1965) replicated the Johns and Quay (1962) research using U. S. Navy incarcerated offenders. They also found psychopaths to differ from neurotics in the frequency of conditioned responses with psychopaths conditioning less. Following a criticism by Persons and Persons (1965) of the statistical analysis used by Johns and Quay in dealing with initial operant level differences between psychopaths and non-psychopaths (ceiling effect could account for differences in learning

rates), Persons and Bruning (1966) set out to test the sociopaths amenability to conditioning using a new task. On the basis of psychiatric diagnosis, and psychopathy and neuroticism scales (Peterson, Quay, Tiffany, 1961) and MAS scores (Taylor, 1952), subjects were labeled as incarcerated sociopaths, incarcerated non-sociopaths, and non-incarcerated normals. Subjects, while blindfolded, were asked to draw a three inch line in a groove in a large sheet of plexiglass. Allowing a 1/4 inch error, subjects received a shock and a statement "too short" or "too long" for errors. They were told "correct" if their performance on a trial was adequate. They found that while all groups improved with reinforced trials, the incarcerated sociopaths learned faster than any other group. They conclude that sociopaths are clearly not defective in conditionability. They point out that their results can in part be explained by noting that the majority of the incarcerated non-sociopaths were neurotics, 67% of them having been diagnosed as having anxiety reactions. As a result of their high anxiety their initial learning may have been impeded since shock was the reinforcer. However, the results of the Persons and Bruning (1966) research does clearly contradict the avoidance conditioning results of Lykken (1957) and Schacter and Latane (1964), which found psychopaths not to be highly conditionable.

Bernard and Eisenman (1967) conditioned sociopaths using a variant of Taffel's (1955) technique. Two kinds of reward, social ("good") and monetary (nickels) were used in conditioning the forty institutionalized female sociopaths. A second group consisted of thirty-nine normal nurses. They too found that sociopathic subjects conditioned better than normals in response to either social or monetary reinforcement. Also,

sociopaths responded better to the social reinforcement than to the monetary reinforcement. Bernard and Eisenman conclude that it is a mistake to assume that sociopaths will condition or not condition, for conditioning can be affected by situational variables such as prior experimenter-subject interaction (Kanfer and Karas, 1959; Ebner, 1965; Hetherington and Ross, 1963) and emotional atmosphere during the experiment (Weiss, Krasner, and Ullmann, 1960). Since their experiment compared institutionalized subjects with non-institutionalized subjects, this variable should also be mentioned, since it has been shown (Stevenson, 1965) that institutionalized children respond more to social reinforcement than non-institutionalized children. This alone could account for the results of the study, especially since the institutionalized vs. non-institutionalized subjects were females being given reinforcement by male experimenters. Another methodological weakness in the Bernard and Eisenman research is that the money used in one of the reinforcement conditions was taken away from each subject following the conditioning trials. Though the experimenters quickly ushered out the completed subject past the waiting subjects so she could not communicate the procedure, it is doubtful that communication did not take place at another time. Thus it is difficult to evaluate the results of the monetary reinforcement condition, and taking away the money might also have diminished the credibility of the social reinforcement used.

Summary

Lykken (1957), Johns and Quay (1962), Schacter and Latane (1964), and Quay and Hunt (1965), claim to support Cleckley's notions about the psychopath having an affective disorder. Persons and Bruning (1966) Bernard and Eisenman (1967), and earlier work by Kadlub (1956) suggest either no difficulties in psychopaths in conditioning, or even that psychopaths condition better than non-psychopaths. Reports of psychotherapeutic success with psychopathic patients (Caditz, 1961; La Barba, 1965; Persons, 1965; Schmideberg, 1947; Sturup, 1952) also suggest that the psychopath can benefit from experience, that perhaps they have no learning deficit or deficient affective responsivity as Cleckley suggests. Despite the controversial findings in this area of research, conceiving of psychopathy as a relative absence of emotional conflict and guilt is widespread and also seems to make sense on the basis of factor analytic studies and clinical assessments. The common conception of psychopaths as being adept at manipulation in order to gain positive reinforcement suggests that perhaps part of the controversial findings is due to the fact that Lykken's and Schacter and Latane's and Person and Bruning's (1966) research used negative reinforcement (shock), while the other studies used positive social reinforcement. Perhaps it is only anxiety related to guilt, as the psychoanalysts (Freud, 1924; Alexander, 1930) imply, which differentiates psychopaths from non-psychopaths, while positive self reinforcements for acceptable behavior may operate in both the psychopath and non-psychopath; if so, differences between psychopaths and non-psychopaths would only be seen in response to negative reinforcement, and no differences would be predicted in response to positive reinforcement.

The research of Schacter and Latane (1964) and also Kadlub (1956) support the contention that sociopaths and normals do not differ in response to positive reinforcement.

The present study will attempt to control for some of the experimental factors, such as knowledge of result prior to experimenter's reinforcement, sex of experimenter, and subject-experimenter interaction, which may have led to the discrepant results. In addition, since no research in this area has used negative social reinforcement in investigating differences between relatively psychopathic offenders and neurotic offenders, and since the use of negative social reinforcement (reproof) is such an integral part of the treatment and control of institutionalized offenders, negative social reinforcement will also be investigated in this study.

One other dimension to be investigated in the present research is the agent of reinforcement. Cowden (1960) suggests that neurotic delinquent girls are more responsive to adults than are pseudo-social delinquent girls. More specifically, he found that neurotic delinquents showed significant changes in anxiety and guilt in response to adults behaving either in an authoritarian or in a permissive manner. Hathaway and Monachesi (1953), on the basis of profile analysis of MMPI scores, suggest that neurotic delinquents would tend to be more sensitive to others than would more psychopathic delinquents; their findings would suggest that neurotic delinquents would respond more to both adults and peers than would pseudo-social delinquents. However, Lewis (1962) found that pseudo-social delinquents identified more with the same sex peers than did neurotic delinquents, which would suggest that they would be more

responsive to peers than to adults. Lewis (1965), separating female delinquents into "social" and neurotic groupings, later did find "social" delinquents to be more susceptible to peer influence than neurotic delinquents.

Hypotheses:

Theories of psychopathy have generated specific hypotheses regarding responsivity to reinforcement. Consistent with the above conceptualization of pseudo-social delinquents as having more psychopathy than neurotic delinquents, it is hypothesized that:

1. Pseudo-social delinquents respond less to negative social reinforcement than do neurotic delinquents.

Since studies using positive reinforcement with psychopaths and non-psychopaths have yielded divergent results, and since clinically neither the delinquent subtypes nor the criminal psychopaths and criminal non-psychopaths appear to differ from each other in their ability to respond to rewards, it is hypothesized that:

2. Pseudo-social and neurotic delinquents do not differ in relative responsivity to positive social reinforcement.

Combining Cowden's suggestion that neurotic delinquents are sensitive to adults, with Lewis's findings that pseudo-social delinquents are more susceptible to influence by peers, it is hypothesized that:

3. Pseudo-social delinquents are more responsive to peers than are neurotic delinquents.
4. Neurotic delinquents are more responsive to adults than are pseudo-social delinquents.

Since the reinforcements will be administered to anyone subject by either a peer E or an adult E, it is further hypothesized that:

5. The variables of type of delinquent, agent of reinforcement, and type of reinforcement, interact in accordance with the previous hypotheses.

Responsivity to reinforcement will be measured by repeated performances on a card sorting task, the task being primarily an index of motivation. A secondary measure of responsivity to reinforcement, assumed to be a self-esteem index, will also be a dependent variable. These measures will be described in the following chapter.

PROCEDURE AND DESIGN

Subject Selection

From a sample of juvenile delinquent girls incarcerated at the Wisconsin School for Girls in Oregon, Wisconsin, all Caucasian girls were categorized into two subgroupings of delinquent types, pseudo-social delinquents and neurotic delinquents. Girls who had been determined to be mentally defective (I.Q. less than 70) were excluded from the experiment. The classifications into either pseudo-social or neurotic delinquent were made by examining previously written psychological or psychiatric reports, casework files, and group psychological tests, in that order. At any point at which the rater felt that a valid judgment could be made in categorizing a particular subject, further clinical investigation was dispensed with and the rating was made. The rater could make a judgment either on the basis of reported neurotic symptoms or on the basis of a clear statement of lack of guilt or emotional conflict made by a reliable clinician. A more detailed description of the criteria used in making the judgment as to classification into the two subtypes can be found in Appendix L. Because the rating system was in the nature of successive hurdles, in some cases the judgment was made quickly upon reading a psychological or psychiatric report, and in other cases a full review of all material was required before a judgment could be made. Every girl reviewed was placed in one of the two categories. The general criterion for classification was the presence or absence of emotional conflict or symptoms of such conflict as suicide attempts, depression, emotional lability, nightmares, compulsivity, obsessive rumination,

overt anxiety, etc. If a review of the case material suggested the relative absence of emotional conflict, the subject was classified as being a pseudo-social delinquent, and if conflict and guilt appeared to be present, the subject was classified as a neurotic delinquent.

Categorical ratings of 100 Caucasian girls were made independently by two raters, and 85% agreement was attained. Approximately 61% of the girls rated were categorized as neurotic delinquents, and 39% were categorized as pseudo-social delinquents. The file of each of the 15 girls on whom there was disagreement was reviewed jointly by the raters. Agreement was achieved on each of these subjects, and they were then included in the populations of pseudo-social and neurotic delinquents to be sampled.

Statistical analysis of the available data indicated that the pseudo-social group and the neurotic group did not differ from each other in intelligence, socio-economic status, or age (see Appendix M). The majority of the sample had been classified as being of Average intellect on the basis of the Otis Intelligence Test (Otis, 1922). The two groups were very similar in socio-economic backgrounds ($\chi^2 = .60, 3 \text{ df}$), with most Ss coming from upper-lower and lower-middle background. The average age of each group was 16.

The validity of the distinction between the relatively disturbed neurotic delinquents and the unconflicted, relatively guilt free pseudo-social delinquents received support through an analysis of the 16 PF test scores which were available (Cattell and Eber, 1957). Since this data was collected some months after Ss had been run and

the institution had begun giving this test to incoming girls only six months before, test results were available on only part of the sample, 13 of whom had been classified as pseudo-social delinquents and 23 neurotic delinquents. A description of the personality factors that this test identifies, and a summary of the available test data on the present sample, are presented in Appendix N. The groups were found to differ from each other on three of the sixteen scales. On scale C, described as a scale of ego strength on which low scores indicate that the person is "affected by feelings, emotionally less stable, and easily upset," and a high score indicates stability and calmness, the neurotic group scored lower than the pseudo-social group (means of 4.30 and 6.08, respectively, $t = 2.80$, 34 df, $p < .01$). On scale G, purported to measure superego strength, the neurotic group obtained scores indicating more superego strength than the pseudo-social group (means of 5.56 vs. 4.38 respectively, $t = 2.38$, 34 df, $p < .05$). On scale O, labelled at the low end as "placid, self-assured, confident, serene (untroubled adequacy)" and at the high end as "apprehensive, worrying, depressive, troubled (guilt proneness)," the neurotic group scored higher than the social delinquent group (means of 6.83 vs. 5.23, respectively, $t = 2.88$, 34 df, $p < .01$). A tendency for the neurotic group to score higher than the pseudo-social group on scale Q4, suggesting that the neurotic group is more "tense, frustrated, driven, overwrought" than the pseudo-social group, was also noted.

Only Caucasian girls were used in the experiment in order to control to some extent for cultural and socio-economic differences between the groups, since inspection suggests that proportionately more non-Caucasian than Caucasian girls would have been classified as pseudo-social delinquents as opposed to neurotic delinquents. This procedure had also been followed by Cowden and by Lewis for the same reasons. At the time that the ratings were made, Caucasians comprised approximately 66% of the population of the institution. Twenty-five percent were Negro, 8% American Indian and 1% Mexican or Puerto Rican. The proportions were very close to the proportions determined by a random sample of 400 girls who had been admitted to the institution during 1966.

Subjects from each of the two delinquent subgroupings were randomly assigned to one of 6 experimental conditions as determined by all combinations of the following two factors:

1. Type of social reinforcement
 - A. positive
 - B. negative
 - C. neutral
2. Agent of reinforcement
 - A. adult
 - B. peer

Since there were two types of delinquents categorized, the experimental design contained $2 \times 3 \times 2$, or 12 cells. This is a nested, or hierarchical design, with subjects nested in type of delinquent,

reinforcement condition, and agent of reinforcement. A schematic representation of the design can be seen in Figure I. A trials factor, which is orthogonal to the other factors, is not included in this representation.

Type of reinforcement	Type of Delinquent:	Neurotic		Pseudo-social	
	Agent of Reinforcement:	Adult	Peer	Adult	Peer
Positive					
Negative					
Neutral					

N = 7/cell

Figure 1. Schematic Representation of Experimental Design
(shown without TRIALS factor).

Subject Selection

There were two main dependent variables utilized in this experiment. These were:

1. Card sort time scores. These scores were assumed to be primarily an index of motivation, since the card sort task required little ability to attain concepts. What is required to obtain a good time score is that the subject hurry around a large table, placing the cards into the appropriate one of four boxes which are placed at the corners of the table. Pilot work with normal nondelinquent Ss indicated that learning did occur under both positive and negative social reinforcement on the task in that over three trials time decreased. Since it is unlikely that much of the sequence of the forty cards in each trial could be learned, the learning that does take place on this task might be an indication of increased dexterity in placing the cards in the slots. However it seems much more likely that the decrease in times over trials is a function of changes in motivational level.
2. Achievement expectation statements. These statements were in the form of statements Ss made of how they would perform on a task (speed or frequency) relative to a norm. This measure is assumed to be an index of self esteem; Ss who state they will do better than the norm

are assumed to be reflecting high self esteem, and Ss who state they will perform poorly relative to a norm are assumed to be reflecting low self esteem. This measure differed from "level of aspiration" measures in that the achievement expectation statements were made in regard to tasks somewhat different from any the Ss had had experience with; in contrast to this, level of aspiration is defined as the level of future performance in a familiar task which an individual, knowing his level of past performance in that task, explicitly undertakes to reach (Frank 1935). It should be noted that low achievement expectation statements might not be reflecting self esteem, but instead might be protective responses intended to shield Ss from failure. Gardner, (1946) and also Heltzel (1963) note that level of aspiration measures can be used in this manner, i.e. as defensive measures against appearing to fail in the presence of E. The achievement expectation measures in the present study were taken three times in the course of the experiment, once prior to any reinforcement and twice following various reinforcement conditions.

