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Egocentricity, delay of gratification, and risk taking in sociopaths.

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EGOCENTRICITY, DELAY OF GRATIFICATION, AND RISK
TAKING IN SOCIOPATHS

A Dissertation Presented

by

Sheldon D. Gluck

Submitted to the Graduate School of the
University of Massachusetts in
partial fulfillment of the requirements for the degree of

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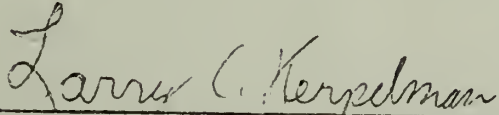
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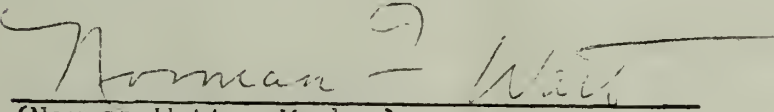
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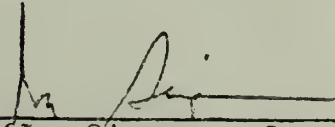
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C H A P T E R I

INTRODUCTION

Classification of Behavior Disorders

Classification is a necessary first step in the development of any science. Without it, the interrelationships of empirical events go unrecognized. The process of classification, however, can be extremely difficult. One of the principal reasons for this is that the methods or dimensions by which events are to be classified are not easily identified, and when they are, their nosological utility is often the subject of heated disagreement.

In the fields of clinical psychology and psychiatry the problems of classification have been especially evident. In these areas classification has proceeded mainly as an attempt to emulate and apply the well accepted framework of the medical model to behavior disorders. Consistent with medical objectives, the purpose of classification or diagnosis has been conceptualized as representing an initial step in the determination of etiology, as a predictor of outcome and prognosis, and as an indicator of appropriate treatment. Voluminous criticism has been directed against the validity of this "disease model" system of nosology (Ullman & Krasner, 1965), but lest a

potentially valuable system be abandoned prematurely, it is important that dissatisfaction bred by impatience not be confused with invalidity. The subtleties and complexities of human behavior are such that it would be unrealistic to expect a meaningful nosology to develop without a long and intense expenditure of effort.

The reliability as well as validity of psychiatric nosology also has been criticized (Maher, 1966; Nathan, 1967). On the basis of a review of relevant research, Eysenck (1960) concluded that the correlations of diagnoses made independently by different psychiatrists were too low to be acceptable as descriptive statements of the patients who were being examined. Eysenck went on to state that this was in no small part due to the low reliability of the ratings made of the symptoms which entered into the various syndromes.

If one thing is clear, it is that there is a good deal of dissatisfaction with the present system of psychiatric nosology. Some critics go so far to question the fundamental need for psychiatric classification; and though their objections do have some validity, there are counterarguments. One frequently voiced objection (Maher, 1966; Zigler & Phillips, 1961) is that no two class members

are exactly alike and assignment to a group ignores the uniqueness of the members. In addition, classification does not concern itself with process or how an individual member of the class changes over time. The counterargument to this concern with loss of uniqueness points out that assignment to class membership should represent a compensatory gain in the knowledge of attributes and correlates that go along with class membership, and that the loss of individual characteristics is minimized if only irrelevant aspects are deleted from the classification schema. What is relevant, however, and what is irrelevant is not always easily determined.

Another common criticism of diagnosis is that diagnostic classes encompass heterogeneous groups of people varying in symptomology, prognosis, etiology, etc. This criticism fails to realize that considered within a classification system is the notion of a broad group which includes subgroups. For example, schizophrenia may be considered the main group with the various forms of schizophrenia considered as subgroups, in which case the concept schizophrenia could not be criticized on the basis that all its members do not share all attributes, although obviously they share some attributes.

Accepting then, in principle at least, the potential value of psychiatric classification, a pertinent question would be to ask how the present system could be improved. Some thoughts on this question have been presented by Zigler & Phillips (1961) and, because of their clarity, they are quoted here:

The amount of descriptive effort required before etiological factors are likely to be discovered has been underestimated and the pursuit of etiology should represent an end point rather than a beginning for classificatory systems.

The process of moving from an empirical orientation to an etiological one is of necessity inferential and therefore susceptible to the myriad dangers of premature inference. We propose that the greatest safeguard against such prematurity is not to be found in the scrapping of an empirical descriptive approach, but in an accelerated program of empirical research. What is needed at this time is a systematic, empirical attack on the problem of mental disorders. Inherent in this program is the employment of symptoms broadly defined as meaningful and discernible behaviors as the basis of a classificatory system [p. 616].

Zigler stresses the need for more active research focusing on the descriptive aspects of mental disorders. If diagnosis is to be useful, its descriptive referents must be less vague and inconsistent than at present. This study has been designed, in part, to deal with Zigler's comments, its intention being to focus on the behavior

disorder sociopathic personality and to examine experimentally the validity of several of its descriptive criteria. At the same time, it is the intent of the study to provide more substantive knowledge about these criteria, and thereby to go beyond the one-dimensionality of the brief statements generally used to characterize this disorder.

History of Sociopathy

In order that the reader may better understand the present form of the concept of sociopathy, the development of the concept is traced in this section. It will help at the outset, to avoid confusion, to make it clear how the concept is currently described. The most recent psychiatric nomenclature (American Psychiatric Association, 1968) has adopted the name antisocial personality to describe what in this paper has been called sociopathic personality. Because of the tenacious popularity of the terms psychopath and sociopath they are used here interchangeably with antisocial personality. The following description is from the diagnostic manual:

This term anti-social personality is reserved for individuals who are basically unsocialized and whose behavior pattern brings them repeatedly into conflict with society. They are incapable of significant loyalty to individuals,

groups, or social values. They are grossly selfish, callous, irresponsible, impulsive, and unable to feel guilt or to learn from experience and punishment. Frustration tolerance is low. They tend to blame others or offer plausible rationalizations for their behavior. A mere history of repeated social offenses is not sufficient to justify this diagnosis [p. 43].

The first clinical description of the sociopath comes to us from the observations of Pinel (Kavka, 1949) who described the unusual behavior of a young aristocrat who was prone to extreme fits of anger. If a dog, or horse, or other animal offended him he would instantly put it to death. At one time he became so enraged at a woman that he threw her into a well. Pinel gives us some background information, telling us that this young man was the son of a weak and indulgent mother who encouraged the gratification of her son's every caprice and desire. He referred to the condition exhibited by this young man as "Manie Sans Délire": "I was not a little surprised to find many maniacs who at no period gave evidence of any lesion of the understanding, but who were under the dominion of instinctive and abstract fury, as if the active faculties alone sustained the injury [p. 462]."

By today's standards, Pinel's "Manie Sans Délire" is too inclusive, lumping together several psychiatric

categories. His classic example cited above would probably be more accurately described as an acting-out neurotic. His observations, however, served as an important step in the direction of considering the psychopathic state as a separate mental disorder.

In England in 1835, J. C. Pritchard coined the phrase "moral insanity" to describe an individual who "is found to be incapable not of reasoning upon any subject proposed to him but of conducting himself with decency and propriety in the business of life [McCord & McCord, 1964, p. 24]." Pritchard's concept, like Pinel's, was overly inclusive compared to the contemporary picture of the sociopath, including such disorders as manic-depressive psychosis under his label "moral insanity." It was Pritchard's concept of moral insanity that was the precursor of the concept of social or moral defectives, or moral imbeciles, developed in the later work of British writers.

In 1878 Gouster (McCord & McCord, 1964) presented the first clinical picture of the symptoms found in moral insanity: longstanding moral perversion; a delight in mischief, excitement, and passion; enfeebled judgment; and certain abnormal physical proportions. Only these last two points would seem to be in disagreement with the present-day

conceptualization.

By the 1870's Pritchard's concept of moral insanity had become increasingly popular and controversial (Maughs, 1941). Its supporters contended that a separate moral sense existed within the mind which could be split into intellectual and moral spheres, and still others felt that the intellect was always affected in mental illness and therefore insanity could not exist without some intellectual impairment.

The inevitable entanglement of the concept of sociopathy with legal and religious questions postponed its progress towards being considered a separate entity until the turn of the century when interest shifted away from theoretical considerations to observations of the sociopath himself. In America, the term moral insanity was replaced by "psychopathic inferiority" suggested by Koch in 1888 (Partridge, 1930). Koch implied that the disorder was caused by a constitutional predisposition; and, in time, constitutional psychopathy gained wide use. In England, things took a slightly different turn. The concept of moral insanity served as a point of departure, with the theoretical conflicts previously associated with the term being relatively ignored. As reported in Partridge's

review (1930), Tregold spoke of an inner defect of moral sense and wisdom with strong antisocial tendencies. Sullivan viewed the conduct of the moral imbecile as patently absurd, "he lacks the essential quality of common sense. The moral imbecile is apt to engage in wrong doing for pleasure rather than profit, is usually an incorrigible thief and liar, and is apt to show early in life a many sided perversity of disposition. In all cases there is a common trait of insensibility with respect to the moral quality involved, with consequent incapacity for expressing shame or remorse [Partridge, 1930, p. 67]." Sullivan's description is much like present conceptions of the sociopath.