In addition to these two basic dependent measures, two other measures were taken. These were:

1. Block sort time. Colored blocks were sorted into the four boxes according to color. As with card sort time, block sort time is assumed to be mostly an index of motivation.
2. Clicker frequency. This measure was a count of the number of times that a button could be depressed by Ss thumb in 20 seconds. This too is assumed to be an index of motivation.

Apparatus

Figure 2 presents the approximate physical arrangement of the experiment and all the apparatus used.

Subject's room: On a 8' x 4' table 2.5' high, approximately centered within a well lit 15.5' x 12' room, were placed four colored boxes, one box at each corner of the table. The dimensions of the boxes were 8" x 8" x 12" with 12" being the height of each box. A lid with a 3/8" x 5" slot was hinged to one side of each box. The boxes differed from the others in color and in being marked with a different letter, any one box having the same letter painted onto all four sides. The boxes were attached to the corners of the table by vices, and throughout the experiment the positions of the boxes were constant.

Three stacks of 3" x 5" cards were placed on a desk in front of the one way mirror. Four types of cards were used, each type differing from the others in color and in being marked with a different letter,

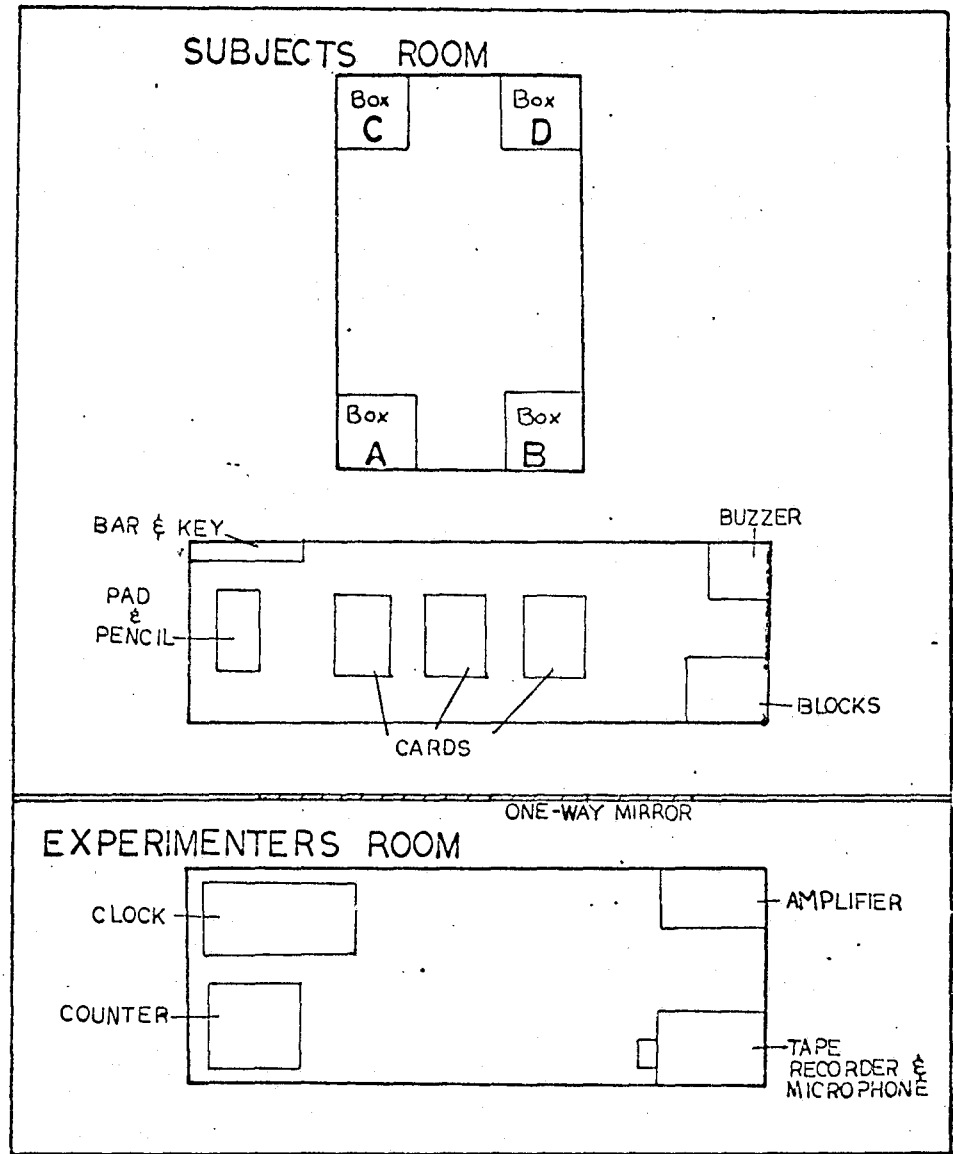


FIG. 2 EXPERIMENTAL ARRANGEMENT AND APPARATUS

so that on all red cards was printed the letter "A", all green cards were marked "B", etc. The letter and color of the cards corresponded with the letter and color of the boxes. Each of the three stacks of cards was alike, containing forty cards, 10 of each type, in a random appearing but fixed order. The order of the cards, along with a sample of the cards used, appears in Appendix A.

A buzzer, labelled "buzzer", was present on the desk. Pressing the buzzer led to a loud buzz, clearly audible in both the subject's room and the experimenter's room, and at the same time, with alternate pressings, started and stopped an electric time clock to which it was wired. This time clock was in the experimenter's room, the connecting wires passing through a small hole in the wall just above the floor level.

On the desk was also placed a cylindrical rod $3/4$ " in diameter and 4" long, labelled "bar and clicker." At one end of the rod there was a button which when depressed gave an audible click. This button was wired to an electric counter in the experimenter's room.

An open plastic freezer carton on the desk held eight blocks, four cube-shaped and four cylindrical. The four cube shaped blocks were of four colors, as were the cylindrical blocks, the colors corresponding clearly to the colors of the four boxes on the table. The blocks had been dropped into the plastic carton in the sequence green, orange, red, yellow, green, orange, red, yellow. The cubes were 1.5" x 1.5" x 1.5" and the cylinders, 3.5" long and $7/8$ " in diameter.

Two pencils and a pad of blank 3" x 5" paper were also present on the desk. Above the one way mirror was a speaker which was connected to an amplifier and microphone in the experimenter's room. With the subject's room lighted and the experimenter's room darkened, the one way mirror was of good enough quality to make it impossible to see into the experimenter's room.

Experimenter's room: A 4' x 2.25' desk placed approximately 3' from the one way mirror held the time clock, counter, two Wollensak tape recorders, and a microphone. Sound from a tape was played through the speakers in the tape recorder and was relayed to the speaker in the subject's room through the microphone and amplifier of the second tape recorder. The experimenter operated the tape recorder and collected performance data on a data sheet, a sample of which can be seen as Appendix B.

This room was effectively darkened through using a black shade on the window in the door and by using wooden shutters, painted black, which were hinged to the windows to fit tightly against them when closed. Another shade in this experimenter's room could be pulled over the one way mirror when needed, i.e. in order to keep the mirror surface effective when the experimenter's room might be lit by opening the door. While the subject was performing, this mirror shade was up, and the light from the subject's room provided enough light for clearly observing the subject, recording the data, and operating the tape recorder.

Tapes: Six tapes were used, corresponding to peer vs. adult agent of reinforcement, and positive, negative, and neutral types of reinforcement. The peer vs. adult tapes were exactly the same except for the taped introduction, i.e. "I am a girl who is not in your cottage who is helping in this" or "I am a staff member here at Oregon who has nothing to do with your stay here except that I'm helping in this". The positive, negative, and neutral condition tapes were exactly alike except for the social reinforcements given. The tapes were made by making five additional copies of an initial tape, leaving room at the beginning of each for recording the peer vs. adult conditions and blank spaces within the tapes for recording the appropriate reinforcement condition.

Experimental Procedure: Each subject was met by the experimenter or by an assistant (a peer in the institution who served throughout the experiment), depending upon whether the subject was to be in the "peer" condition or the "adult" condition. The subject was then taken into the subject's room and was asked if she would volunteer to participate in the development of an aptitude test. Ss were told that the results of their performance would not be given to the school or to their social worker. In the "peer" condition, the assistant told Ss that a girl in the institution would be giving the instructions from the other side of the one way mirror; in the "adult" condition, E told Ss that a counselor not in their cottage would be giving instructions from the other side of the mirror. The general nature of the task, i.e. that they would be asked to place cards into

the boxes on the table, was explained. Subjects were then given the opportunity to stay or leave, with further assurances that staying was purely voluntary.

If a subject agreed to stay, the tape recorder was started ("Can you hear me all right over the speaker?") just as E or the peer assistant was closing the door to the subject's room. The recorder was started either by E or by the assistant, whoever was not with the subject. After E or the assistant entered the experimenter's room, the shade covering the mirror, which had been slightly raised, was raised all the way so Ss could be clearly observed. The pause button on the tape recorder was used whenever Ss were performing the various tasks.

On those few instances where instructions were not followed, the assistant pushed the pause at the end of a sentence and spoke into the microphone. Because of the echoes in the subject's room, and because of the similarity in voice quality between the taped voice and the assistant's voice, no subject appeared to note any irregularities in the procedure. Because of skillful use of the pause button and the assistant's ability to clarify via the microphone when needed, and because of a "dummy" experiment which was run intermittently throughout the course of the actual experiment, no subject seemed to suspect that the instructions were not actually being given "live." The "dummy" experiment will be discussed at the end of this chapter.

The transcript of the tapes appears in Appendix C. What follows is a general description of the taped instructions given to Ss.

After the introduction as a staff member or peer, Ss were again told that the purpose of experiment was to develop an aptitude test. The bar and clicker was then referred to and Ss were told that girls their age could depress the clicker approximately fifty times in a fifteen second period. Ss were asked to write down their estimate of the number of times they could click it in a fifteen second period and to hold the written estimate up to the mirror so it could be recorded. This was recorded as "clicker estimate" at the top of the data sheet. The three stacks of cards and the buzzer were then pointed out, and Ss were told that the task would be to press the buzzer, pick up one stack of cards, and to place the cards one by one in their order of appearance into the slots of the appropriate boxes, then to press the buzzer again when that one stack had been sorted, then to wait. These instructions were given twice, and Ss were cautioned each time to not skip any cards. Then, upon the signal "Go," Ss pressed the buzzer which started the time clock, sorted the cards, then pressed the buzzer stopping the timer. During the performance of this, E held the pause lever on the tape recorder, releasing the pause lever when the buzzer had been pressed to indicate completion of the task. Times were recorded, and the timer reset. If Ss skipped cards, or sorted cards, the assistant during the trial reminded them again of the instructions. If Ss would not follow this rule after two warnings, their data were excluded from the experiment.

After completion of this task, referred to on the data sheet as "Card Sort #1," Ss were given social reinforcements which they were led to believe was based on their performance on the card sort task. The reinforcements used are presented in Appendix C. Positive reinforcement consisted of comments like "Really good! According to how other kids did, you went really fast! Let's see if you can do even better with the next stack now that you have some practice! But first, rest for awhile." Negative reinforcement consisted of comments like, "You didn't do well at all. You did pretty poor. Really slow. Let's see if you can do better with the next stack. Now that you have practice you should be able to do better. But first, rest for awhile." In the neutral reinforcement condition Ss were told, "Now please wait." In all conditions there was approximately thirty-five seconds between the second pressing of the buzzer on card sort #1 and the initial pressing of the buzzer of card sort #2. Near the end of this interval Ss were told that upon hearing the signal "Go," they were to press the buzzer, pick up the second stack of cards, and to repeat the sorting task.

Following the completion of card sort #2 Ss were reinforced as they had been following card sort #1, the positive and negative reinforcements being somewhat more emphatic following card sort #2. Following card sort #3 reinforcements were again given. Any one subject received the same type of reinforcement following card sorts 1, 2, and 3.

The taped voice then went on to tell all Ss to lift the lid of the boxes back so the boxes were open at the top. The open carton of colored blocks was then pointed out, and Ss were told that girls their age could put the blocks into the correct (same color) boxes in about thirty seconds. Ss then were asked to estimate how fast they could perform this task, and to write down their estimate and hold it up to the mirror. Then, upon the signal "Go," Ss pressed the buzzer, sorted the blocks into the boxes, then pressed the buzzer signalling completion of the task. Data were recorded. All Ss were given positive verbal reinforcement. Ss were then asked by the taped voice to pick up the bar with the attached button and to press the clicker a few times with their thumbs. Ss were then reminded that fifty clicks per fifteen seconds was average for girls their age, and were asked to make another estimate of how many times they could click the button in a fifteen second period now that they had "practiced" the task. Estimates were recorded, and on the signal "Go" they performed the task. Actually twenty seconds was given before the taped voice ended the task, which provided ample time for even relatively unmotivated Ss to surpass fifty clicks. Data were recorded from the electric counter, and all Ss were given positive reinforcement. The tape recorder was then shut off, and E or the peer assistant entered the subject's room and, in order to determine any suspicions on the part of Ss, asked if they had any idea who the person was who had been giving the instructions. Ss were then thanked and removed from the experimental situation.

Because it was crucial to the concept of social reinforcement that Ss believe a person and not a taped voice was commenting on their performance, a "dummy" experiment was run in which institution girls served as experimenters. Twelve girls were trained individually to serve as assistants in the project, which was explained as an attempt at developing an aptitude test. These girls were taught to give instructions to Ss regarding putting the cards into the correct boxes, and they were taught to read the time clock. They were told to praise or reproach girls after comparing their sorting times with "averages" that had been provided. These "experimenters" were given one practice session, using another "experimenter" as a mock subject. Then during the course of this "experimenter's" stay in the institution, she was called in two or three times to perform her task. A mimeographed guide was provided these "experimenters" to enable them to perform their tasks moderately well. This guide, which also served as a data sheet, appears as Appendix D. Each of these twelve girls was requested to not tell anyone that they were serving as experimenters, and were told there were a total of twelve girls and twelve counselors who had been trained as experimenters. Needless to say, word spread quickly throughout the institution that girls and counselors were serving as experimenters. Six Caucasian and six non-Caucasian girls were used as experimenters in this dummy experiment. Thirty non-Caucasian girls served as Ss. This dummy experiment was intermingled with the actual experiment. The purpose of the dummy experiment was two-fold:

CONTINUED

1 OF 3

1. To increase the credibility of the actual experiment.
2. To cause it to appear that the experiment did not exclude non-Caucasian girls.

Because training of the experimenters was difficult and they never seemed to be trained well enough to collect data and give reinforcements reliably, the data from the dummy experiment was not analyzed.