The concept of sociopathy has had a long history of confusion surrounding its development. This confusion has come not only from the inadequate delimiting of the behavioral phenomenon in question, but also from the plethora of terms and subtypes that have been used at one time or another to refer to the sociopath. A number of attempts have been made to divide the classification of sociopathy into subgroups, but rather than clarifying the concept, they have only helped to befuddle the issue, since these attempts based their subgrouping primarily on arbitrary

and superficial distinctions. A few of the many systems are given below:

<u>Kraepelin</u> (McCord & McCord, 1964)	<u>Schneider</u> (McCord & McCord, 1964)	<u>Partridge</u> (1930)
1. the excitable	1. the hyperthymic	1. delinquent
2. the unstable	2. the depressed	2. inadequate
3. the impulsive	3. the insecure	3. those with
4. the eccentric	4. the fanatic	general
5. the liars and swindlers	5. the self-seeking	incompat-
6. the antisocial	6. the emotionally unstable	ibility
7. the quarrelsome	7. the exploitative	
	8. the affectless	
	9. the weak-willed	
	10. the asthenic	

As recently as 1942, Henderson (1942) identified three types: (1) predominantly aggressive, (2) predominantly inadequate, and (3) predominantly creative. Though his tripartite division contributed little, Henderson's description of the psychopath is generally consistent with more recent formulations. He described him as an individual who has remained at an immature, egocentric level, and who lacks persistence of effort and is unable to profit from experience. One notable disagreement with the contemporary picture of the psychopath is Henderson's statement that, "Their conduct throughout their lives has been punctuated by disturbing episodes which have given rise to great anxiety [p. 486]." This is not consistent with the picture

of the psychopath as guiltless, affectless, and devoid of remorse.

Contributing to the general perplexity surrounding the concept of psychopathy has been the overinclusiveness of the concept. For example, Kahn (1931), whose book Psychopathic Personality was for more than a decade regarded as the chief exposition on the subject, listed sixteen types of psychopaths. The disorders included in Kahn's book included all the familiar psychoneurotic reactions as well as a variety of other behavior disorders, and, ironically, little can be found in this book which relates to the psychopath himself.

Ever since the concept of psychopathy was first described by Pinel, it has had the uncanny quality of being called by different names. In his historical review, Partridge (1930) identified approximately a dozen terms more or less synonymous in their use. They include constitutional inferior, constitutional psychopathic personality, psychopath, constitutional psychopath, constitutional psychopathic state, moral imbecile, constitutional defective, defective delinquents, emotionally unstable or inferior, neurotic constitution, and instinct character. In his review of psychopathy, Maughs (1941) was able to come up

with seventeen terms, including something called a psychosatiopath.

With all the confusion surrounding the concept of sociopathy, it is not surprising that an occasional author has suggested that the concept be done away with. One psychiatrist wrote, "The term psychopathic personality as commonly understood is useless in psychiatric research. It does not refer to a specific behavioral entity. It serves as a scrap-basket to which is relegated a group of otherwise unclassified personality disorders and problems [In McCord & McCord, 1964, p. 29]." Kinberg says the same thing a little more strongly, "The concept should be abrogated as theoretically unsatisfactory, practically misleading and destructive to scientific thinking [McCord & McCord, 1964, p. 2]."

Through the clouding confusion and disagreement the concept of sociopathy hung on, and by the early 1900's observers had begun to refine and delimit the concept. In 1906, Meyer excluded hysteria, psychasthenia, and neurasthenia from the concept (Partridge, 1930). Birnbaum (1917) pointed out that criminal behavior per se was not psychopathic, nor did psychopaths necessarily exhibit intellectual defects. By the end of World War I, the consensus was that

psychopathy was a discrete disorder manifested by strong criminal tendencies apparently not deterred by punishment.

By the 1930s the term "constitutional inferior" seemed to be falling into disrepute as being too ambiguous, too comprehensive, and too indefinite regarding the boundaries between abnormal and normal. Not to be undone by his predecessors, Partridge (1930) offered his own contribution to the names that had already amassed around the concept of psychopathy. He coined the terms "essential sociopath" and "sociopath." Partridge indicated that schemas of the psychopath at that time placed him in a coordinate position with the mental deficiencies, and that psychopathy as it was being used in its more inclusive sense referred to deep and chronic maladjustment. The principal characteristic of Partridge's "essential sociopath" is persistent and consistent antisocial behavior which is extremely resistant to change. Partridge went on to propose that the sociopath appears in two varieties: as the antisocial personality par excellence, and as a member of a great class of socially deviated persons who do not manifest any major personality deficiency.

A challenge to the concept of psychopathy that began in 1930 and which, to an abated degree, has continued to

the present is the question of the presence of intrapsychic conflicts (Jenkins, 1960). In 1930, Franz Alexander presented his classic paper on the neurotic character in which he relegated the concept of psychopathy to the subordinate position of one among many neuroses. As such, the psychopath's behavior was understood in terms of the interplay of id, ego, and superego (Alexander, 1930). According to Alexander, the seeming guiltlessness of the psychopath's behavior is only apparent. On an unconscious level, the psychopath is seeking self punishment (Gurvitz, 1951). Alexander's position maintains that the psychopath lives out his impulses, and that the strength of his ego is less than other neurotics principally because of the overwhelming power of his impulses.

Though most social scientists today believe that Alexander's theory depicts the personality of the acting out neurotic rather than the true psychopath (McCord & McCord, 1964), his position has not been without its supporters. After studying the cases of fifty psychopaths, Partridge (1928) concluded that the psychopath is one in whom strong demands are accompanied by feelings of inadequacy, inferiority and insecurity. Bromberg (1948) argued that the dynamic psychopathology of the so-called

psychopath is similar to, if not identical with, the basic defects in the structure of the ego found in the neurotic character. For Bromberg the defenses considered to be used by the psychopathic character were the same as those in other neuroses. He felt that the presence of anxiety, guilt, repression, and substitute gratification made it difficult to view psychopathy as dynamically dissimilar from symptomatic neurosis.

Karpman (1948a, 1948b) made a significant contribution in elucidating the thinking concerning the presence of conflict in psychopathy when he divided the disorder into two subtypes: symptomatic (secondary) and idiopathic (primary) psychopathy. In the symptomatic group Karpman included those cases which, on intensive study, demonstrated that there was an underlying psychic disturbance responsible for the appearance of psychopathic behavior. The neurotic character discussed by Alexander would be included in this group. When all the cases which Karpman was able to place in his first group were taken care of there still remained a small group designated as primary psychopaths, in whom no sign of psychogenesis could be found, "No matter how much effort one may make. It just isn't there [Karpman, 1948b, p. 527]!"

A pervasive difficulty with the concept of psychopathy has been the failure to define the concept in terms of a consistent set of criteria. Least guilty of this has been Hervey Cleckley (1964), who has compiled a relatively detailed and extensive list of descriptive criteria. Cleckley's efforts have had great practical value in helping to clarify what is meant by psychopathy. He listed sixteen points [p. 363]:

1. Superficial charm and good "intelligence"
2. Absence of "nervousness" or neurotic manifestations
3. Absence of delusions and other signs of irrational thinking
4. Unreliability
5. Untruthfulness and insincerity
6. Lack of remorse or shame
7. Inadequately motivated antisocial behavior
8. Poor judgment and failure to learn by experience
9. Pathological egocentricity and incapacity for love
10. General poverty in major affective reactions
11. Specific loss of insight
12. Unresponsiveness in general interpersonal relationships
13. Fantastic and uninviting behavior with drink and sometimes without
14. Suicide rarely carried out
15. Sex life impersonal, trivial and poorly integrated
16. Failure to follow any life plan

As previous writers had done, Cleckley emphasized the traditional traits of guiltlessness, incapacity for object love, shallowness of emotion, and impulsivity. In addition,

he introduced some new observations on the psychopath's superficial charm by which he often conceals his asociality. Surprisingly, Cleckley also noted that psychopaths can be found not only in prisons but in the respected positions of physicians, scientists, or even psychiatrists.

Cleckley's efforts are not without some shortcomings. Even a cursory look at his list reveals that his sixteen criteria are not discrete and independent, there being a fair degree of overlap and repetition. It is also not specified how much relative weight is to be given to the various criteria.

As phrased, not all of Cleckley's criteria readily lend themselves to objective validation. Among the sixteen listed, the two that have been selected for study here are "egocentricity and incapacity for love" and "failure to follow any life plan." For the latter criterion, some license has been taken in the present study in reconceptualizing it as inability to delay gratification. This is not felt to be a violation of the basic description when one considers Cleckley's (1964) statement, "He [the psychopath] does not maintain an effort toward any far goal at all, [p. 400]." Or McCord & McCords' (1964) statement that, "His life [the psychopath's] is

dominated by fleeting desires which leave no space for farsighted planning [p. 10]."