RESULTS

Each Caucasian girl in the institution was rated by two independent raters as being either a pseudo-social or neurotic delinquent. In rating 100 of these girls, inter-rater agreement was 85%. Approximately 39% of the girls were rated as being pseudo-social delinquents, and 61% neurotic delinquents. Where independent rating differed (15 cases), the raters discussed the girls and were able to arrive at a unified judgment. The inter-rater agreement and the population base rates were not appreciably different from those of Cowden's (1960) and Lewis's (1962, 1965) experiments performed in the same institution.

The four main dependent measures were examined separately by an analysis of variance procedure. The first analysis is concerned with the card sort times associated with the experimental conditions of type of delinquent, type of reinforcement, agent of reinforcement, and trials. The second analysis concerns the changes in self-esteem associated with the experimental conditions. The third analysis is of block sorting times, and the last analysis deals with frequency of clicker pressing.

Card Sort Time Measures

An inspection of the time score data revealed that the scores were not markedly skewed, and that there appeared to be no correlation between the means and standard deviations of the subgroups (see appendix K for means and standard deviations), so that no transformations were required before proceeding with the analysis. Time required to perform the card sorting task on each of three trials was the primary dependent

measure. Since Trial 1 was performed prior to any reinforcement, but following the communication by E as to whether E was an adult or peer, analysis of Trial 1 alone provided an early index of responsivity of the two types of delinquents to adults vs. peers in the experimental situation, and also provided a test of any biases which might have occurred in randomly assigning Ss to reinforcement conditions.

The analysis of variance of the speed of card sorting on Trial 1 indicated no initial difference between pseudo-social and neurotic delinquents, (see Table 1; see Appendix I for Trial 1 means). No initial difference was found in responsivity to adult vs. peer experimenter. Furthermore, this analysis indicated no systematic-bias in assigning Ss to the three reinforcement conditions. The analysis of Trial 1 speed data also indicated no significant interactions occurred among any of the three variables.

Following Trial 1, Ss were given either positive, negative, or neutral reinforcement according to the experimental condition to which they had been assigned. Each subject was again given the same reinforcement following Trial 2. Thus performance following these two reinforcements, i.e., performance on Trial 2 and Trial 3, showed any effects which reinforcement had on performance, along with the effects of agent of reinforcement, repeated trials, type of delinquent, and the interactions of these factors. Table 2 summarizes the analysis of variance of card sort time scores over all three trials.

The only significant main effect was trials ($p < .001$), indicating that Ss improved in performance over trials (means of 1'52.44, 1'44.73,

Table 1
 Analysis of Variance Summary of Trial 1
 Card Sort Time Scores

<u>Source</u>	<u>df</u>	<u>ms</u>	<u>F</u>
Reinforcement (R)	2	353.726	2.20 N.S.
Adult-Peer (E)	1	44.298	<1
Neurotic--Pseudo-social (D)	1	116.679	<1
ER	2	226.583	1.41
DR	2	21.583	<1
ED	1	16.298	<1
EDR	2	12.298	<1
<u>Ss within RED</u>	<u>72</u>	160.516	
	83		

Table 2
 Analysis of Variance Summary
 of Card Sort Time Scores

<u>Source</u>	<u>df</u>	<u>ms</u>	<u>F</u>
Reinforcement (R)	2	583.933	1.24 N.S.
Adult-peer (E)	1	197.337	<1
Neurotic--Pseudo-social (D)	1	78.893	<1
RE	2	670.409	1.42 N.S.
RD	2	792.964	1.68 N.S.
ED	1	18.893	<1
EDR	2	10.964	<1
<u>Ss within EDR</u>	72	471.704	
Trials (T)	2	2520.968	91.09***
TR	4	143.302	5.18***
TE	2	13.778	<1
TD	2	31.000	1.12 N.S.
TRE	4	11.635	<1
TRD	4	163.536	5.91***
TED	2	6.048	<1
TRED	4	2.798	<1
<u>Ss by trials</u> within RED	<u>144</u>	27.676	
	251		

*** p < .001
 ** p < .01
 * p < .05

and 1'41.85, for trials 1, 2, and 3 respectively). Neither type of reinforcement nor agent of reinforcement, nor type of delinquent, showed any overall significant main effect. Of the six two-way interactions, only the trials by type of reinforcement interaction was significant ($p < .001$), indicating that Ss in different reinforcement conditions responded differently across trials (see Figure 3 and Table 3).

Table 3

Mean Card Sort Times According to Reinforcement
Condition over Trials (see Figure 3)

<u>Reinforcement</u>	<u>Trial 1</u>	<u>Trial 2</u>	<u>Trial 3</u>
Positive	1'48.929"	1'42.357"	1'38.929"
Negative	1'56.036"	1'43.857"	1'41.393"
Neutral	1'52.357"	1'47.964"	1'45.214"

The significant ($p < .001$) trials by type of reinforcement by type of delinquent interaction indicates that pseudo-social and neurotic delinquents responded differently to positive and negative and neutral reinforcements over the three trials. None of the other three way interactions or the four way interaction was significant.

A graphic representation of the two way interaction of the trials by type of reinforcement is seen in Figure 3. Within trials 1, 2, and 3 analyzed separately, no significant difference in card sort times were found among neutral, negative, and positive reinforcement conditions, as

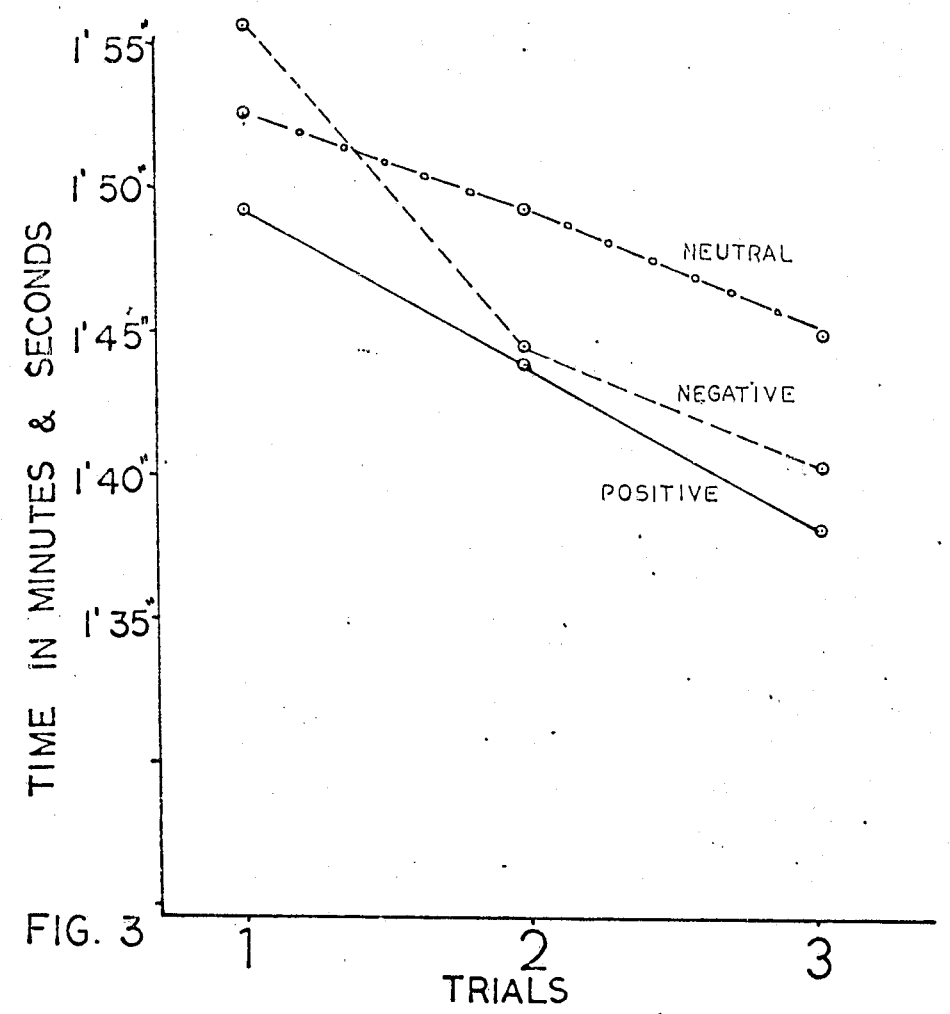


FIG. 3
CARD SORT TIMES ACCORDING TO REINFORCEMENT CONDITIONS OVER TRIALS (SEE TABLE 3)

evidenced by the nonsignificant main effect of reinforcement seen in Table 1, and Appendices E and F. Again looking at the significant trials by type of reinforcement interaction illustrated in Figure 3, an analysis of variance procedure performed separately on each of the positive, negative, and neutral reinforcement conditions across the three trials indicated that Ss increased in speed of card sorting under all three reinforcement conditions (F for positive reinforcement = 26.13, 2,144 df, $p < .001$; F for negative reinforcement = 62.19, 2, 144 df, $p < .001$; F for neutral reinforcement = 13.13, 2, 144 df, $p < .001$). While no differences had been found between the three reinforcement groups within any one trial, inspection of the curves suggested that the positive reinforcement group continued to increase in card sort speed following the second reinforcement while the negative and neutral groups may not have. This possibility was supported by subsequent tests which indicated that positive reinforcement led to an increase in speed of card sorting between Trials 1 and 2 and a further increase in speed on Trial 3 (t for trial 1 vs. trial 2 = 4.67, 144 df, $p < .001$; t for trial 2 vs. trial 3 = 2.44, 144 df, $p < .05$), while in the negative and neutral reinforcement conditions, speed of card sorting increased following the first reinforcement, but there was no significant further increase in speed following the second reinforcement (Trial 1 negative vs. Trial 2 negative $t = 8.66$, 144 df, $p < .001$; Trial 2 negative vs. Trial 3 negative $t = 1.04$, 144 df, N.S.; Trial 1 neutral vs. Trial 2 neutral $t = 3.13$, 144 df, $p < .001$; Trial 2 neutral vs. trial 3 neutral $t = 1.95$, 144 df, N.S.). The continuing

increase in speed following the second positive reinforcement, and the apparent lack of continuing increase in speed following the second negative and neutral reinforcements, appeared to be a factor leading to the significant trials by reinforcement interaction effect. Another obvious factor which contributed to this significant interaction was the relatively great increase in card sorting speed which occurred following the first negative reinforcement, as illustrated in Figure 3.

Figure 4 presents a graphic representation of the significant ($p < .001$) trials by type of reinforcement by type of delinquent three way interaction (Table 4). Separate F tests were run on the neurotic and pseudo-social delinquents' performance across trials under the positive, negative, and neutral reinforcement conditions. Under all reinforcement conditions, except one, pseudo-social and neurotic delinquents showed an improvement across trials (F tests significant at $p < .001$); the exception was that under neutral reinforcement neurotic delinquents showed no apparent improvement in performance over trials. As one can see in Figure 4, it appears that pseudo-social and neurotic delinquents respond differentially over trials in response to negative reinforcement and perhaps in response to neutral reinforcement, but pseudo-social and neurotic delinquents perform at approximately the same rates in response to positive reinforcement over the three trials. Analysis of the time scores of pseudo-social and neurotic delinquents within the negative reinforcement condition alone (Figure 4 - "negative") yielded a significant D x R x T interaction ($F = 11.33, 2, 144 \text{ df}; p < .001$), indicating that the neurotic delinquents responded more to the negative reinforcement than did the pseudo-social delinquents.

FIGURE 4

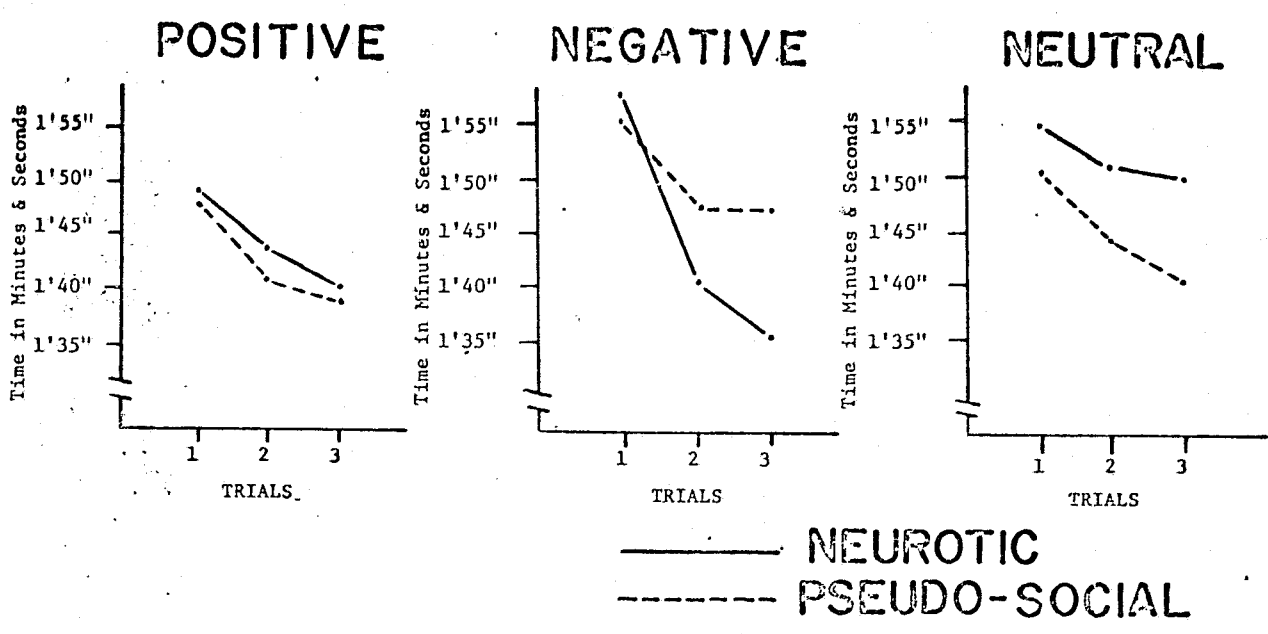


Figure 4. Card sort times according to type of delinquent and type of reinforcement over trials (see Table 4)

Table 4
 Card Sort Times According to Type
 of Delinquent and Type of Reinforcement,
 over Trials (see Figure 4).

<u>Reinforcement</u>	<u>Trial 1</u>	<u>Trial 2</u>	<u>Trial 3</u>
Neurotic	1'49.36	1'43.71	1'40.00
Positive			
Pseudo-social	1'48.50	1'41.00	1'37.86
Neurotic	1'57.00	1'40.43	1'35.79
Negative			
Pseudo-social	1'55.07	1'47.29	1'47.00
Neurotic	1'54.50	1'51.64	1'49.64
Neutral			
Pseudo-social	1'50.21	1'44.29	1'40.79

Separate analyses of the pseudo-social and neurotic delinquents in the neutral and positive reinforcement conditions seen in Figure 4 did not yield significant interactions.

Neurotic and pseudo-social delinquents were compared at each trial, under each of the reinforcement conditions (Figure 4). Under positive reinforcement at each trial examined separately, there were no differences between neurotic and pseudo-social delinquents. Also, under neutral reinforcement at each of the trials examined separately, there were no differences between neurotic and pseudo-social delinquents. However, in the negative reinforcement condition, though there was no initial difference (Trial 1) and no significant difference at Trial 2, by Trial 3 neurotic delinquents did differ from pseudo-social delinquents, with neurotic delinquents performing faster than pseudo-social delinquents ($t = 2.24$, 216 df, $p < .05$). The mean card sort time under negative reinforcement for neurotic delinquents on trial 3 was 1'35.79", as compared with 1'47.00" for pseudo-social delinquents. The divergent negative reinforcement curves seen in Figure 4 illustrate this finding.

Self Esteem Measures

The first self esteem measure (SE_1) was in the form of a frequency estimate, i.e. how many clicks the subject thought she could make in a 15 second period relative to a norm of 50 clicks. The second self esteem measure was in the form of a speed estimate, i.e. how fast the subject thought she could sort blocks into the boxes by color relative to a norm of 30 seconds. SE_1 was measured prior to any reinforcements having been given, and SE_2 was measured following each subject having had three instances of either positive, negative, or neutral reinforcement.

The third self esteem measure (SE_3) was taken after all Ss had received positive reinforcement on the block sorting task, and was again in the form of Ss prediction of how many times she could press the clicker relative to a norm of 50 clicks in a 15 second period. Because the SE_2 index was a measure of speed, a subject who stated a number less than 30 was considered as reflecting high self evaluation. The SE_1 and SE_2 indices, on the other hand, were frequency measures, so that a subject who was viewed as valuing herself highly stated a number higher than 50. In order to give each SE measure the same direction, SE_2 measures were reversed about the mean of 30, so that a subject who stated that she could sort the blocks in 25 seconds was given an SE_2 score of 35. In order to make the three self esteem scores further comparable, the SE_1 distribution was transformed first into standard scores, then to a distribution with a mean of 50 and a standard deviation of 10 (McNemar, p. 37). The same transformation operation was performed on each of the SE_2 and SE_3 measures. Prior to these transformations the means and standard deviations of SE_1 , SE_2 , and SE_3 , were 40.82, S.D. 8.70; 29.42, S.D. 5.16; and 44.23, S.D. 9.22, respectively. The analysis which follows is based only on the transformed scores. The original scores and transformed scores may be found in Appendix C.

An analysis of variance performed on the first self esteem measures (SE_1) indicated that pseudo-social delinquents had higher initial self esteem measures than did neurotic delinquents (means of 52.28 vs. 47.72, respectively, $F = 4.21$, 1.72 df, $p < .05$) (see Table 5). When this initial SE measure was taken Ss knew the experimenter as being an adult or as being a peer; however, no differences were found in initial

Table 5

Analysis of Variance Summary of SE₁ Measures

<u>Source</u>	<u>df</u>	<u>ms</u>	<u>f</u>
Reinforcement (R)	2	18.98	<1
Adult-Peer (E)	1	9.85	<1
Neurotic--Pseudo-social (D)	1	438.08	4.21*
ER	2	48.67	<1
DR	2	127.38	1.22 N.S.
ED	1	2.66	<1
EDR	2	35.20	<1
<u>Ss within RED</u>	<u>72</u>	103.99	
	83		

*p < .05

SE in response to this experimenter factor. Since at the time that SE₁ was taken, Ss had not yet received any reinforcement, the non-significant reinforcement effect indicates that no systematic bias occurred in assigning Ss to the three reinforcement conditions.

Because of the initial difference between social and individual delinquents on SE₁, a covariance analysis was considered. However an analysis of variance procedure performed on the data considering SE₁ and SE₂ as repeated measures found no significant interaction involving type of delinquent (see Appendix H for summary table). This suggests that a covariance analysis would not add any information. Also, inspection of the curves indicated that changes between SE₁ and SE₂ could not be predicted on the basis of SE₁. Because the results of separate analyses of SE₁, SE₂, and SE₃ are more clear, and because the three are not really repeated measures, it was decided to present the analysis of each self esteem index separately.

The second self esteem measure was taken after each subject had experienced three instances of either positive, negative, or neutral reinforcement. Analysis of variance performed on the second SE measure (SE₂) indicated that Ss differed on stated SE₂ according to which reinforcement condition they had experienced ($F = 10.03, 2, 72 \text{ df}, p < .01$) (Table 6). Subsequent *t* tests indicated that Ss who had received positive reinforcement stated higher SE₂ than Ss who had experienced negative reinforcement (means of 53.48 vs. 44.00, respectively; $t = 4.07, 72 \text{ df}, p < .01$). Ss who had experienced negative reinforcement stated lower SE₂ than Ss in the neutral reinforcement condition (means of 44.00 vs. 52.52 respectively; $t = 3.66, 72 \text{ df},$

Table 6
 Analysis of Variance Summary of SE₂ Measures

Source	df	ms	F
Reinforcement (R)	2	762.30	10.03**
Adult-Peer (E)	1	354.20	4.66*
Neurotic--Pseudo-social (D)	1	32.60	<1
ER	2	38.95	<1
DR	2	48.39	<1
ED	1	212.90	2.80 N.S.
EDR	2	315.64	4.15*
<u>Ss within RED</u>	<u>72</u>	<u>75.97</u>	
	83		

**p < .01

*p < .05

$p < .01$). There were no apparent differences in stated SE_2 between Ss in the positive and neutral reinforcement conditions.

Ss also differed on SE_2 according to whether the agent of reinforcement had been the adult E or the peer E , with the adult E condition yielding higher SE_2 than the peer E condition (means of 52.05 vs. 47.95, respectively, $F = 4.66$, 1, 72 df, $p < .05$).

A three way interaction occurred among type of delinquent, type of reinforcement, and agent of reinforcement ($F = 4.15$, 2, 72 df, $p < .05$). Figure 5 graphically presents this interaction. Separate F tests were performed to test for the differences in stated SE_2 following the three conditions of reinforcement administered by adults vs. peers to the pseudo-social vs. neurotic delinquents (i.e., F tests performed across each curve in Figure 5). Neurotic delinquents who had received reinforcements from an adult experimenter stated different SE_2 according to which reinforcement condition they had experienced ($F = 6.78$, 2, 72 df, $p < .01$). Subsequent t tests indicated that neurotic delinquents who had received positive reinforcement from an adult gave higher SE_2 than neurotic delinquents who had experienced negative reinforcement from the adult E (means of 53.34 vs. 40.06, respectively, $t = 2.85$, 72 df, $p < .01$). Also, neurotic delinquents who had received neutral reinforcement from the adult E stated higher SE_2 than did neurotic delinquents who had received negative reinforcement from an adult E (means of 56.11 vs. 40.06, respectively, $t = 3.44$, 72 df, $p < .01$). There was no apparent difference between the neurotic delinquents SE_2 responses following positive vs. neutral reinforcements administered by an adult E . Where neurotic delinquents had been given reinforcements

FIGURE 5

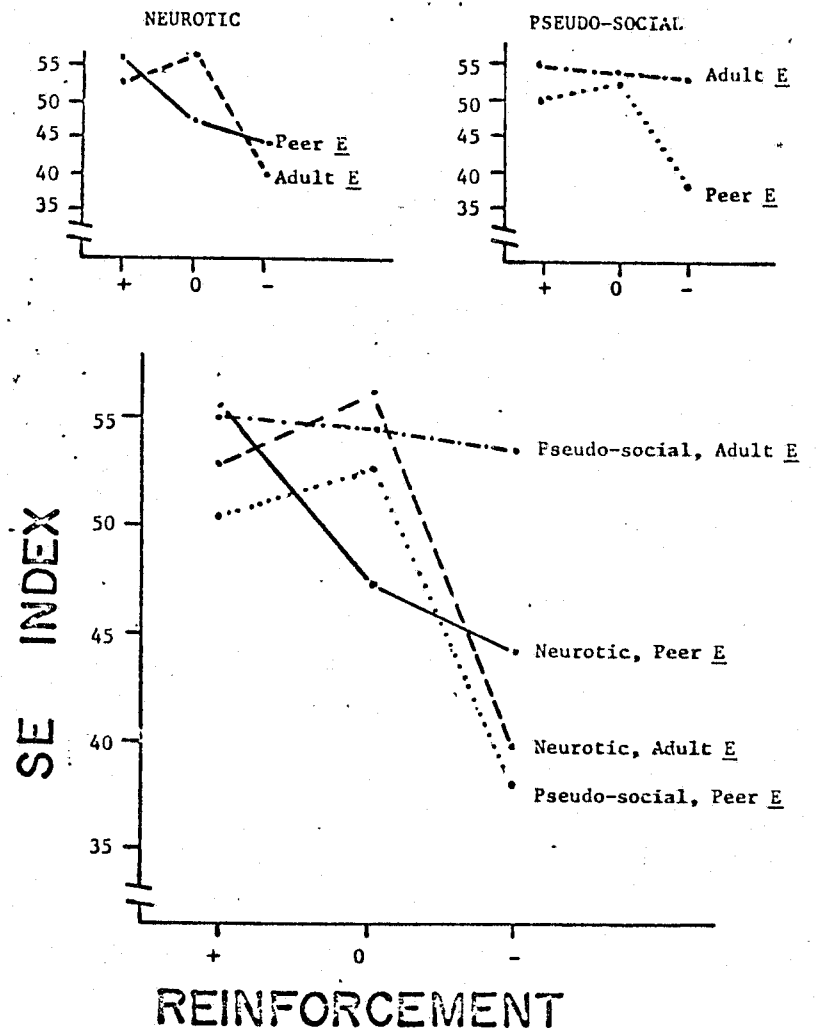


Figure 5. Second Self Esteem Measure (SE₂) According to Type of Delinquent, Experimenter, and Type of Reinforcement.

by the peer E, the SE_2 measures did not differ following the three reinforcement conditions, though a tendency toward differential responsiveness was noted (means of 55.28, 44.49, and 46.98 following positive, negative and neutral reinforcements; $F = 2.94$, 2, 72 df, $p < .10$).

From Figure 5 it can be seen that pseudo-social delinquents appeared not to vary their stated SE_2 following positive, negative, and neutral reinforcements when these reinforcements had been administered by the adult E. However, where the peer E had administered the reinforcements, pseudo-social delinquents SE_2 statements were affected ($F = 5.56$, 2, 72 df, $p < .01$). Subsequent t tests indicated that pseudo-social delinquents who had received positive reinforcement from the peer E stated higher SE_2 than pseudo-social delinquents who had received negative reinforcement from the peer E (means of 50.30 vs. 38.12, respectively; $t = 2.61$, 72 df, $p < .02$). Also, pseudo-social delinquents who had received the neutral reinforcement condition from the peer E stated higher SE_2 than did pseudo-social delinquents who had experienced negative reinforcement from the peer E (means of 52.51 vs. 38.12, respectively; $t = 3.09$, 72 df, $p < .01$). There was no apparent difference between stated SE_2 following positive vs. neutral reinforcements for the pseudo-social delinquent Ss responding to the peer E.

The significant type of delinquent x type of reinforcement x agent of reinforcement triple interaction portrayed in Figure 5 allowed F tests to be performed on the means comprising each reinforcement condition separately. Only following negative reinforcement did differences occur on Ss stated SE_2 responses ($F = 4.23$, 3, 73 df, $p < .01$). Subsequent tests indicated that neurotic delinquents who had received

negative reinforcements from the adult E stated lower SE_2 than did pseudo-social delinquents who had received negative reinforcements from the adult E (means of 40.06 vs. 53.34, respectively; $t = 2.85$, 72 df, $p < .01$). Thus, it appeared that while neurotic delinquents' self esteem was effected by negative reinforcement heard from the adult E, pseudo-social delinquents' self esteem was effected when the negative reinforcements had been administered by the peer E; where the peer E had given the negative reinforcements, pseudo-social delinquents stated lower SE_2 than when the adult E had given the negative reinforcements (means of 38.12 vs. 53.34, respectively; $t = 3.27$, 72 df, $p < .01$).

The third self esteem measure (SE_3) was taken after all Ss had experienced an instance of positive reinforcement following their block sorting performance. On this measure the three reinforcement groups differed from each other in that the positive reinforcement group had experienced three instances of positive reinforcement during the card sorting trials and one instance of positive reinforcement following one block sort; the negative reinforcement group had experienced three instances of negative reinforcement during the card sorting, followed by one instance of positive reinforcement after the block sorting; the neutral reinforcement groups had been exposed to three instances of no obvious reinforcement feedback followed by one instance of positive reinforcement after the block sort. Analysis of variance of the SE_3 measures indicated that there were no differences on this measure between these conditions of reinforcement, between the adult vs. peer agent of reinforcement, or

between the two types of delinquents. There were no interactions of these variables (see Table 7).

Block Sort Times

These measures were taken following the three reinforcements each subject received for her card sort performance, and following the SE₂ measure which was a self estimate of how well the subject thought she would do in block sorting. Analysis of variance performed on block sort times (see Table 8) indicated that Ss differed in speed according to whether they had experienced positive, negative, or neutral reinforcement on the card sorting performance ($F = 3.53, 2, 72 \text{ df}, p < .05$). Subsequent tests indicated that Ss who had experienced positive reinforcement sorted the blocks into the boxes faster than Ss who had received neutral reinforcement (means of 13.61 seconds vs. 15.57 seconds, respectively; $t = 2.65, 72 \text{ df}, p < .01$). There was no apparent difference between Ss who had received positive reinforcement and Ss who had received negative reinforcement, and no apparent difference between Ss who had experienced negative reinforcement and Ss who had received neutral reinforcement.

Ss also differed on block sort times according to type of delinquent, with pseudo-social delinquents performing faster than neurotic delinquents (means of 13.93 seconds vs. 15.31 seconds, respectively, $F = 5.22, 1, 72 \text{ df}, p < .05$).