Research on Sociopathy

Until Lykken (1955, 1957) presented his work on anxiety in the sociopathic personality, nothing had been done experimentally to validate the purported characteristics of the sociopath. Lykken addressed himself specifically to the sociopath's alleged lack of affective arousal and recalcitrance to attempts at modification of his antisocial behavior.

Though Lykken's work and most studies that have followed it have focused on aspects of behavior--avoidance learning and anxiety in the sociopath--which are not the specific interest of the present research, a brief summary of this work will be given in order that the reader may be made familiar with the direction and form that research has taken. Starting from Cleckley's clinical observations, Lykken formulated several experimental hypotheses: a) sociopaths would be clearly defective compared to normals in their ability to develop or condition anxiety, defined as an anticipatory emotional response to warning signals previously associated with noxious stimulation, b) sociopaths would exhibit little manifest anxiety in life

situations normally conducive to this response, and c) sociopaths would be relatively incapable of avoidance learning under those conditions where anxiety would mediate the learning of an avoidance response.

Lykken's task was a 20 choice point mental maze which the subject was given 20 trials to master (the manifest task). At each choice point the subject could choose among any one of four alternative responses, one correct and three incorrect. Of the three error alternatives, only one would result in the receiving of shock. The "latent task" was for the subject to avoid receiving shocks, i.e., to learn to be incorrect on the non-shocked alternatives. Presumably, performance on the manifest task would be reinforced by social and ego rewards and performance on the latent task, by anxiety reduction.

The measure of anxiety conditionability was taken independent of the maze learning task, in a classical conditioning situation using GSR as the dependent variable. Subjects sat blindfolded listening to two buzzers, only one of which was paired with shock. The second buzzer, of different tone, was used to test for generalization effects.

Lykken used three groups in his experiment: primary

sociopaths, neurotic sociopaths, and normals. The distinction between the primary and neurotic sociopath was made on the basis of the presence of conflict and manifest anxiety, primary sociopathy being indicated by low levels of anxiety on the Taylor, Lykken, and Welsh anxiety indices. The distinction that Lykken made was consistent with Karpman's primary and secondary psychopath.

Lykken's major hypotheses were confirmed: a) there was no difference between the groups in learning the manifest task, b) the primary sociopaths showed significantly less avoidance learning on the latent task than normals, with the neurotics falling about midway between these two groups, and c) the primary sociopaths showed significantly less GSR reactivity and conditioning than the normals, with the neurotic sociopaths giving GSR data almost identical to those of the primary sociopaths.

Results for the basal skin conductance (BSC) measures among the three groups were equivocal. The data for the normals suggested lower BSC than for the sociopaths, but Lykken postulated that this may have been an artifact of the condition that his sociopaths and controls were run through the experimental procedure at different seasons of the year. Purportedly, skin conductance is affected

by seasonal changes.

Lykken's study indicated that the sociopath does not have a general learning deficit, but, more specifically, a deficit in a particular form of anxiety mediated avoidance learning. Support for the notion that the sociopath is not impaired in his general learning ability comes from the research of Bernard & Eisenman (1967) and Persons & Bruning (1966). In fact, both these studies found learning in the sociopath to be equal to, if not better than, learning in normals. Persons & Bruning (1966) instructed male incarcerated sociopaths, incarcerated non-sociopaths and normals to draw three-inch lines. Knowledge of results was given verbally by the statements "too long" and "too short," and by a mild shock for incorrect answers. The investigators found that the sociopaths demonstrated the most rapid acquisition and greatest resistance to extinction. Bernard & Eisenman (1967), using female sociopaths and student nurses, employed a verbal conditioning task in which pronouns were reinforced in a sentence-construction task. Two types of positive reinforcers were used, "good" as social reward and nickels as monetary reward. The investigators found that the sociopaths showed significantly more frequent emission of the

reinforced pronoun and that social reward was more effective than monetary reward for both groups.

Partial support for Lykken's finding of lowered autonomic reactivity in the sociopath can also be found. Hare (1965) monitored skin conductance of psychopathic and non-psychopathic criminals and non-criminal controls while they watched the numbers one through twelve consecutively presented on a memory drum. Subjects were previously told that the number eight would be accompanied by a shock. The results showed that as shock approached, anticipatory arousal, as measured by the increases in log conductance in the interval prior to shock, began later and were smaller for the psychopathic than for the non-psychopathic subjects. No significant differences, however, were found between psychopaths and controls for responsiveness to shock or recovery from the effects of the shock.

Fox and Lippert (1963) used juvenile offenders diagnosed personality pattern disturbance. They monitored spontaneous GSR activity and basal skin conductance while their subjects were instructed to relax on a couch in a low ambient noise level room. The researchers found that the personality disturbance group exhibited the greatest

frequency of spontaneous activity, but no significant difference between groups was found in basal skin conductance.

A position directly opposed to Lykken's and Cleckley's is that of Schacter and Latané (1964) who argue that the sociopath is more autonomically responsive than the normal, and that their apparently low manifest anxiety is a function of a labeling, or cognitive, factor. Their arguments are based, in part, upon research (Schacter & Singer, 1962) which demonstrated that a state of chemically induced physiological arousal was experienced differently depending upon the experimental conditions. Those subjects who were told what to expect, i.e., the physiological effects of epinephrine, the drug used, did not report anger or euphoria as did the non-informed subjects. Schacter and Latané interpret this experiment to mean that both physiological and cognitive components are required for experiencing an emotion.

In a further experiment intended to clarify the relationship between epinephrine, sociopathy, and avoidance learning, Schacter and Latané (1964) repeated Lykken's original study but with one addition. Each subject was tested two times, once with an injection of placebo and

once with epinephrine. As expected, under the placebo condition Lykken's original findings were replicated. Unexpectedly, however, under the epinephrine condition the sociopaths' performance on the avoidance task surpassed the performance of the normals. To help explain this finding, Schacter and Latané appealed to a companion study in which pre- and post-injection pulse rates were taken for sociopaths and normals. In that study, pre-injection pulse rates were found to be somewhat higher for sociopaths, and after injection, the differences favoring the sociopath were even greater. Schacter and Latané's use of pulse rate rather than GSR introduced the controversial issue of what measure, or measures, of autonomic functioning are best representative of arousal. Without attempting to answer this question, they took their findings of greater pulse rate and epinephrine sensitivity in the Lykken situation to support the thesis that the sociopath is more, not less, autonomically responsive than the normal. They further speculated that the sociopath's reactivity is indiscriminately high, almost any event eliciting strong autonomic responses. In terms of internal cues, it follows that sociopaths will feel little differences during times of danger

or during more tranquil times. It is only under highly unusual circumstances of stimulation that the sociopath is able to feel, i.e., to discriminate or label his emotional state.

Because those conditions which, for others, would be associated with emotionality are, for the sociopath his normal state, the sociopath might be expected to be reckless and to seek out situations that would allow him to experience emotion. Observations of the sociopath's thrill seeking and reckless behavior would seem to support this. The same behavior, however, can also be seen as the pathological seeking of stimulation arising from the sociopath's lowered reactivity.

Quay (1965) interprets much of the psychopath's antisocial behavior as pathological seeking of stimulation. He has argued that while the evidence for lowered basal activity is equivocal, the GSR studies almost uniformly indicate a more rapid adaptation process. Because of their lowered basal activity or rapid adaptation, according to Quay, psychopaths are often in a situation of stimulus deprivation and are thereby motivated by this unpleasant condition to change their affective state.

An illuminating study, clarifying and providing

fresh insights into the relationship of anxiety and avoidance learning in sociopaths, has been reported by Schmauk (1967, 1970). Schmauk's research is primarily a replication of Lykken's, with several modifications and additions. The major important modifications were the monitoring of GSR activity during the learning of the mental maze; the inclusion of three different types of punishment: shock, loss of money, and social punishment (the word wrong); the operational definition of autonomic anticipation and autonomic reactivity; and the assessment of the subjective experience of anxiety.

Schmauk's findings agreed with Lykken's for the learning of the manifest task but not for the learning of the latent task. Schmauk found that under the tangible punishment condition (loss of money), primary sociopaths learned to avoid as well as normals, but under the other two punishment conditions, normals' performance in learning to avoid was superior to that of the sociopaths'. Schmauk found no significant difference between his groups in basal skin conductance or in autonomic reactivity. An important finding was a groups by punishment interaction for the autonomic anticipation score (skin conductance changes in the five-second interval during which the

subject chose a lever). Under the tangible punishment condition, autonomic anticipation was about equal for the two groups, but under the other two punishment conditions, the normals had greater anticipation scores. In addition, primary sociopaths reported greater subjective anxiety under the tangible punishment condition.

On the basis of Schmauk's (1967, 1970) findings, it would appear that the popular notion that sociopaths are deficient in avoidance learning should be qualified to state that they are deficient in their responsiveness to particular kinds of punishments. Find the appropriate stimuli, and their autonomic responsivity, their subjective experience of anxiety, and their ability to learn to avoid are equal to that of normals.