Block sort time was apparently unaffected by the factor of agent of reinforcement. None of the two way interactions involving type of delinquent, agent of reinforcement, or condition of reinforcement

Table 7
 Analysis of Variance Summary of SE₃ Measures

<u>Source</u>	<u>df</u>	<u>ms</u>	<u>F</u>
Reinforcement (R)	2	260.86	2.58 N.S.
Adult-Peer (E)	1	105.96	1.05 N.S.
Neurotic--Pseudo-social (D)	1	142.72	1.41 N.S.
ER	2	63.88	<1
DR	2	22.69	<1
ED	1	1.69	<1
EDR	2	95.18	<1
<u>Ss within RED</u>	72	100.90	
	83		

Table 8

Analysis of Variance Summary of Block Sort Time Scores

<u>Source</u>	<u>df</u>	<u>ms</u>	<u>F</u>
Reinforcement (R)	2	27.08	3.53 *
Adult-Peer (E)	1	8.05	1.05 N.S.
Neurotic--Pseudo-social (D)	1	40.05	5.22 *
ER'	2	2.94	<1
DR	2	23.37	3.04 N.S.
ED	1	1.71	<1
EDR	?	.46	<1
<u>Ss within RED</u>	72	7.67	
	<hr/>		
	83		

*p < .05

was significant, though a tendency was noted for type of delinquent to interact with type of reinforcement ($F = 3.04, p < .10$). This interaction appeared to be due primarily to a tendency for neurotic delinquents to sort the blocks more slowly than pseudo-social delinquents following neutral reinforcement (means of 17.21 seconds vs. 13.93 seconds, respectively).

Clicker Frequency

Following Ss last SE estimate, SE_3 , estimating how many times she would press the clicker in a 15 second period, Ss performed the clicker pressing task. In order to insure that Ss would surpass the given norm of 50 and then would accept the last positive reinforcement as valid, an interval of 20 seconds was actually given. An analysis of variance of clicker frequency (see Table 9) indicated that Ss performed better on this task with the peer E than with the adult E (means of 79.10 vs. 73.05, respectively; $F = 9.15, 1, 72 \text{ df}, p < .01$). No other experimental variables had any apparent effect on clicker pressing performance.

Table 9
Analysis of Variance Summary of Clicker Frequency

<u>Source</u>	<u>df</u>	<u>ms</u>	<u>F</u>
Reinforcement (R)	2	92.89	1.11 N.S.
Adult-Peer (E)	1	768.05	9.15 **
Neurotic--Pseudo-social (D)	1	.43	<1
ER	2	183.08	2.18 N.S.
DR	2	43.96	<1
ED	1	40.05	<1
EDR	2	77.15	<1
<u>Ss within RED</u>	<u>72</u>	83.96	
	83		

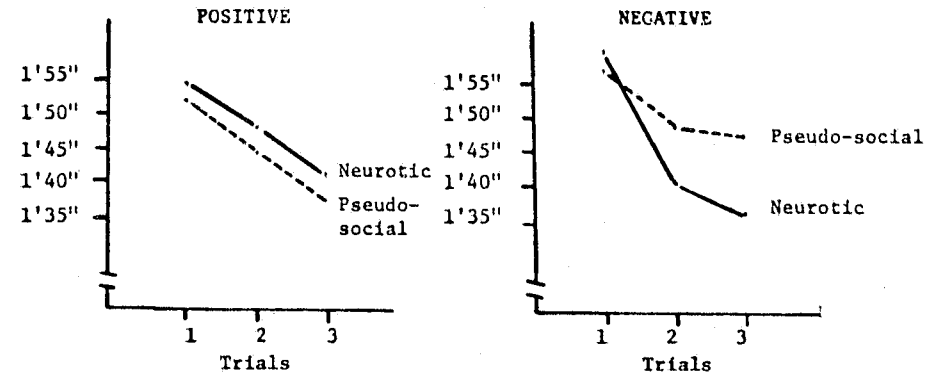
** p < .01

DISCUSSION

We will first consider responsivity of the pseudo-social and neurotic delinquents to the reinforcement conditions and agents of reinforcement by discussing the card sort times of the various experimental groups. The secondary index of responsivity, self esteem self ratings, will then be discussed in relation to the card sort times wherever possible, so that a relatively complete picture of the differences between the pseudo-social and neurotic delinquents in this experiment will be presented. Throughout the discussion the relationship between the findings of this experiment and various other theories and findings will be noted. Finally, the implications of this research for future research and for the treatment of delinquents will be discussed.

Card Sort Times

Perhaps the most dramatic conclusion of the present research is that pseudo-social delinquents do respond less to negative social reinforcement than do neurotic delinquents, while no clear differences occur in responsivity to positive social reinforcement. These conclusions, illustrated below in a reproduction of part of Figure 4, support hypotheses 1 and 2 of the experiment.



Card Sort Times over Trials

It is clear that no differences in speed were present prior to reinforcement, as can be seen by comparing pseudo-social and neurotic delinquents on trial 1 times. With the presentation of positive reinforcement following trials 1 and 2, both pseudo-social and neurotic delinquents improve in performance at approximately the same rate. However, when negative reinforcement is given following trials 1 and 2, neurotic delinquents show a rapid increase in speed which continues through the third trial, while pseudo-social delinquents increase somewhat in speed on trial 2, but show virtually no further increase in speed on trial 3. It is the rapid increase in speed in neurotic delinquents following the first negative reinforcement which appears to contribute much to the significant trials by reinforcement interaction seen in Figure 3 and clearly contributes to the type of delinquent x type of reinforcement x trials interaction illustrated in Figure 4.

As noted in the previous chapter, the trials by reinforcement interaction (Figure 3) also occurs because neurotic and pseudo-social delinquents both continue increasing in speed following the second positive reinforcement, while following the second negative reinforcement and in the neutral reinforcement condition, there is no increase in speed on trial 3 over trial 2. Figure 4 illustrates that it is only the pseudo-social delinquents who do not show a further increase following the second negative reinforcement; this apparent lack of responsivity to negative reinforcement contributed much to the significant trials x reinforcement conditions interaction.

It must be noted here that conceiving of the two types of delinquents as being anxious vs. non-anxious might also have generated the hypothesis that neurotic delinquents would respond more to negative reinforcement than pseudo-social delinquents. Conceiving of the two groups in this simplified way, i.e. as differing only in the amount of anxiety or generalized drive, does not completely define the groups, since they were selected on the basis of neurotic symptomatology or evidence of guilt which may or may not have included overt anxiety. That the groups differed in dimensions other than anxiety is supported by the analysis of the 16 P.F. Test, which indicated that the neurotic group showed greater superego strength than the pseudo-social group, and that the neurotic group was less adequate, more prone to guilt, than the pseudo-social delinquents. Nevertheless, hypothesis I could be generated by positing a difference between pseudo-social and neurotic delinquents in overt anxiety, or in anxiety as operationally defined by the MAS. The 16 PF analysis does suggest that the groups do differ

in anxiety, since the neurotics were found to be less stable, and more easily upset, than the pseudo-social delinquents, and the neurotics also appeared to be more tense and driven than the pseudo-social delinquents.

A great deal of research on the relationship between anxiety and performance in simple and more complex learning situations has been generated by the Spence-Taylor theory (Spence, 1958; Spence and Taylor, 1953) which posits response strength to be a multiplicative function of drive and habit strength in which anxiety is considered to be a generalized drive. On a simple task, one in which the reinforced response is high in a hierarchy of responses, as habit strength increases through conditioning trials, performance is increased more in higher drive Ss than in lower drive Ss. If the response selected as the "correct" response, i.e. if the response that is reinforced, is not the dominant response but is nevertheless high in a response hierarchy, increasing anxiety results in an increase in performance; however with further increases in anxiety a marked impairment often occurs. If a response which is reinforced is very low on a response hierarchy, increasing anxiety tends to decrease performance. Spence's (1964) review of the eyelid conditioning research, considered to be a simple conditioning task in which the dominant response is high on the response hierarchy, notes that in all but four of twenty-five studies high anxious Ss (MAS measure) conditioned more easily than low anxious Ss. In experiments in which anxiety has been aroused by stress-inducing instructions, stressed Ss showed greater ease of eyelid conditioning than non-stressed Ss (Spence, 1958; Spence, Farber, and Taylor, 1954; Spence and Goldstein, 1961). Bitterman and Holtzman (1952) and Welch and Kubis (1947) have

also found that Ss clinically judged as being highly anxious responded better to GSR conditioning than did low anxious Ss.

The card sorting task appears to be a simple task in which responses other than speed, which is being reinforced, would probably not be increased relative to the increase in the speed response. Also, other factors which might affect performance in high anxious Ss, such as fear of failure and the desire to give up which have been noted by Child (1954) and Sarason and Mandler (1952), did not appear to interfere with performance in the neurotic group. Consequently, it is possible to interpret the difference in performance between neurotic and pseudo-social delinquents on the card sort task as reflecting a higher drive in the neurotic group which, under negative reinforcement, is perhaps increased more than the drive level of the pseudo-social delinquents is increased.

Based on anxiety as a drive, and assuming the neurotic group to be more "driven" than the pseudo-social group, one might expect differences between the groups to be seen on trial 1. However these differences do not occur; in fact the pseudo-social group if anything is slightly faster than the neurotic group on trial 1 (1'51.26 vs. 1'53.45, respectively; difference not significant). Also, under neutral reinforcement, the neurotic group appears somewhat more slow than the pseudo-social group, the pseudo-social delinquents appearing to increase more over nonreinforced trials than the neurotic group, though again this interaction is not significant. Nevertheless, the results of the analysis of the negative reinforcement condition, indicating that the neurotic group responds more to negative social reinforcement than the pseudo-social

group, could be conceived of as reflecting a difference in emotional reactivity related to differing anxiety levels between the two groups.

Whether the pseudo-social group responded to negative reinforcement by performing more slowly than normals, or whether the neurotic group responded to negative reinforcement by performing faster than normals, is not answered in this study. Only the differences between the two groups within the delinquent population are noted. The use of a normal, non-delinquent control group, and the use of other control groups in further investigating the distinction between neurotic and pseudo-social delinquents, will be discussed later. A normal control group would be needed to demonstrate that the pseudo-social delinquents differ from non-anxious normals in response to social reinforcement. This would strengthen the argument that pseudo-social delinquents have a greater amount of psychopathy than neurotic delinquents and non-delinquents. However, since in this thesis the hypotheses were generated by conceiving of pseudo-social delinquents as having more psychopathy than neurotic delinquents, and since the results are consistent with these hypotheses and also are supported to some extent by the 16 PF findings, we will return to conceptualizing the delinquent subgroups primarily in terms of relative amounts of psychopathy.

The results in the negative reinforcement condition are consonant with Lykken's (1957) and Schacter and Latane's (1964) in finding more highly psychopathic Ss to be less conditionable under negative reinforcement, than less psychopathic individuals. Thus part of Cleckley's (1950) theory is confirmed in the present research in that pseudo-social delinquents do not appear to respond to words of reproof as do neurotic

delinquents, as inferred from the differences in performance. Cleckley might also predict that psychopaths would not respond to words of praise as would non-psychopaths, and Johns and Quay (1962) and Quay and Hunt (1965) in fact do support this prediction in their research. However, the present research suggests that there is no difference between pseudo-social and neurotic delinquents in response to positive reinforcement. This finding is consonant with the conclusions of Kadlub (1956) and Schacter and Latane (1964). The clinical notion that sociopathic individuals learn in response to rewards but do not appear to profit from punishments is only in part confirmed however. Noting that pseudo-social delinquents do improve between trials 1 and 2 in response to negative reinforcement, as do neurotic delinquents, suggests that pseudo-social delinquents do respond to reproof. It is only with further reproof (following trial 2) that pseudo-social delinquents fail to show further improvement in their performance, while neurotic delinquents do show a further increase in performance. If one assumes that pseudo-social delinquents have already had their "trial 1" reproofs in response to inadequate societal performance, it would then appear that continuing reproofs would have little effect in motivating change in punished performance. This is in agreement with the common observation that while neurotic delinquents seem amenable to change in the institutional milieu, which depends in large part on negative reinforcement to modify and control behavior, pseudo-social delinquents seem less amenable to change. According to the present findings individual psychotherapy which in reinforcement terms would tend to use positive reinforcement (deconditioning anxiety, giving support), would be equally applicable to pseudo-social

delinquents and neurotic delinquents, assuming other variables of psychotherapy to be equal. Caditz (1961), La Barba (1965), Persons (1965), Schmideberg (1947), and Sturup (1952) have reported successful psychotherapy with psychopathic patients.

As noted earlier, Cleckley's notion that psychopaths do not respond to words and phrases with normal affect suggests that psychopaths would differ from non-psychopaths in response to both positive and negative social reinforcement. This theory then is not supported by the findings of the present research. The more dynamic theories, which attribute the psychopathic personality to faulty and incomplete development of the superego because of early emotional deprivation and the resultant inadequate identification with parental values (Alexander, 1930; Aichorn, 1935; Bender, 1947; Fridlander, 1947) are not stated in reinforcement terms; however, abstracting from this environmental approach to superego development, one might predict that the psychopath would not respond with anxiety to negative social reinforcement, but might respond normally to positive social reinforcement. These dynamic theories, which incidentally are reflected in the common clinical observation that psychopaths do not benefit from punished experiences but are adept at manipulating for rewards, are supported by the present research.

A recent theory of psychopathy which will undoubtedly generate a good deal of research because it seems so susceptible to experimental testing, has been proposed by Quay (1965). Quay hypothesizes that the psychopath has a lower basal reactivity and/or is able to adapt faster to sensory input than the non-psychopath. The psychopath then requires a higher level of sensory input or greater variability of sensory input

than the normal in order to maintain pleasant affect, i.e., in order to sustain motivation in any given task. Thus, because of the psychopath's relative intolerance for sameness, he appears impulsive. The psychopath's need for varied stimulation reduces affect and motivation in a stable environment, and would lead to a decreased ability to respond to both negative and positive reinforcement in any repeated task.

Since Quay (1965) does not posit that negative and positive reinforcement necessarily differ in terms of the amount of stimulation provided, and since in the present experiment the experimental environment remains otherwise the same under these two reinforcement conditions, Quay's hypothesis would lead to the prediction that pseudo-social delinquents would respond less to both positive and negative reinforcement than would neurotic delinquents. This prediction is not confirmed in the present research. In fact Quay might predict that pseudo-social and neurotic delinquents would differ most in response to neutral reinforcement, since that condition might be considered to provide the least varied stimulation. An inspection of the performance of pseudo-social and neurotic delinquents under neutral reinforcement, illustrated in Figure 4, suggests that if anything the opposite occurs. Under neutral reinforcement pseudo-social delinquents do show a decrease in card sort time over trials, while neurotic delinquents, being perhaps more dependent on external feedback do not improve their performance in the neutral reinforcement condition. Halleck's (1966) conception of the psychopath as a person who feels relative freedom from the dictates of society would suggest that pseudo-social delinquents would be less dependent on external evaluative feedback than would the less free,

i.e., more dependent, neurotic delinquents.

Hypotheses 3 and 4 combined would lead to the prediction of a significant interaction between peer vs. adult agent of reinforcement and pseudo-social vs. neurotic type of delinquent. As can be seen from Table 2, no such interaction occurs, and hypotheses 3 and 4 are unconfirmed. In fact, the experimental factor of peer vs. adult experimenter does not appear in any significant interaction in the analysis of card sort times. Thus hypothesis 5, which posits an interaction between agent of reinforcement, type of reinforcement, and type of delinquent, is not confirmed. It could be that the effects of positive, negative, and neutral reinforcement completely overshadow any small effects which peer vs. adult experimenter might have. Cowden's (1960) suggestion that neurotic delinquents appear more sensitive to adults than to peers, and Lewis' (1965) findings that pseudo-social delinquents are more influenced by peers than by adults are thus not clearly supported in this experiment. Lewis (1965) did find that neurotic delinquents are not more susceptible to adult influence than are pseudo-social delinquents, and the present research supports his conclusions regarding neurotic delinquents.

Summarizing the card sort time measures in relation to the hypotheses of the experiment, it was found that:

1. Pseudo-social delinquents did respond less to negative social reinforcement than do neurotic delinquents, in confirmation of hypothesis 1.
2. Pseudo-social and neurotic delinquents did not appear to differ in responsivity to positive social reinforcement, in confirmation of hypothesis 2.

3. Since hypotheses 3 and 4 combined led to the prediction of a significant E x D interaction, and this interaction did not occur, hypotheses 3 and 4 were unconfirmed. Pseudo-social and neurotic delinquents did not differ significantly in response to adult E vs. peer E.
4. Since hypothesis 5 predicted a significant E x D x R interaction which did not occur, this hypothesis was unconfirmed.

It is tempting to speculate that in the experimental situation Ss did not place much import on the distinction between having an adult E vs. a peer E, since the experimenter was not seen by the subject at any time. The concept of "peer" should probably imply more than a person of similar age in a similar predicament of being an institutionalized delinquent. Perhaps for a peer to be a more potent agent of reinforcement the peer should be known to the subject, so that the subject would more readily identify with the peer. The simplicity of this explanation does not hold up however; pseudo-social and neurotic delinquents did respond differentially on the self esteem measure to the adult vs. peer experimenter, though the distinction was not reflected in their card sort performance.

Self Esteem

Pseudo-social delinquents stated a higher self esteem than neurotic delinquents prior to the presentation of any reinforcements. Considering Halleck's (1966) conception of the psychopath as being relatively free in that he does not depend upon the approval or disapproval of others, it could be that pseudo-social delinquents were more ready to evaluate themselves highly because they would not fear performing more poorly than their prediction. Findings by Hovland and Janis (1959), Crutchfield (1955), and Maslow (1961) indicate a relationship between self esteem and susceptibility to influence, with individuals with low self esteem being more susceptible. If this relationship, which is questioned by some (Mangan, Quartermain, and Vaughn, 1960; Divesta and Cox, 1960) especially in regard to female subjects (Hovland and Janis, 1959), does indeed exist, then it might also be true that persons who are very susceptible to influence also have low self esteem. One would expect that neurotic delinquents, like other neurotic individuals, might be less confident of their own judgmental abilities. A study by Morgan (1961) did find that psychopathic subjects tended to show less attitude change than non-psychopathic prisoners as a result of group discussion, and Cowden (1960) also observed that more neurotic Ss demonstrated more change in response to adults than did the more psychopathic Ss. Consequently, the difference in initial self esteem found in the present study between pseudo-social and neurotic delinquents could be reflecting the difference between these groups in their differing willingness to be influenced.

Self esteem was affected by the reinforcements. Measuring self esteem following the presentation of three instances of either negative or positive or neutral reinforcement, Ss who had received positive reinforcement stated higher self esteem than Ss who had experienced negative reinforcement. Also, Ss who had experienced negative reinforcement stated lower self esteem than Ss who had received neutral reinforcement. There were no apparent differences in stated self esteem between Ss who had been exposed to positive reinforcement and Ss who had been in the neutral reinforcement condition. For Ss in general then, the negative reinforcement was believed and resulted in a lowering of stated self esteem.

However, an inspection of Figure 5 illustrating the significant interaction of type of delinquent, agent of reinforcement, and condition of reinforcement, reveals that pseudo-social delinquents lowered their self esteem only when they had received negative reinforcement from a peer. Where an adult had been the agent of reinforcement, pseudo-social delinquents apparently did not alter their self esteem statements regardless of whether they had been in the positive, negative, or neutral reinforcement condition. Self esteem statements by pseudo-social delinquents remained high regardless of what the adult E told them about their card sort performance. The pseudo-social delinquents maintained their statements of adequacy though at the same time they appear to have stopped trying harder on the card sort task. The pseudo-social delinquents may not have believed the adult E at all. What is more likely considering Lewis's (1965)

findings that pseudo-social delinquents are not responsive to adults is that the pseudo-social delinquents did not care what the adult E told them.

When a peer told pseudo-social delinquents that they had done poorly, this group did respond with lowered self-esteem (Figure 5). At the same time, however, they did not show much increase in performance on the last card sort. Thus, while the pseudo-social delinquent responded by a change in self-evaluation to the peers telling him he was no good, he did not speed up in his card sort performance. Looking at self-esteem as a measure of defensiveness (Gardner (1946) Heltzel, 1963), it appeared that pseudo-social delinquents remained defensively aloof in response to adults, but admitted to inadequacies somewhat in response to reproof from peers. The significant main effect of agent of reinforcement (E) seen in Table 8 was due to the fact that both pseudo-social and neurotic delinquents lowered their self-esteem in response to reproof from the peer E, but only neurotic delinquents lowered their self-esteem in response to reproof from the adult E. This difference was also reflected in the significant E x type of delinquent by reinforcement condition interaction seen in Table 8.

Neurotic delinquents did respond differentially to the various reinforcements administered by the Adult E. Where the adult E had told them they had done poorly, neurotic delinquents stated lower self esteem than when the adult E had told them they had done well or told them nothing at all. Self esteem was not appreciably different following positive reinforcement than following neutral reinforcement, however. On

the other hand, when neurotic delinquents had received reinforcements from the peer E , there was relatively little effect on self-esteem regardless of the reinforcements given ($p < .10$), though differences were in the expected direction. It is interesting to note that when the adult E gave the neurotic delinquents no feedback they tended to maintain self esteem, but when the peer E gave no feedback they stated fairly low self esteem (means of 56.11 vs. 46.98, $p < .10$). It is as if the neurotic delinquents expected failure (low SE_1), and hearing neither reproof nor praise from the adult they were encouraged; however, when they heard neither praise nor reproof from the peer they seemed somewhat discouraged. It could be that neurotic delinquents have come to expect reproof from adults and praise from peers and feel relief when adults do not give reproof and discouragement when peers do not give praise. Pseudo-social delinquents appear to interpret no feedback as simply no feedback, regardless of the agent of reinforcement, and so reflect the security they tend to behaviorally display. On the other hand, one might expect neurotic delinquents to be more threatened by ambiguity from adults than by ambiguity from a peer, a hypothesis which is not supported, but also not clearly rejected, in this research. Relating the self esteem measures taken following administration of the reinforcements more directly to the hypotheses of the experiment:

1. Combining adult and peer experimenters, pseudo-social delinquents and neurotic delinquents did not differ in response to negative reinforcement, so that hypothesis 1 was not confirmed.
2. No differences appeared between pseudo-social and neurotic delinquents in response to positive reinforcement, regardless of the agent of reinforcement. Hypothesis 2 was thereby supported again, as it was on the card sort time task.
3. Hypotheses 3 and 4, which disregard the type of reinforcement, were also not confirmed, since pseudo-social and neurotic delinquents did not differ significantly in response to adult E vs. peer E on the self esteem measure.
4. Hypothesis 5, which predicted an interaction between type of delinquent, agent of reinforcement, and type of reinforcement in the directions suggested by the previous hypotheses were confirmed in part in that:
 - a. Pseudo-social delinquents responded less to negative reinforcement administered by adults than negative reinforcement administered by peers.
 - b. Pseudo-social delinquents responded less than neurotic delinquents to negative reinforcement administered by adults.

It will be recalled that the third self esteem statement was given following one instance of positive reinforcement for all Ss for their block sorting performance. The three reinforcement groups differed when SE_3 was measured in that the positive reinforcement group had experienced positive-positive reinforcement, the negative reinforcement group had experienced negative-positive reinforcements, and the neutral group had experienced neutral-positive reinforcements. No differences were found on this measure between the various reinforcement groups, or between the two types of delinquents, or between Ss being reinforced by adults vs. peers, and there also were no apparent interactions of those variables. If three instances of positive or negative or neutral reinforcement followed by one instance of positive reinforcement on a somewhat different task can be considered comparable to Gerwitz and Baer's (1958) conditions of social reinforcement satiation, deprivation, and isolation, respectively, the present findings do not support the Gerwitz and Baer hypotheses. It appears that the value of the positive reinforcement following the block sorting task was enough to erase differences in self esteem that had existed, but that above this effect the one instance of positive reinforcement did not have a differential value dependent upon the reinforcement condition it followed. It should be noted, however, that the reinforcement paradigm is not really the same as that investigated by Gerwitz and Baer or in related studies investigating somewhat different hypotheses related to anxiety arousal (Stevenson and Hill, 1963; Stevenson and Snyder, 1960; Walters and Henning, 1962). Perhaps the primary difference is that in the present study the positive reinforcement following block

sorting was brief and not highly enthusiastic. This reinforcement was not intended to be a test of the various theories regarding changes in reinforcement patterns. The primary purpose was to undo any extreme anger or frustration which might have been felt by Ss who had experienced negative reinforcement, so that they would later leave the experimental situation relatively satisfied. The lack of differences found in the SE_2 measures between the various reinforcement groups indicates that this goal was accomplished.

Other Dependent Variables: Block sort times and Clicker Frequency.

Ss performed the block sorting task after having received three instances of either positive, negative, or neutral reinforcement, and after having stated their SE_2 expectation. Thus, Ss might still be considered to be responding to the reinforcements that had been administered. They did in fact differ in block sort time according to the reinforcement condition to which they had been exposed, a significant difference in speed occurring between positive reinforcement Ss and neutral reinforcement Ss, with negative reinforcement Ss falling in between. It is interesting to note that the order of performance according to reinforcement conditions is the same here as for card sorting time on trial 3 (see Figure 3). In a sense then block sort time could be considered a fourth speed trial, and extending Figure 3 in this manner leads to a significant difference occurring between the most divergent groups, i.e. the positive reinforcement group and the neutral reinforcement group. A continuing positive reinforcement following trial 3 kept Ss motivated; a continuing lack of feedback appeared to keep Ss relatively unmotivated.

Pseudo-social delinquents performed faster than neurotic delinquents on the block sort measure. From Quay's (1965) hypothesis that the psychopath requires a greater variability of sensory input than the non-psychopath in order to sustain motivation, one would predict that pseudo-social delinquents would respond relatively well to a new stimulus. On the block sort task pseudo-social delinquents do appear to enter into the task with renewed vigor, giving some support to Quay's hypotheses regarding the nature of psychopathy. On the performance task preceding block sorting, i.e. on trial 3 of card sorting, the only significant difference between the pseudo-social and neurotic delinquents had been that pseudo-social delinquents had performed more slowly than neurotic delinquents under negative reinforcement. Presenting the new task was apparently stimulating enough to overcome the motivational lag some pseudo-social delinquents were feeling, enough so that this group outdid the neurotic delinquents. Conceiving of anxiety as contributing to generalized drive, one might expect the more anxious neurotic delinquents to perform better than pseudo-social delinquents on block sorting, yet the opposite occurs. Thus Quay's theory of psychopathy reviewed earlier is quite specifically supported if one accepts the present thesis that pseudo-social and neurotic delinquents are differentiated by the relative amounts of psychopathy present.

Clicker frequency, the last task in the experiment, was included primarily to enable Ss to feel relatively good when they left. Though Ss had been told that the average number of clicks girls their age could make in a 15 second period was 50, pilot work had actually indicated that

the mean for the population was higher. Moreover, to assure that Ss would surpass 50 clicks, they were actually given 20 seconds. The only differences which might have been expected by this time, considering that various reinforcements had been administered and three self esteem statements had been made by Ss, would reflect differences in general productivity between pseudo-social and neurotic delinquents and differences between pseudo-social and neurotic delinquents according to the adult E vs. peer E variable as suggested in hypotheses 3 and 4. However, these particular differences did not appear. Instead, delinquents regardless of classification performed better on the clicker task when the experimenter was a peer than in the adult E condition. Since this particular main effect did not appear in any of the preceding measures, it is difficult to explain, and since the clicker measure was not particularly intended to discriminate between subgroups, no attempt at explanation will be made. It might be noted, however, that performance on this new task apparently did not raise again the motivation of pseudo-social delinquents as was seen on the block sort measure and as Quay might predict.

Review and Implications

The pseudo-social delinquent girl performed as well as the neurotic delinquent in response to positive social reinforcement, but in response to negative reinforcement the pseudo-social delinquent performed less well than the neurotic delinquent. Reproof from a peer led to statements suggesting lowered self esteem for the pseudo-social delinquent; reproof from an adult appeared to have no impact on self

esteem statements or the pseudo-social delinquent would not admit any such impact to the adult. Neurotic delinquents, on the other hand, appeared to respond greatly to reproof as measured by speed of performance, and their self esteem statements were lowered by this negative reinforcement regardless of the agent of reinforcement.

Clearly then, to the extent that the findings of this research can be generalized to other correctional institutions, treatment programs should take cognizance of the differences between these two types of delinquents in order to increase the effectiveness of the programs. The current use of negative social reinforcement would appear to be quite effective in modifying or at least controlling the behavior of neurotic delinquents, but would have less effect on pseudo-social delinquents. Lykken's and Schacter and Latane's results suggest that even more stringent punishment than negative social reinforcement would have little effect on pseudo-social delinquents. It would be interesting to analyze recidivism rates according to type of delinquent; it could be that the high rate mentioned earlier is due primarily to returning pseudo-social delinquents.