Based on the findings of Schmauk and others (Lykken, 1957; Schacter & Latané, 1964), the putatively low autonomic reactivity of sociopaths has not been clearly substantiated. The only reliable finding cutting across a large number of studies (Hare, 1965; Lykken, 1957; Schacter & Latané, 1964; Schmauk, 1970) is that sociopaths condition fear more poorly than do normals, and that their autonomic anticipation of aversive stimuli is generally less.

A recent study which also employed GSR in sociopaths as one of its primary dependent measures is of special interest, not so much for any light it sheds on the question of autonomic reactivity in sociopaths, but for its directing of investigative attention to the study of the interpersonal egocentricity and insensitivity of sociopaths, one of the major criteria of concern to this study. Sutker (1970) used a vicarious conditioning paradigm to test her hypothesis that sociopaths have little sensitivity to the feelings of others. Basic to her procedure was the recognized phenomenon that emotional responses of one individual may elicit similar or dissimilar responses in another individual. Sutker cited evidence that one person observing another person receiving shocks can come to evince a conditioned GSR to the impending shock. Given this research finding, Sutker theorized that sociopaths, with their reduced sensitivity to others, should exhibit less conditionability than normal subjects of a vicarious autonomic emotional response while observing shock delivered to another individual (in this instance a stooge of the experimenter). Sutker also hypothesized, as a second measure of the sociopaths' insensitivity, that sociopaths would relinquish fewer quarters, given to them prior to

the experiment, when the relinquishment of quarters would serve to prevent the other from receiving shocks. No other remuneration was involved beyond the packet of quarters.

Subjects for Sutker's study were all males, twelve psychology students and twelve volunteer sociopaths whose names had been obtained from several mental health agencies. After being wired to monitoring equipment, subjects were told to sit quietly and listen to the presentation of the numbers one through seven. They were told that after the number four the other subject would receive a shock. There were two pre-conditioning trials and six conditioning trials. After the first six conditioning trials, six more trials followed, with the subject given the option of placing one of his six quarters in a box after the number two was called, in order to prevent the other subject from receiving shock.

Sutker found no differences between sociopaths and non-sociopaths in BSC, which is in line with previous literature (Fox and Lippert, 1963; Schmauk, 1970). Contrary to prediction, Sutker found that sociopaths responded with significantly greater GSR conductance changes to all stimuli across trials. They did not, however, show any

significant difference in response to the number three between pre-conditioning and conditioning trials, while the normals did, confirming previous research findings of poorer anticipatory responding in sociopaths. On Sutker's other measure of insensitivity, the relinquishing of quarters, no significant differences were found between groups.

While Sutker's findings did not support the thesis of greater egocentricity of sociopaths, it cannot hastily be concluded that there are no differences in egocentricity between sociopaths and normals. This is because the scientific method, which provides the procedural foundation of all research, recognizes the limitations and fallibility of experimentation. Any experiment is susceptible to many errors which include errors in design and procedure as well as interpretation of the data. One safeguard against the incorporation of inaccurate conclusions into the body of scientific information is the expectation that experimental findings be replicated by other researchers. When this has not occurred, the value of the findings of any one study is considered tentative at best. Sutker's study, being the first to examine the hypothesis of the egocentricity or insensitivity of

sociopaths, should be evaluated with great care. In addition, that Sutker's findings did not support her hypothesis of greater insensitivity of sociopaths, raises the question of the potency of her dependent measures. It is conceivable that another method of measuring the egocentricity of sociopaths would give totally different results from those of Sutker. The present study, investigating egocentricity in sociopathy within an experimental context wholly dissimilar to that employed by Sutker, provided a valuable next step in the evaluation of egocentricity as one of the criteria of sociopathy. Further, because of the present investigator's agreement with Zigler & Phillips (1961) position on the need for more intensive research into the descriptive dimensions of behavior disorders, two additional criteria of sociopathy were investigated.

Overview and Hypotheses

The three dimensions of sociopathy under consideration in this study were egocentrism, the inability to delay gratification, and high risk taking behavior. The first two characteristics were drawn from the detailed descriptions of the sociopath given by Cleckley (1964) and by McCord & McCord (1964). The third characteristic was

extrapolated principally from media based impressions of the sociopath's life style, which suggested that sociopaths, in spite of high risks of failure, are attracted to high payoffs that require a minimum expenditure of effort. This last characteristic of risk taking was proposed with less confidence in its validity than the other two criteria but with the hope that its inclusion would provide additional insights into the sociopath's behavior.

Egocentrism. Based on the literature reviewed above, an egocentric person was understood to be an individual who is concerned chiefly with his own desires to the exclusion of those of others. He is completely absorbed in himself, craving only his own pleasure. His attachments to others are usually fleeting and superficial, and when he does relate to others, it is as though they were objects to be used and manipulated to further his own ends. Cooperation, compromise, or the sacrificing of his needs for the betterment of others are considered difficult, if not alien, concepts for the egocentric individual to understand.

Considering the above description, a task which would allow for cooperative or exploitative behavior was needed as an experimental paradigm for egocentricity. A task

that seemed well suited to this requirement was the Prisoner's Dilemma (PD) game (Crumbaugh & Evans, 1967; Scodel, Minas, Ratoosh & Lipetz, 1959). Briefly, this game is structured so that two players occupying separate cubicles are called upon to make a series of choices. The combined choices made affect the amount of money earned. The payoff contingencies and choices are established in such a way that each subject has the option of maximizing his own gain to the disadvantage of the partner or maximizing mutual gain.

Hypothesis 1 was that sociopaths would exhibit more egocentricity (exploitative or uncooperative behavior) than normals.

Inability to Delay Gratification. Not being able to delay gratification was defined in this study, as per Mischel (1961), as the preference of immediate smaller reinforcements over long term larger ones. The sociopath reputedly is motivated by whim and the immediacy of his needs. Long term planning and time consuming considerations are supposedly ignored or given minimal thought. If this is so, it was expected that after the PD game was over, the sociopaths, more frequently than the normals, would choose to take their earnings at the end of the

experiment rather than wait a week for the additional incentive of one extra dollar.

Hypothesis 2 was that sociopaths, as compared with normals, would exhibit an inability to delay gratification, as measured by a greater number of the sociopaths indicating a preference for receiving their earnings immediately after the end of the experiment.

High Risk Taking Behavior. By the nature of his antisocial behavior, the sociopath often gives the impression that he is taking great risks in the face of a high likelihood of being caught. Is the sociopath attracted by high payoffs that require minimum effort (e.g., horse betting) so much so that he ignores or minimizes the risks involved?

The method for measuring this characteristic came at the end of the experiment when the sociopath earned a fixed amount from the PD game. He was offered the chance to multiply his earnings by spinning a dial. If he got a "five" his earnings were multiplied, if he did not, he lost all his money. The multiples were selected so that chance was clearly against the sociopath's success.

Hypothesis 3 was that sociopaths, as compared with normals, would exhibit greater risk taking behavior, i.e.,

sociopaths would go for the "quick killing" (an opportunity to multiply their earnings) more often than normals.

A corollary to this hypothesis was that sociopaths would perceive the risk involved in spinning the dial as more favorable than would normals, and this would be reflected in their subjective ratings of the degree of risk.

C H A P T E R II

METHOD

Subject Selection

Three groups of 35 subjects each participated in this research: primary sociopaths (PSs), neurotic sociopaths (NSs), and normal controls (Cs). Primary and neurotic sociopaths, all of whom were recidivists, were recruited from a population of criminal offenders incarcerated at a large New Jersey reformatory. Inmates at the reformatory were all males, predominantly Negro, and ranging in age from 17 to 35. Normal controls were recruited from three Philadelphia high schools varying in the proportion of racial groups present and in the socioeconomic background of their students. One school was atypical in that it provided a post high school technical training program for its students. An attempt was made to match Ss for age, race, IQ, SES, and funds available. Funds available was determined by asking Ss how much money they had on a weekly basis from any source. For those high school students who held jobs, the amount of money given to their families was subtracted from their earnings. Funds available was included among the matching

variables as a method of equating subject groups for their subjective estimate of the value of the money incentives that were being played for in the prisoner's dilemma game. All groups were constituted to be approximately 70% Negro, average in intelligence, and from lower class backgrounds. Socioeconomic status was determined from a rating procedure which incorporates education, occupational prestige, and income into one measure (Reiss, 1961).

All potential Ss were given, in a group situation, the Minnesota Multiphasic Personality Inventory (MMPI) and the Revised Beta Examination Intelligence Test. This was done routinely for the criminal offenders by prison authorities. Sociopaths' were considered eligible for selection if testing had been done within a year's time. In a large number of instances retesting was done to obtain a more currently accurate record. Any S receiving a Beta IQ below 85 was not used, this being considered a minimum required intelligence level to insure the S's comprehension of the experimental procedure and instructions. On the basis of the MMPI score profiles, subjects were assigned to one of the three groups.