The differences in card sort performance between the two types of delinquents in response to negative reinforcement can be interpreted in two ways. The pseudo-social delinquents may have responded less to negative reinforcement than non psychopathic persons would, as the psychopathy theory and research predict, or the neurotic delinquents may be particularly reactive to negative reinforcement, as anxiety drive theory predicts. As noted earlier, conceiving of neurotic delinquents as being simply more anxious, and considering this type

of anxiety as having drive properties, one would expect neurotic delinquents to perform better than the pseudo-social group under positive and neutral reinforcements and the neurotic delinquents were no different (possibly slower) than the pseudo-social delinquents. But perhaps in response to negative reinforcement it is a higher level of emotional reactivity which is causing the neurotic delinquents to over-react, and this over-reaction is what leads to the clear differences between the groups under negative reinforcement. Only the use of a normal control group could help answer this question. If non-anxious normals would respond to the negative reinforcement no differently from the neurotic group, then the conceptualization of the two delinquent types as differing in psychopathy would be greatly strengthened. If the non-anxious normals would respond to the negative reinforcement condition as did the pseudo-social delinquent group, this would suggest that it was the over-reactivity of the neurotic delinquents which led to the differences in performance between the two delinquent types. While the lack of differences in drive prior to reinforcement, and the indication of the 16 PF analysis that the subgroups differ in superego strength and guilt proneness in addition to anxiety differences suggests that the psychopathy hypothesis is somewhat more tenable, especially in working with an anti-social population, normal control groups (anxious and non-anxious) would be most desirable in future research with these delinquent types.

Considering the differences between the groups in response to negative reinforcement and the apparent lack of differences in response to positive reinforcement, perhaps two separate types of correctional institutions for delinquents need to be established. One type, dealing with neurotic delinquents, could make effective use of negative reinforcements in order to control and re-educate, in addition to utilizing re-educative and supporting techniques such as group and individual psychotherapy. Since the neurotic delinquents respond so readily to negative reinforcement, perhaps punishments would be effective even if they were mild verbal reproofs. Stringent punishments such as lock-ups often may not be necessary. Another type of institution, dealing with pseudo-social delinquents, might utilize retraining primarily through rewarding achievements. Since the self-esteem of pseudo-social delinquents does appear to be affected by peer evaluations, this second type of institution might emphasize group therapy and vocational instruction led, if possible, by peers or near peers, perhaps ex-inmates. Short (1963) has used older delinquents as remedial instructors for younger potential school drop-outs and delinquents with good success. Other evidence, provided by Ohlin and Lawrence (1951) Cloward (1955), and Vinter and Janowitz (1961), also suggests that delinquents can assert antidelinquent influence on their peers. Individual therapy might also be offered pseudo-social delinquents, since they do appear to be able to respond to the positive reinforcements related to traditional psychotherapy. However, because of their relative lack of anxiety, social delinquents might not feel motivated to enter psychotherapy, unless being in psychotherapy could come to be considered

CONTINUED

2 OF 3

prestigious by their peers.

It cannot be concluded from this research that pseudo-social delinquents would not respond to negative reinforcement. This group does respond with improved performance after one reproof in the experimental situation; it is only with further reproof that they appear not to show further increases in performance. It could be that the pseudo-social group would respond better if the intensity and the instrumental relevance of the reinforcing stimulus were greater. Perhaps then punishments such as long lock-ups do have an effect on pseudo-social delinquents in controlling their future behavior. Further research as to the effectiveness of various types and intensities of reinforcements is needed.

A final comment should be made about the performance task developed for the present research. Delinquents increased in card sorting speed over trials under all reinforcement conditions as would be expected on a reliable measure of learning and motivational changes. Because the task is so simple, involving no concept attainment or fine motor learning, it is highly unlikely that intelligence would correlate with the speed measure. Some improvement in performance could occur as Ss became more adept at placing the cards in the slot; but if this motor ability were an important factor in determining speed, one might predict that the neurotic Ss, who also appear to be more anxious, would perform poorly when made even more anxious by the negative social reinforcement.

The difficulty in developing or constructing tasks to investigate the effects of social reinforcement in children has been noted by Stevenson (1965), who mentions the marble dropping task used by Gerwitz

and Baer (1958) as being particularly suitable for this area of research. That task, which involves sorting marbles by dropping them into a box containing holes while E reinforces certain sortings, would seem much more applicable to young children than to adolescents, both because the reinforced response becomes immediately obvious to adolescents and because delinquents well might refuse to participate in such a task. The task developed for the present research meets Stevenson's (1966) criteria quite well; it does not have a high intrinsic interest, it appears to minimize the effects of prior learning, it permits the experimenter to dispense reinforcements arbitrarily, and discrete responses are utilized. Stevenson suggests that the task should not have a clear terminus or visible product so that Ss will not persist in the task with only the motivation of seeing the task completed. This criterion is not met by the present research. However, an important factor not mentioned by Stevenson is controlled; the use of the one way mirror and the taped voice controls for subject-experimenter interactions and for differences between experimenters. The task might well be used in future research with pseudo-social and neurotic delinquents, perhaps in investigating the variables of intensity of social reinforcement, rates of reinforcement, and the variables of deprivation and satiation of social reinforcements. This task might also be used to investigate the variables of leadership status (which known experimenter is most effective in dispensing reinforcements), qualities of leadership (quality and quantity of reinforcements given by Ss of known status), patterns of aggression (which type of delinquent responds to E when experimental situation is reversed, i.e., when Ss and E change places), and other variables.

SUMMARY

This study was an investigation of the responsivity of two types of delinquent girls to positive, negative, and neutral social reinforcement. Using psychological or psychiatric reports, case history material, and group psychological tests to determine the presence or relative absence of neurotic symptomatology and manifestations of guilt, 42 girls were classified as neurotic delinquents, delinquents who evidenced signs of emotional conflict, and 42 girls were classified as pseudo-social delinquents, delinquents who showed little emotional conflict or guilt. It was assumed that delinquents with little inner conflict were more psychopathic than neurotic delinquents. Based on research evidence which suggested that psychopaths do not respond to negative reinforcement but do respond to positive reinforcement, it was hypothesized that (1) pseudo-social delinquents will respond less to negative social reinforcement than will neurotic delinquents and (2) pseudo-social and neurotic delinquents will not differ in responsivity to positive social reinforcement. In addition to the variables of type of delinquent and type of reinforcement, this study also investigated the effects of two different agents of reinforcement. Since some research has suggested that pseudo-social delinquents are susceptible to influence by peers and neurotic delinquents are sensitive to adults, it was further hypothesized that (3) pseudo-social delinquents will be more responsive to peers than neurotic delinquents and (4) neurotic delinquents will be more responsive to adults than will pseudo-social delinquents. Since reinforcements were administered by either a peer E or an adult E, it

was also hypothesized that (5) the variables of type of delinquent, type of reinforcement, and agent of reinforcement will interact in accordance with the previous hypotheses.

Reinforcements were administered over a speaker from a second room equipped with a one way mirror. Though the instructions and reinforcements were on tape, Ss were led to believe that E was actually there giving the reinforcements and instructions. Responsivity to reinforcement was measured by repeated timed trials on a task which required that the subject place 40 cards which had been set in a fixed, random-appearing order into four boxes placed at the corners of a large table. The task involved little learning, and was thus primarily an index of motivation. A secondary measure of responsivity to reinforcement was a self esteem index which was measured before and after the reinforcements were administered.

As measured by the primary dependent variable of card sort speed, the results confirmed hypotheses 1 and 2. Hypotheses 3 and 4 were not confirmed. It was thus concluded that pseudo-social delinquents are relatively unresponsive to negative social reinforcement, while neurotic delinquents do respond to negative reinforcement by increasing motivation. Since the adult E vs. peer E dimension had no apparent main effect and did not interact with the other variables as measured by card sorting time, hypothesis 5 was unconfirmed.

Results of the analysis of self esteem statements indicated that pseudo-social delinquents respond to peers giving negative reinforcement by lowering their self esteem ratings. However, pseudo-social delinquents do not lower their stated self esteem in response to reproof from

adults. Neurotic delinquents, on the other hand, are affected by negative reinforcement administered by either peers or adults.

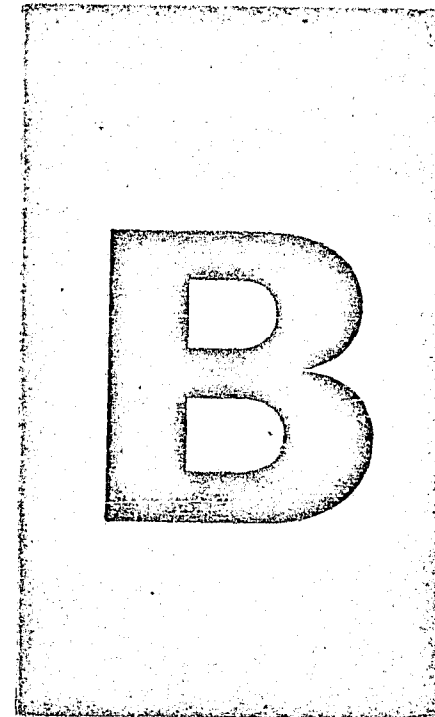
The results were discussed in relation to some theories of psychopathy and anxiety, and references were drawn for the treatment of juvenile offenders. The findings in general indicate that the pseudo-social vs. neurotic dichotomy should be considered in formulating institution treatment programs for female delinquents.

Appendix A

Order of the Cards, Sample of Cards Used

ORDER: ABCACDBADCB CABDCACACABCABDADBDEDCDCABDB

Sample Card:



Appendix B

Data Sheet

_____ Age _____ GP _____

S.E. Status _____ I.Q. _____

Clicker Estimate _____

Card Sort #1 _____

Card Sort #2 _____

Card Sort #3 _____

Block Estimate _____

Block Sort Time _____

Clicker Estimate _____

Click # in 20 secs _____

Appendix C

Taped Instructions and Reinforcements

All Ss: Can you hear me all right over the speaker? . . . In front of you is a one way mirror. I can see you but you can't see me. Also, you can hear me, but I can't hear you so please do not talk, and listen very closely. I am a-

Adult condition: (1) Staff member in the institution who is not involved with your cottage or your classes.

Peer condition: (2) Girl here in the institution who is not in your cottage.

All Ss: I have been asked to help in this. It is to develop an aptitude test. How you do on this will not be told to your social worker or to the school. Do you see the round bar on the yellow pad right on the desk in front of you? It has a clicker on the end of it. Girls your age can hold the round bar and click it with their thumbs about 50 times in 15 seconds. Don't click it now-- later on you'll get a chance to. I want you to tell me about how many times you'll be able to click it in 15 seconds. Since I can't hear you, you'll have to write down the number on the pad in front of you, and then hold it up to the mirror so that I can read it. Please write down your number right now. Remember, most girls can do about 50 in 15 seconds. (Pause button).

Since you can't talk to me and ask questions, I'll give you the instructions twice, so listen closely. Now, look at the four

colored boxes in the room with the letters A, B, C, and D on them. When I say "Go," first press the buzzer on the desk, then pick up one stack of cards, and put the cards one by one into the right boxes as fast as you can. When you're finished with that one stack of cards, hurry back and press the buzzer again. I'll repeat the instructions now. Look at the four colored boxes in the room with the letters A, B, C, and D on them. When I say "Go," you first press the buzzer on the desk, then you pick up one stack of cards, and put the cards one by one into the right boxes as fast as you can. When you are finished with that one stack of cards, hurry back and press the buzzer again. Then you wait until I write down your time and see how you did. You are to work as fast as you can, and do not skip any cards. Start by pressing the buzzer. Are you ready? Go! (pause button)

Positive condition: Let's see how you did (sound of searching through papers). Hey, really good! According to how the other kids did, you really went fast! Let's see if you can do even better with the next stack of cards. First rest, don't do anything for a little while. (about 20 seconds pause in tape)

Negative condition: Let's see how you did (sound of searching through papers). Well, not so good. According to how the other kids did, you did poor. You're

pretty slow. Let's see if you can do better with the next stack of cards. First rest for a while. (about 20 seconds pause in tape)

Neutral condition: Now please wait (about 30 second pause in tape).

All Ss: When I say "Go," press the buzzer, pick up the cards, and work as fast as you can. Ready? Go! (pause button).

Positive condition: Let's see how you did this time (papers rustle).

You did even better! Much better than the other girls! Now one more time, and let's see if you can really go not that you have all that practice! Now wait til I say "Go" after you rest a while, and press the buzzer and really do it fast. Now first you rest, don't do anything. (pause in tape about 17 seconds)

Negative condition: Let's see how you did this time (papers rustle).

Poor again! Much worse than the other girls! You're still no good at it, even with practice! Now one last time. You've gotta be able to go faster than that! Now wait til I say "Go" after you rest a while, and really do it fast. Now first rest, don't do anything. (pause in tape about 17 seconds)

Neutral condition: Now please wait again (about 28 seconds pause in tape). Last time now. When I say "Go" press the buzzer, pick up the last stack of cards, and sort them as fast as you can.

All Ss: Ok. Ready, Go! (pause button).

Positive condition: Let's see how you did (papers rustle). Good!
You did a good job! You really went fast!
(25 second pause in tape)

Negative condition: Let's see how you did (papers rustle). Still
poor. You really didn't do it well at all.
You really are slow. (25 second pause in tape)

Neutral condition: Now please wait (30 seconds pause).

All Ss: Now, I want you to open the boxes so that they will stay open.

You just lift the cover all the way over, so that the boxes are
open. (pause button) Ok, now look at the box full of colored
objects in front of the mirror. Most girls can put the blocks
into the right colored boxes you just opened in about 30 seconds.
Write down how fast you think you can do it. Really fast would
be 20 seconds, and really slow would be 40 seconds. Thirty seconds
would be about average. Now write down your guess about how fast
you will actually do it in and hold the paper up to the mirror,
so that I can see it. (pause button) Ok. Now, when I say "go,"
press the buzzer, pick up the box of objects, and put the objects
in the right boxes. Then, press the buzzer again. Now do this
in the fastest way you want to. Are you ready? Go! (pause button)

Well! You really did well! Good! Now for the last thing.

I want you to press the clicker on the end of the round bar a few
times for practice. Right now (pause button for 5 seconds). Ok.

Remember most girls could click 50 times in 15 seconds, and you wrote down your estimate of how many times you could do it before. This time, write down how many times you could do it now, after having pressed the clicker. Ok. Write down your new guess on the pad, and hold it up to the mirror (pause button).

Ok. Now, when I say go, pick up the bar and click it as fast as you can until I say stop. Are you ready? Go! (20 seconds pause in tape) Stop!

You did very well. Mr. Post will see you in the room in a little while. Just wait for him, and thank you very much.

Appendix D

Data Sheet for "Dummy" Experiment

DATA SHEET

Age _____

Average Time for Age _____

1. Tell about one-way mirror.
2. Tell how you are (not your name), that you are helping, and that this has no effect on their stay.
3. Tell that they are not supposed to talk, because you can't hear them.
4. Tell what you want them to do. Remember they are to press the buzzer, pick up a stack of cards, sort them one by one into the correct slots on the boxes without skipping any cards, and when they have finished the one stack of cards to press the buzzer again and wait. "Get ready, get set, go!"
5. Record their time: Trial #1 Time _____.
6. Set the timer.
7. Tell the person if they did well or not. If they did poorly, let them know. If they did well, let them know. Be clear about how you think they did, how hard or not hard they were trying. Ask them to go faster with the next stack.
8. Tell the person to repeat the whole thing with the next stack of cards. Remind them to press the buzzer before they start and when they finish. "Get ready, get set, go!"

9. Record the time: Trial #2 Time _____
10. Set the timer.
11. Tell the person if they did well or not. If they did poorly, let them know. If they did well, let them know. Ask them to go faster with the next stack.
12. Tell the person to repeat the whole thing with the last stack of cards. Remind them to press the buzzer at start and at the end.
13. Record the time: Trial #3 Time _____
14. Set the timer.
15. Thank the person, ask them to wait there. Call me, I'll return the girl to the cottage.

Appendix E

Analysis of variance summary of card

sort time scores, trial 2

<u>Source</u>	<u>df</u>	<u>ms</u>	<u>F</u>
Reinforcement (R)	2	235.94	1.31 N.S.
Adult-Peer (E)	1	28.58	< 1
Neurotic--Pseudo-social (D)	1	24.11	< 1
ER	2	191.58	1.07 N.S.
DR	2	367.75	2.05 N.S.
ED	1	14.58	< 1
EDR	2	2.73	< 1
Ss within RED	72	179.52	
	<hr/> 83		

Appendix F

Analysis of variance summary of card
sort time scores, trial 3

<u>SOURCE</u>	<u>df</u>	<u>ms</u>	<u>F</u>
Reinforcement (R)	2	280.87	1.50 N.S.
Adult-Peer (E)	1	152.01	< 1
Neurotic--Pseudo-social (D)	1	.11	< 1
ER	2	275.51	1.47 N.S.
DR	2	730.75	3.91*
ED	1	.11	< 1
EDR	2	1.54	< 1
Ss within RED	72	187.02	

 83

* p < .05

Appendix G

Self-esteem measures, raw scores

Type:	Neurotic							
	Agent	Adult			Peer			
	<u>Ss</u>	<u>SE 1</u>	<u>SE 2</u>	<u>SE 3</u>	<u>Ss</u>	<u>SE 1</u>	<u>SE 2</u>	<u>SE 3</u>
Positive	1	40	25	45	22	26	25	26
	2	30	30	40	23	40	30	50
	3	35	30	45	24	30	30	35
	4	48	25	55	25	30	20	50
	5	40	25	50	26	30	25	25
	6	45	25	35	27	45	25	50
	7	35	40	40	28	45	40	45
Negative	8	35	38	40	29	48	33	40
	9	35	35	40	30	30	40	40
	10	40	35	50	31	60	30	50
	11	45	40	30	32	40	35	30
	12	45	35	45	33	30	30	30
	13	30	35	40	34	50	26	42
	14	38	32	43	35	40	40	40
Neutral	15	25	30	50	36	40	30	50
	16	30	30	30	37	40	30	50
	17	25	25	40	38	35	35	40
	18	50	20	70	39	38	30	38
	19	50	22	50	40	45	30	50
	20	35	30	40	41	43	35	48
	21	50	35	50	42	40	35	50

Appendix G cont.

Type:	Pseudo-social							
	Adult				Peer			
Agent:	<u>Sa</u>	<u>SE 1</u>	<u>SE 2</u>	<u>SE 3</u>	<u>Ss</u>	<u>SE 1</u>	<u>SE 2</u>	<u>SE 3</u>
Positive	43	38	33	36	64	36	30	40
	44	50	25	40	65	25	35	30
	45	45	30	55	66	30	30	40
	46	50	25	30	67	63	28	60
	47	35	28	45	68	45	30	50
	48	50	25	50	69	48	30	50
	49	40	30	40	70	60	30	50
	50	60	25	80	71	50	50	50
	51	35	30	50	72	45	35	30
Negative	52	30	35	40	73	50	30	40
	53	30	30	29	74	20	30	50
	54	35	32	50	75	30	40	30
	55	50	20	50	76	40	40	40
	56	40	30	40	77	48	32	41
	57	40	23	45	78	40	30	40
Neutral	58	50	30	50	79	52	30	54
	59	45	30	35	80	45	30	50
	60	45	25	55	81	40	30	50
	61	40	30	50	82	45	25	50
	62	43	30	43	83	40	30	40
	63	45	30	60	84	50	30	50

Appendix H

Analysis of variance summary of SE₁ and SE₂ as repeated measures

<u>Source</u>	<u>df</u>	<u>ms</u>	<u>F</u>
Reinforcement (R)	2	454.07	4.26 *
Experimenter (E)	1	122.95	1.15 N.S.
Type of Delinquent (D)	1	254.85	2.39 N.S.
RE	2	1.45	1
DR	2	20.57	1
DE	1	131.58	1.24 N.S.
DER	2	202.49	1.90 N.S.
Ss within RED	72	106.51	
Trials (T)	1	000.00	1
TR	2	327.21	4.45 *
TE	1	201.10	2.74 N.S.
TD	1	115.83	1.58 N.S.
TRE	2	86.18	1.17 N.S.
TDR	2	155.19	2.11 N.S.
TDE	1	83.98	1.14 N.S.
TDER	2	148.35	2.02 N.S.
Ss by Trials within RED	72	73.45	

* p < .05

Appendix I

Trial 1 card sort mean times

<u>Reinf.</u>	<u>Neurotic</u>		<u>Pseudo-social</u>	
	<u>Adult</u>	<u>Peer</u>	<u>Adult</u>	<u>Peer</u>
Pos.	1'51.571	1'47.143	1'48.571	1'48.429
Neg.	1'57.429	1'56.571	1'56.000	1'54.143
Neutral	1'51.000	1'58.000	1'45.714	1'54.714

	<u>Delinquent</u>	<u>Reinforcement</u>	<u>Experimenter*</u>
Neurotic	1'53.619	Pos. 1'48.929	Adult 1'51.714
Pseudo-social	1'51.262	Neg. 1'56.036	Peer 1'53.167
		Neut. 1'52.357	

* Agent of reinforcement

Appendix J

Card sort times, raw scores--60"

Type:	Neurotic							
Agent:	Adult			Peer				
	Ss	TR 1	TR 2	TR 3	Ss	TR 1	TR 2	TR 3
Positive	1	50	49	41	22	39	33	28
	2	42	36	31	23	69	66	59
	3	48	38	30	24	22	14	14
	4	63	49	46	25	27	20	20
	5	43	38	38	26	58	51	48
	6	53	48	38	27	61	77	77
	7	62	52	53	28	54	41	37
Negative	8	64	37	35	29	46	22	22
	9	50	30	29	30	63	56	57
	10	57	41	36	31	52	29	25
	11	60	49	38	32	60	44	21
	12	80	70	61	33	81	46	48
	13	37	33	24	34	47	35	35
	14	54	35	34	35	47	39	36
Neutral	15	66	56	48	36	62	51	50
	16	50	68	50	37	70	69	65
	17	49	41	46	38	59	59	50
	18	53	50	40	39	45	46	47
	19	53	52	54	40	50	45	45
	20	49	40	43	41	62	47	58
	21	37	35	34	42	58	64	65

Appendix J cont.

Type:

Pseudo-Social

Agent:

Adult

Peer

	TR 1	TR 2	TR 3		TR 1	TR 2	TR 3
				Ss			
	41	38	40		64	50	35
	44	39	35		65	49	49
	38	27	23		66	28	24
	53	53	55		67	45	43
	37	32	29		68	75	61
	81	56	45		69	43	43
	46	39	36		70	49	35
	52	33	39		71	69	59
	55	35	36		72	36	24
	53	53	50		73	46	41
	69	69	79		74	46	34
	41	32	42		75	60	61
	53	45	43		76	57	49
	59	55	50		77	65	52
	39	32	27		78	37	31
	79	72	66		79	63	61
	52	46	36		80	69	56
	26	20	17		81	63	65
	41	38	29		82=	44	34
	44	44	43		83	65	50
	39	29	32		84	42	42

Appendix K

Means and standard deviations, card sort trial 3

	Neurotic		Pseudo-social	
	Adult	Peer	Adult	Peer
Positive				
	M = 1'39.6"	M = 1'40.4"	M = 1'37.6"	M = 1'38.1"
	S.D. = 8.1"	S.D. = 22.4"	S.D. = 10.4"	S.D. = 12.5"
Negative				
	M = 1'36.7"	M = 1'34.9"	M = 1'48.4"	M = 1'45.6"
	S.D. = 11.7"	S.D. = 13.6"	S.D. = 14.4"	S.D. = 16.3"
Neutral				
	M = 1'45.0"	M = 1'54.3"	M = 1'35.7"	M = 1'45.9"
	S.D. = 6.7"	S.D. = 8.4"	S.D. = 15.6"	S.D. = 16.0"

Appendix L

The following criteria were used in making a judgment on each delinquent girl as to classification type. In a number of instances the case material (reports, tests) presented conflicting information even within the same report. In these few cases all the material was reviewed and a clinical judgment was made.

1. If a psychiatric or psychological report is available (approximately on 60% of the sample), if any of the following are noted, classify as "neurotic":

Depression or symptoms of depression such as suicide attempt, sleeping and eating disturbances

Obsessive behavior

Statement indicating severe emotional disturbances

Severe anxiety

Statement indicating high emotional reactivity

Statement indicating presence of clear insecurity

If the report is explicit in noting a chronic lack of guilt or anxiety, classify as pseudo-social.

If neither type of statement or both types of statement appear, or if there is no psychiatric or psychological report available, then,

2. Review social worker reports (field reports and institution reports). Use same criteria as in the psychiatric or psychological reports. If a judgment cannot be made at this point:

Appendix L cont.

3. Review group tests, such as the 16 P-F test (Cattell and Eber, (1957), Minnesota Counseling Inventory, and sentence completion tests. On 16 P-F note in particular scales C (ego strength), G (superego strength), and O (guilt proneness). On MCI note emotional stability scale in particular.

Note: In this system of successive hurdles, approximately 50% of the judgments were made from psychiatric or psychological reports. About 80% of the remaining subjects were classified on the basis of social worker reports. A review of test material, in conjunction with any reports available, aided in making a judgment on the remaining subjects. Inter-rater agreement was 85%, $n = 100$, with approximately 39% of the sample being classified as pseudo-social delinquents and 61% as neurotic.

Appendix M

Comparison of the pseudo-social and neurotic delinquents on
intelligence, socio-economic status, and age

	Bright-normal	Average	Dull-normal	Borderline
Pseudo-social	7	13	5	4
Neurotic	6	21	8	0

$\chi^2 = 6.20, 3 \text{ df}, \text{N.S.}$

	Upper middle	Lower middle	Upper lower	Lower lower
Pseudo-social	1	8	11	3
Neurotic	1	7	8	4

$\chi^2 = .60, 3 \text{ df}, \text{N.S.}$

	Mean age	S.D.
Pseudo-social	16.00	1.0
Neurotic	16.03	1.25

$t = 1, 58 \text{ df}$

Appendix N

16 P-F scale description and summary of analysis

Scale	Description		Mean, S.D. Pseudo-social N = 13	Mean, S.D. Neurotic N = 23	t 34 df
	Low	High			
A	Reserved, detached, critical, cool (sizothymia)	Outgoing, warmhearted, easy going, participating (affecto-thymia, formerly cyclothymia)	4.54, 1.9	5.30, 1.1	<1
B	Less intelligent, concrete thinking (lower scholastic mental capacity)	More intelligent, abstract thinking, bright (higher scholastic mental capacity)	5.0, 2.0	5.1, 2.0	<1
C	Affected by feelings, emotionally less stable, easily upset (lower ego strength)	Emotionally stable, faces reality, calm, mature (higher ego strength)	6.08, 1.0	4.30, .6	2.80**
E	Humble, mild, accommodating, conforming (submissiveness)	Assertive, independent, aggressive, stubborn (dominance)	5.77, 2.1	5.96, 1.5	<1
F	Sober, prudent, serious, taciturn (desurgency)	Happy-go-lucky, impulsively lively, gay, enthusiastic (surgency)	5.00, 2.0	4.91, 1.6	<1
G	Expedient, evades rules, feels few obligations (weaker super-ego strength)	Conscientious, persevering, staid, rule-bound (stronger ego strength)	4.38, 1.6	5.56, 1.0	2.38*
H	Shy, restrained, diffident, timid (Threctia)	Venturesome, socially bold, uninhibited, spontaneous (Parmia)	3.74, 1.8	3.38, 1.2	<1
I	Tough-minded, self-reliant, realistic, no-nonsense (Harria)	Tender-minded, dependent, over-protected, sensitive (Premsia)	6.54, 1.5	6.91, 1.8	<1

Appendix N cont.

Scale	Description		Mean, S.D. Pseudo-social N = 13	Mean, S.D. Neurotic N = 23	t 34 df
	Low	High			
L	Trusting, adaptable, free of jealousy, easy to get on with (Alaxia)	Suspicious, self-opinionated, hard to fool (Protension)	6.54, 1.5	6.91, 1.8	< 1
M	Practical, careful, conventional, regulated by external realities, proper (Praxernia)	Imaginative, wrapped up in inner urgencies, careless of practical matters, Bohemian (Autia)	6.31, 2.5	5.70, 1.9	< 1
N	Forthright, natural, artless, sentimental (Artlessness)	Shrewd, calculating, worldly, penetrating (Schrdness)	6.15, 1.2	6.22, 1.3	< 1
O	Placid, self-assured, confident, serene (Untroubled adequacy)	Apprehensive, worrying, depressive, troubled (Guilt proneness)	5.23, 1.4	6.83, 1.7	2.88**
Q ₁	Conservative, respecting established ideas, tolerant of traditional difficulties (Conservatism)	Experimenting, critical, liberal analytical, free-thinking (Radicalism)	4.62, 2.2	4.61, 1.4	< 1
Q ₂	Group-dependent, a "joiner" and sound follower (Group adherence)	Self-sufficient, prefers own decisions, resourceful (Self-sufficiency)	5.38, 1.7	4.56, 1.7	1.33 N.S.
Q ₃	Undisciplined self-conflict, follows own urges, careless of protocol (Low integration)	Controlled, socially-precise, following self-image (High self concept control)	3.15, 1.8	3.17, 1.5	< 1
Q ₄	Relaxed, tranquil, torpid, unfrustrated (Low ergic tension)	Tense, frustrated, driven, over-wrought (High ergic tension)	5.69, 1.3	6.61, 1.3	1.93 N.S.

** p < .01

* p < .05

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