The MMPI was chosen as the main selection device for two reasons. One, it is convenient, being easily

administered, scored, and interpreted; and, two, there is a large body of literature which supports its validity in identifying sociopaths (Craddick, 1962; Dahlstrom & Welsh, 1960; Gilberstadt & Duker, 1965; Guthrie, 1950; Hanum, 1964; Hathaway & Monachesi, 1953; Marks & Seeman, 1963; Meehl, 1946; Stefanowicz, 1967).

In the present research, two groups of sociopaths were identified. The concept of there being two groups of sociopaths and the procedure used to identify these groups followed from the work of several researchers. Conceptually, the definition of sociopathy was refined and given greater precision by Karpman (1948a, 1948b) when he forwarded the idea that sociopathy could be meaningfully divided into two subclasses, primary and secondary, with the separation being made on the basis of the absence or presence of the neurotic indicants of guilt and anxiety, respectively. Lykken (1955) adopted Karpman's thinking and translated it into experimental operations. He identified primary sociopaths and neurotic sociopaths among a prison population by using Cleckley's criteria in check list form. Only inmates with a diagnosis of sociopathic personality were considered by Lykken's panel of psychologists for assignment to the primary sociopath or

neurotic sociopath groups. Lykken also administered the MMPI and obtained several measures of anxiety, including the Taylor Manifest Anxiety Scale (MAS). Consistent with prediction, Lykken found that his PS subjects were significantly lower on the MAS. The MMPI profiles of the two groups were similar, both showing elevations on the psychopathic deviate (Pd) and hypomania (Ma) scales, but with the neurotic sociopaths' mean profile suggesting a tendency to score lower on hypomania (Ma) and higher on depression than the primary sociopaths. Guided by Lykken's work, Schmauk (1967) selected his primary sociopath subjects to have a Pd-Ma profile on the MMPI, with low depression, psychasthenia, and hypochondriasis scores; and his neurotic sociopath subjects to have a Pd-Ma profile with depression, psychasthenia, and hypochondriasis being higher.

In the present research, Schmauk's procedure for selecting sociopathic groups (with minor variations) was used. A large group of incarcerated Ss received the Beta and MMPI. The complete MMPI profile, including the ten clinical scales, the three validity scales, and the Taylor MAS (1953), was plotted for each S. Offenders with normal-looking profiles (Pd and Ma below T-score 65, all other

scales below T-score 70) or psychotic-appearing profiles (paranoia or schizophrenia above T-score 70) were dropped from further consideration. Subjects having a Pd-Ma profile with low MMPI anxiety Scales (hypochondriasis, hysteria, depression, and psychasthenia) were classified as primary sociopaths. Those subjects showing a Pd-Ma profile with high MMPI anxiety scores were classified neurotic sociopaths. In order to objectify this procedure, a degree of sociopathy score was devised. This score was simply the sum of the anxiety scale scores (see above). Dividing the sociopaths into primary and neurotic groupings was then accomplished by using a median split on the Total Anxiety (TA) scores, the upper half (those with the greatest Total Anxiety scores) being assigned to the neurotic sociopath group. Then, based on previous research (Schmauk, 1967) which showed that neurotic sociopaths exhibit higher MAS scores than primary sociopaths, any S with an MAS score that deviated greatly from the average of his preliminary group designation was excluded from the study.

Finally, after the initial division of the criminal offenders into PS and NS groups, further purification of the groups was made by considering an additional criterion.

Each S's case history was read looking for signs of emotionality. It was intended that the PS subjects should not have signs or indications of strong emotions attributed to them in their histories. For example, a candidate for the PS group should not have had a notation in his history that during an interview he was "crying" or "extremely anxious." Obversely, a candidate for the NS group should not have had terms like "unfeeling," "guiltless," or "cold" attributed to him. In practice the charts were not especially useful in eliminating Ss. This was because there was too much variability in the contents of different charts and because many different prison guards were responsible for the rating of inmates. Only one S was eliminated on the basis of chart material, there being a large number of comments suggesting psychosis.

Procedure

Because strategy choices in the Prisoner's Dilemma (PD) game have been shown to be related to personality traits and attitudes (Deutsch, 1960; Lutzker, 1960; McClintock, Harrison, Strand & Gallo, 1963; Terhune, 1968), and because the game provides an opportunity for the expression of both cooperative and exploitative behavior, it was selected as the experimental paradigm for assessing

egocentricity.

Prisoner's Dilemma. Typically, the PD situation is structured so that each player has the option of maximizing his own earnings or maximizing mutual earnings. To clarify, the contingencies for the payoff matrix illustrated (See Figure 1) would be as follows: If both players X and Y chose red this would be a cooperative choice maximizing the gain of both parties (i.e., both parties receive \$.10). If, however, either X or Y chose red and the other person chose blue, the person choosing blue has maximized his gain (he gets \$.15) to the other's disadvantage (he gets \$.05). Both players choosing blue would result in mutual loss (i.e., both players would receive \$.03).

In this experiment, the basic procedure was modified to make the situation more sensitive to exploitative or egocentric behavior. A real player Y was eliminated, and instead the subject played against a predetermined series of responses made by the experimenter. All of Y's choices were red or cooperative. The onus, then, of cooperating, or taking advantage of the partner, was on the subject. Because all Ss were playing against a 100% cooperative strategy, it was feared that word of mouth would communicate

PLAYER Y
 RED ○ BLUE ●

	I GET (X) HE GETS (Y) ○ ○	I GET (X) HE GETS (Y) ○ ●
RED ○	10 10	5 15
	I GET (X) HE GETS (Y) ● ○	I GET (X) HE GETS (Y) ● ●
PLAYER X RED ○ BLUE ●	15 5	3 3

VALUES FOR
 SECOND
 MATRIX

20	20	10	35
35	10	3	3

○ - Red
 ● - Blue

Figure 1. Payoff matrix in Prisoner's Dilemma Game

this and arouse the suspicions of future Ss. To minimize this problem, the first two Ss and every sixth S after that were buffer Ss. Included only for the purpose of deception, these Ss played the PD against a matching of previous choice strategy, and were allowed to earn denominations of money different from actual Ss. Also, in modifying the procedure, an attempt was made to avoid communicating to the subjects that the Prisoner's Dilemma was in any way a "game." It was felt that if the subjects believed the situation to be a game they would be "set" to "win" and would choose competitive responses. To clarify the experimental requirements and the payoff contingencies, the usual matrix presentation format was modified to include written statements of the contingencies (See Figure 1). The payoff contingencies were adjusted so that a competitive response was especially dangerous (known as the "chicken" variant of the PD) resulting in the lowest possible outcome under the condition of mutual competitive choices. It was speculated that this would encourage cooperation and thereby enhance the sensitivity of the PD to the exploitative tendencies of the sociopaths. In addition, to facilitate comprehension of the procedure, a color code was included on the charts

above the respective payoffs indicating the color choices that would give that payoff.

The experimental procedure can be conceptualized as being divided into four stages, three corresponding to the three hypotheses under question, and the last to the administration of a post-experimental questionnaire. The instructions for the experimental procedure are presented in Appendix A.

Egocentricity. During the first, and longest, part of the experiment the Ss participated in the PD game. Each S sat in a cubicle set off by two Masonite partitions at right angles to each other. Each S participated in the procedure alone but was led to believe that there was another person facing him on the other side of the partition. The experimenter (E) was situated at a right angle to both subject cubicles and was separated from S by one wall of the partition. When necessary, materials were passed to the S through a slot in the partition. The apparatus was placed on a table top and oak tag sheets were used to screen the S's view from under the table. Posted in front of the S was the payoff matrix shown in Figure 1 (minus the X and Y entries), indicating the possible choices he could make and the respective payoffs

in cents. Although each S thought he was playing against the other, in reality he played against the E and received constant feedback that his "partner" was making only cooperative choices, i.e., was always picking red. When a light flashed in front of him, the S selected a blue or red card and passed it to the E through the slot in the partition. The E in turn recorded S's selection and the amount of money earned. The E returned the choice card along with a payoff card which made it clear to the S what the respective choices were and what the payoff contingencies were, e.g., "you chose blue, he chose red; you get 15¢, he gets 5¢." On every fifth trial, the S received a card indicating how much money he had earned up to that point.

Each S played the game until he came as close to a \$3.00 limit as was possible given the varying "win" units of ten and fifteen cents. No S received less than \$3.00 or more than \$3.10. The number of trials any S took to reach this limit depended on the proportion of cooperative or exploitative choices that he made. The greatest possible number of trials was 30, and the least, 20. Because inmates were not allowed to have money in their possession, other arrangements were made so that they could convert

their earnings into canteen merchandise, or, if they preferred, have the money credited to their account. If they chose to convert to canteen goods, they were given a canteen slip redeemable at the canteen itself. In order to equate, as much as possible, the delay in payment for the controls and sociopaths, the controls were given vouchers which they gave to a designated high school official in return for cash.

After the Prisoner's Dilemma game was played up to the \$3.00 limit and the S's preference for immediate or delayed gratification was determined (see below), a new matrix was introduced with increased payoff values (Figure 1). Subjects were given only one trial on this matrix. The purpose of its inclusion was to increase the attractiveness of an exploitative strategy. By doing this it was hoped that sociopaths who might have been making cooperative choices to impress the examiner would be attracted enough by the higher payoff to change their strategy to a more exploitative one.

Delay of Payoff. At the end of the PD game, each S was asked to indicate on a slip of paper whether he would prefer the money he had earned that day immediately after the experiment was over; or whether he would prefer to

wait a week, at which time a dollar bonus would be added, bringing his earnings to approximately four dollars.

Risk Taking. For the third phase of the experiment, the S was taken to another room. The E explained to the S that he now had the opportunity to increase his earnings. He could do this if he chose by spinning a dial on a board where the numbers one through five were written. If he got a five, the E would pay him fifteen dollars. If he did not get a five, he would lose all that he had earned (with the exception of the dollar bonus for those Ss who chose to delay). The S was told what the odds against him were.

Post-experiment Questionnaires. After the S had made his risk choice, the E asked him to rate his partner on several variables (see Appendix B), and to fill out answers to a questionnaire in his own words (see Appendix C). In administering the rating scale, the questions alternately reversed scale direction to help prevent indiscriminate marking. The amount of income from any source that the S received in a week was also determined at this time.

C H A P T E R III

RESULTS

The sociopaths and normal controls were compared, in total, on 33 variables. The basic statistical treatments were the chi-square for independence, and the one-factor analysis of variance (with the Newman-Keuls sequential range test employed, when appropriate, for comparisons between means). The F max test was initially applied to the data to ascertain the presence of homogeneity of variance. In several instances, F max revealed violations of the homogeneity assumption. Because the violations were minor and the analysis of variance is a robust procedure (Lindquist, 1953; Myers, 1966) its use was not contraindicated. Discussions of those instances of heterogeneity of variance are offered, where relevant, in the presentation of results.

In the statistical analysis of the data, a confidence level of $p = .05$ was adopted. At this value or below, the null hypothesis was not accepted. For the sake of thoroughness, however, significance levels from $p < .01$ to $p < .10$ are reported. Directional tests of significance were employed where indicated.

Group Matching and Selection Variables

An attempt was made to match the three groups for age, SES, IQ, funds available, and race. The means and standard deviations for these variables, with the exception of race, which was treated separately, are presented in Table 1. The F ratios for each variable are reported in Appendix D. Inspection of Table 1 reveals that the subject groups were significantly different on the measures age and funds available. For both indices, both groups of sociopaths differed from the controls but not from each other. Because groups were not matched on these two variables, either Pearson product moment correlations or point biserial correlations were calculated between these measures and the major dependent measures, to determine if group differences on these variables were effected by differences in the matching variables. The correlations obtained for the relationships between age and percent exploitative response, immediate and delayed gratification, and high and low risk were .14, .04, and .13, respectively. The correlations between funds available and the dependent measures were -.15, .02, and .15. None of the correlations were significant, (df = 103), permitting the assumption that any group differences present on the major

TABLE 1

Comparisons of Means and Standard Deviations for Three Subject Groups on Matching Variables with Significance Levels Obtained from the Newman-Keuls Sequential Range Test

<u>Groups</u>	<u>Age</u>	<u>IQ</u>	<u>SES</u>	<u>Funds</u>				
Descriptive Data								
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
C	17.9	.9	104.5	12.3	26.9	20.8	9.69	5.41
PS	21.4	2.0	103.5	10.2	25.5	16.8	6.75	4.25
NS	20.7	1.7	101.3	9.5	24.3	16.8	7.03	4.25
Newman-Keuls Comparisons (<u>p</u> values)								
C-PS	.01	n	n	.05				
C-NS	.01	n	n	.05				
NS-PS	.10	n	n	n				

Note.--All significance levels are less than the p values indicated. p >.10 is indicated by the letter n.

dependent variables were not contributed to by group differences in age and funds available.

For the age variable, a significant value of F_{\max} was obtained ($F_{\max} = 4.95, p < .01$). The occurrence here of heterogeneity of variance appears to be the consequence of the limited range of S_s available from the upper grades of the high school population.

The data for race were analyzed by chi-square. The number of Black subjects for the C, PS, and NS groups were 24, 25, and 24, respectively. The value of χ^2 obtained was not significant, denoting that all groups were equally matched on this variable ($\chi^2 = .08, df = 2$).

In Table 2 the means and standard deviations for the MMPI-based group selection measures are presented along with the significance levels for the Newman-Keuls comparisons of group means. The F ratios for these variables in addition to the other MMPI measures are found in Appendix D. For the Total Anxiety and MAS measures, computation of F_{\max} indicated minor violations of the homogeneity of variance assumption. The values obtained were 3.47 and 3.92 respectively ($p < .01$). These minor violations of homogeneity of variance are the result of experimental manipulations, in that all control S_s were included in

TABLE 2

Comparisons of Means and Standard Deviations for Principal
MMPI Group Assignment Measures with Significance
Levels Obtained from the Newman-Keuls Sequential
Range Test

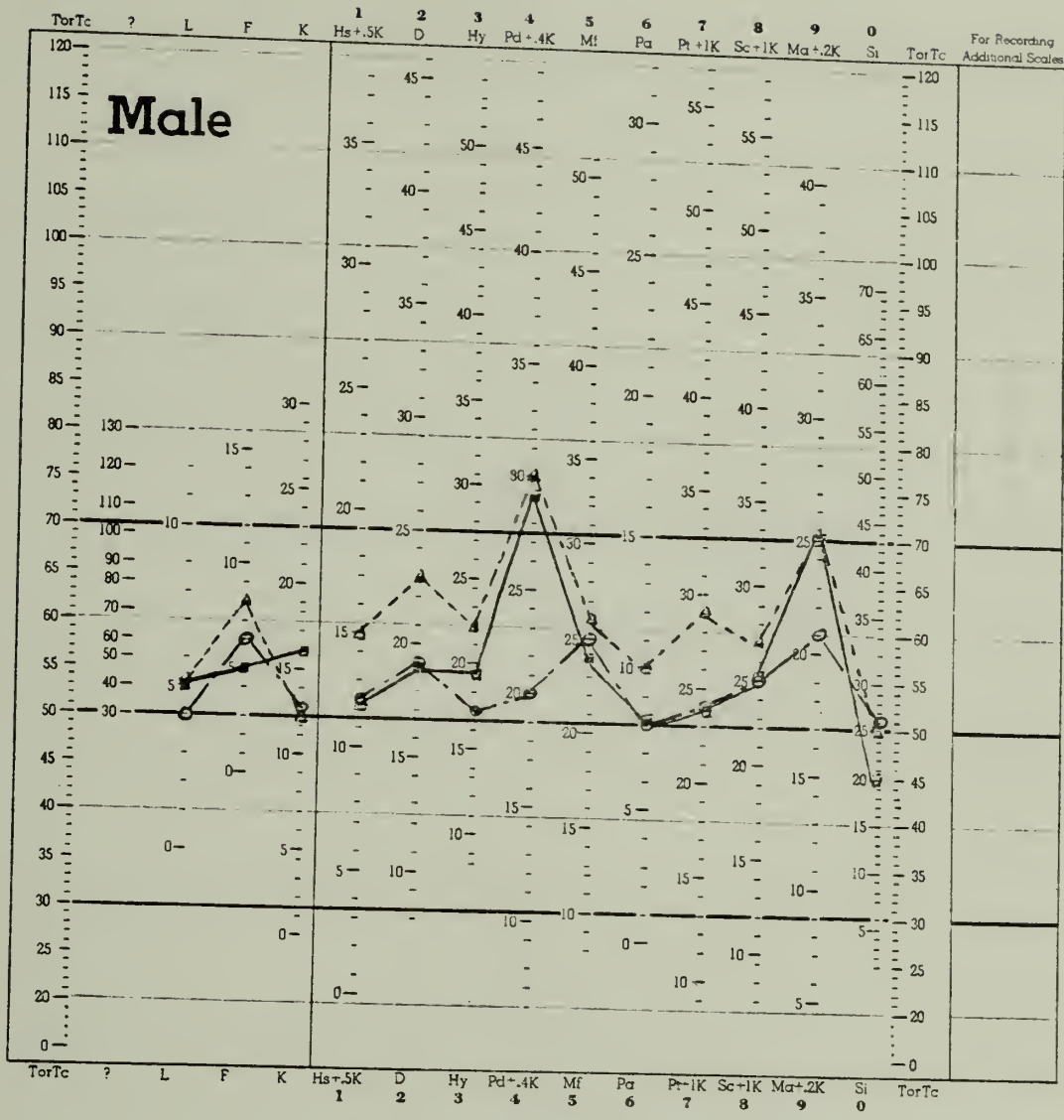
<u>Groups</u>	<u>Pd</u>	<u>Ma</u>	<u>Ta</u>	<u>MAS</u>				
Descriptive Data								
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
C	19.9	3.0	20.7	3.3	210.0	22.1	12.0	5.6
PS	28.6	2.1	24.8	2.5	211.4	11.9	7.8	2.8
NS	29.7	3.2	24.6	2.7	249.1	15.3	18.0	4.6
Newman-Keuls Comparisons (<u>p</u> values)								
C-PS	.01		.01		n			.01
C-NS	.01		.01		.01			.01
NS-PS	n		n		.01			.01

Note.--All significance levels are less than the p
values indicated. p >.10 is indicated by the letter n.

the study regardless of their Total Anxiety and MAS scores, while sociopaths, on the other hand, were excluded or included in the experiment based on the values of Total Anxiety and MAS. Consequently, their scores exhibited less variance than did those for the control subjects.

The statistical analyses reported in Table 2 and Table 23 (see Appendix D) provide a gross quantitative measure of the success of the selection procedures. The Newman-Keuls analyses indicate that the PSs and NSs did not differ on Pd and Ma of the MMPI, but were, in accord with selection objectives, significantly different ($p < .01$) on Total Anxiety and MAS, the PSs having lower scores on both measures. Control Ss were significantly different from the sociopaths on Pd and Ma as well as MAS. On the latter measure, their scores fell midway between the PSs and NSs. Neurotic sociopaths and controls were significantly different on Total Anxiety but PSs and controls were not.

Figure 2 presents the graphed MMPI profiles for the three groups. Table 3 presents a comparison of the MMPI T-scores for all 13 scales with significance levels between group means obtained from the Newman-Keuls sequential range test.



- ——— C Group
- ——— PS Group
- △ - - - - NS Group

Figure 2. Graphs of MMPI T-scores

TABLE 3

Comparisons of Subject Groups' MMPI T-Scores with
Significance Levels of Multiple Comparisons
Obtained from the Newman-Keuls
Sequential Range Test

MMPI Scales													
	<u>L</u>	<u>F</u>	<u>K</u>	<u>Hs</u>	<u>D</u>	<u>Hy</u>	<u>Pd</u>	<u>Mf</u>	<u>Pa</u>	<u>Pt</u>	<u>Sc</u>	<u>Ma</u>	<u>Si</u>
C	50	58	51	52	56	51	53	59	50	52	55	60	51
PS	53	55	57	52	56	55	74	57	50	52	55	70	45
NS	53	62	49	59	65	60	76	61	56	62	59	70	50
Newman-Keuls Comparisons (<u>p</u> values)													
C-PS	n	n	.01	n	n	.05	.01	n	n	n	n	.01	.01
C-NS	n	.01	n	.01	.01	.01	.01	n	.01	.01	n	.01	n
NS-PS	n	.01	.01	.01	.01	.01	n	n	.01	.01	n	n	.01

Note.--All significance levels are less than the p values indicated. p >.10 is indicated by the letter n.

Major Dependent Variables

Prisoner's dilemma and exploitative behavior. Subjects participating in the PD played the game for an unequal number of trials but for approximately equal amounts of money. For this reason, Ss' exploitative scores are presented in percent form. The means and standard deviations for the percent exploitative response for each group are presented in Table 4. Significance of differences between the means was tested by an analysis of variance (see Table 5). No significant differences were found. Hypothesis 1 therefore was not confirmed. Sociopaths did not exhibit significantly greater exploitative behavior than the control subjects. Results were in the predicted direction for the PS and C groups, the PSS scoring higher on exploitativeness, but the mean group difference of 5.5% was slight. Neurotic sociopaths, in opposition to prediction, scored slightly lower than the Cs on exploitativeness.

In examining exploitative behavior in the PD game, particular attention was focused on Ss' responses on trials one and two. Choice behavior on these trials was considered especially important for several reasons. Trial one, of all trials, best reflected the S's initial attitude or posture towards his partner. Because a

TABLE 4

Means and Standard Deviations for Percent Exploitative
Response in the Prisoner's Dilemma Game

<u>Group</u>	<u>Mean</u>	<u>Standard Deviation</u>
C	60.9	25.3
PS	66.4	24.3
NS	59.8	31.7

TABLE 5

Summary of Analysis of Variance for
Percent Exploitative Response

<u>Source of Variation</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Between Groups	2	881.313	440.656	.592	n
Within Groups	102	75952.750	744.635		
Total	104	76834.063			

Note.--p >.10 indicated by the letter n.

response on this trial preceded feedback from the partner and the establishment of a pattern of interaction, the S having been explained the nature of the payoff contingencies was in the position of having to guess at his partner's probable strategy. A trusting S, expecting his partner to pick red, would likely respond in kind and choose red also. On the other hand a suspicious S, expecting his partner to choose blue, might be expected to choose blue himself in order to teach the other person a lesson and prevent him from obtaining an advantage. Consistent with the theoretical position that sociopaths are egocentric, they were expected to be less trustful and more likely to select blue on the first trial.

Subjects' responses to trial two were also of special interest since it was the first time the Ss made a strategy choice with the benefit of feedback on the other's willingness to cooperate. Over iterated trials the possibility existed that the "other's" unconditionally cooperative behavior may have made Ss somewhat skeptical of the reality of their partner. This possible disbelief in the presence of the other could have had the effect of diluting group differences. Such skepticism, while conceivably present on later trials, could hardly have been present on trial two.

Response on trial one, then, gave some idea of how trusting a S was, and choice on trial two would seem to

reflect on how trustworthy the S was. It was anticipated that sociopaths would be less trusting and trustworthy.

In Table 6 are reported the percent of Ss choosing the exploitative response on trials one and two. Results are given in percent form because of the loss of one S's data. The data presented in Table 6 were analyzed by the use of χ^2 . A total of six χ^2 were indicated, three for the groups comparisons on trial one, and three for the groups comparisons on trial two. Rather than computing all six χ^2 , the χ^2 for the largest group difference on either trial was computed first under the following rationale. If this χ^2 were nonsignificant, then none of the other χ^2 could be significant. If this χ^2 , however, were significant, then the χ^2 for the next largest group difference would be calculated--and so on. As it happened, the χ^2 obtained for the NS and C groups on trial two (the largest of the six differences) was not significant ($\chi^2 = 1.18$, df = 1, p < .15, one-tailed test). While group differences did not reach significance, more sociopaths than controls chose the exploitative response for both trials.

A further analysis was undertaken to determine if the sociopathic and control groups differed in exploitative

TABLE 6

Percent of Subjects Choosing the Exploitative
Response on Trials One and Two in
the Prisoner's Dilemma Game

<u>Group</u>	<u>Trial One</u>	<u>Trial Two</u>
C	35	44
PS	46	54
NS	43	57

behavior over the course of PD play. Also of interest was whether exploitativeness varied over trials for all groups. To answer these questions a two factor Groups X Blocks repeated measures analysis of variance (see Table 8) was performed on the mean number of exploitative choices per block (see Table 7). Generally, before a repeated measures analysis of variance is performed, heterogeneity of covariance is determined. Because this procedure is laborious, an alternate procedure, outlined by Winer (1962) was employed. This alternate method assumes heterogeneity of covariance and evaluates F ratios on adjusted degrees of freedom. Because of the loss of data for one subject, the analysis was adjusted for unequal N by the method of least squares. Due to the fact that the number of trials for individual S s varied between 20 and 30, the lower limit of 20 trials, divided into four blocks, was used for the analysis. As can be seen (Table 8), there was a significant Blocks main effect which is consistent with the preponderance of research with the PD, which has found an increase in competitive choices over a short number of trials (Crumbaugh & Evans, 1967; Lutzker, 1960; Vinacke, 1969). There was no significant Group main effect or Groups X Blocks interaction, though as can be seen

TABLE 7

Means and Standard Deviations for Exploitative
Choices for Each of Four Trial Blocks

<u>Groups</u>	Block One		Block Two		Block Three		Block Four	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
C	2.1	1.41	2.9	1.54	3.3	1.78	3.6	1.80
PS	2.7	1.47	3.2	1.37	3.4	1.48	3.7	1.41
NS	2.5	1.60	2.9	1.73	3.1	1.85	3.3	1.74

TABLE 8

Summary of Groups X Blocks Analysis of
Variance for Mean Number Exploitative
Choices Per Block

<u>Source of Variation</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Groups	2	7.09	3.54	.453	n
Subjects Within Groups	101	789.29	7.81		
Blocks	3	66.30	22.10	26.466	.01
Groups X Blocks	6	4.46	.74	.889	n
Blocks X Subjects Within					
Blocks	303	253.00	.83		

Note.--All significance levels are less than the p values indicated. p >.10 is indicated by the letter n.

clearly from Figure 3, the PSs were consistently (albeit nonsignificantly) more exploitative than either NSs or Cs over all trial blocks.

Exploitative behavior on the second matrix with higher payoff values (introduced for one trial) was not significantly different for the three groups ($\chi^2 = .544$, df = 2, p >.10). The number of subjects choosing blue for the Cs, PSs, and NSs were 18, 21, and 19, respectively. These results were in the predicted direction.

In sum, on the aggregate measures of exploitativeness obtained from the PD situation, sociopaths were not significantly different from controls. There were, however, trends in the data. Both groups of sociopaths combined, tended, on the average, to choose the exploitative strategy more frequently than did normals. Primary sociopaths were consistently more exploitative than controls. Sociopaths tended to be less trusting and trustworthy as reflected in their behavior on the first two trials of the PD. In addition, when exploitation in the PD was made a more appealing option, sociopaths once again tended to respond more competitively. All these findings were in the predicted direction, but all differences were small and nonsignificant.

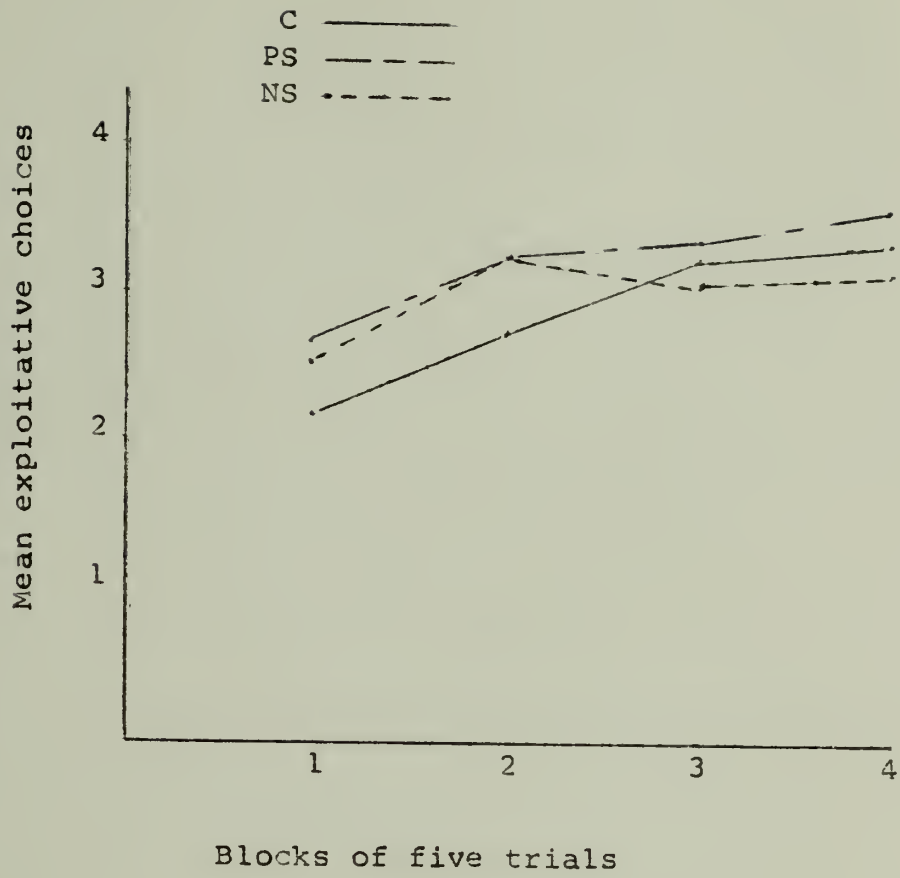


Figure 3. Changes in exploitative choices over trial blocks.

Immediate vs. delayed gratification. Before analyzing the data for delay of gratification, it was important to determine that subject groups had not earned unequal amounts of money up to the immediate vs. delay decision choice point. This concern also applied for monies earned for the high or low risk decision. In Table 9 are presented the means and standard deviations for monies earned up to both these major decision points. A summary of the analyses of variance is reported in Table 10. As can be seen from Table 9, approximately \$3.00 per group had been earned as of the immediate vs. delay decision point, and no significant differences among groups in money earned were found at this point. For the high vs. low risk choice, groups had earned approximately \$3.30. The additional 30¢ was the average sum earned on the one trial of play with the second payoff matrix. No group differences were found here either.

The number of delay choices for the Cs, PSs, and NSs were 18, 19, and 11, respectively. These differences were analyzed by a series of three χ^2 for the three possible between groups comparisons. Because prediction and existing theory indicated the direction of differences, the chi-squares for the comparisons of the experimental groups

TABLE 9

Means and Standard Deviations of Monies Earned
at Each of the Two Major Choice Points

<u>Groups</u>	First choice point (I vs. D)		Second choice point (H vs. L)	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
C	3.03	.04	3.31	.09
PS	3.05	.04	3.34	.09
NS	3.03	.04	3.31	.09

TABLE 10

Summary of Analyses of Variance for Monies
Earned at Each of the Two Major
Choice Points

<u>Source of Variation</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Immediate vs. Delay Choice Point					
Between Groups	2	.006	.003	2.025	n
Within Groups	102	.149	.002		
Total	104	.155			
High vs. Low Risk Choice Point					
Between Groups	2	.016	.008	1.023	n
Within Groups	102	.814	.008		
Total	104	.831			

Note.--p >.10 is indicated by the letter n.

with the control group were assessed against one-tailed tests. Because little is known about the relationship of PSs and NSs, the chi-square comparing these groups was tested non-directionally, i.e., with a two-tailed test. The comparison of number of delay choices between the Cs and NSs yielded a significant χ^2 of 2.886 (df = 1, p <.05). The χ^2 obtained for the difference between Cs and PSs was .06 (df = 1, p >.10). The χ^2 for the differences between the NSs and PSs was 3.74 (df = 1, p <.06), approaching significance. The results of these analyses indicate that hypothesis 2 was confirmed only in part. The Cs demonstrated a significantly greater capacity for delayed gratification than the NSs, but no differences in delaying capacity was found for the Cs and PSs. Surprisingly, the PSs and NSs were found to be dissimilar in their preferences for delayed gratification. The PSs were more like the Cs and exhibited greater delay capacity than the NSs, the difference closely approaching significance.

High vs. low risk. As discussed above and illustrated in Table 9, no differences existed in money earned up to the high vs. low risk decision point.

The number of C, PS, and NS subjects choosing high risk were 2, 8, and 2, respectively. Before these results

for the high vs. low risk variable can be meaningfully discussed, however, it is necessary to think about a problem of interpretation of these data that was created by a weakness inherent in the experimental design. Because a subject's high or low choice followed his choice of immediate or delayed gratification, different Ss were presented with different options at the high vs. low risk decision making point. A S who had chosen to delay was told that if he lost in the risk situation he would lose all his money except the \$1.00 bonus for waiting a week. A S who had chosen an immediate response was told that he would lose all his money. Clearly, the delay S, who ended up with some money (no matter how little) would likely find the high risk option more attractive than would the immediate S (who might end up with no money).

In order to determine if an immediate or delay choice had an effect on risk taking, a χ^2 was calculated between immediate and delay Ss (summing over groups) for high and low risk choices. The value of χ^2 obtained ($\chi^2 = 4.64$, $df = 1$, $p < .05$) indicated that Ss making a delay choice were more likely to opt for the high risk than immediate choice Ss. Though this weakness was inherent in the design of the experiment, no problem in interpretation

would have occurred had the results conformed to prediction. It was hypothesized that sociopaths would prefer immediate gratification and higher risk. Had the sociopaths chosen the immediate contingency more often than normals, this would have biased their decision against high risk. If they then chose high risk more frequently, even stronger support would have been indicated for their high risk propensity.

Interpretation, then, of risk taking behavior cannot be made without first comparing groups on their delay decisions. Because no difference in delay preference was found for the PSs and Cs, their risk taking behavior can be compared directly. A directional χ^2 test was performed ($\chi^2 = 4.20$, $df = 1$, $p < .025$). This confirmed hypothesis 3 for the primary sociopaths, which stated that sociopaths would exhibit greater risk taking behavior than controls. A comparison of the delay choices of the Cs and NSs revealed that nearly twice as many C subjects preferred delayed reward. This being so, a negative bias was introduced against the neurotic sociopaths choosing the high risk option--they had more to lose than the control subjects. That 2 control subjects and 2 neurotic sociopaths preferred high risks suggests that neurotic

sociopaths may have a greater propensity for high risk conditions. This possibility is supported by the data for subjects' ratings of their perception of risk (see Table 16 below) which shows that neurotic sociopaths rated the four to one odds as more favorable than did the controls.

A statistical comparison of the number of PSs and NSs who preferred high risk indicated that the PSs exhibited the greater proclivity for risk taking ($\chi^2 = 4.20$, $df = 1$, $p < .05$). After considering the delay behavior of both these groups, the finding for risk preference still holds but less strongly. Nearly twice as many PSs chose delay as the NSs. If the groups were equal in risk taking preference, it might have been expected that twice as many PS as NS subjects would have chosen high risk. In actuality, four times as many primary sociopaths chose high risk as did neurotic sociopaths.

In sum, statistical analysis of the risk choices allows for the conclusion that significantly more PSs preferred high risk than Cs. A post hoc, crude interpretation of the results suggests that NSs may fall midway between Cs and PSs in their preference for high risk.

Supplementary Dependent Variables

Ratings. Subjects filled out ratings on intelligence

of the other person, cooperation of the other person, cooperation of self, and the other's consistency. Means and standard deviations for these ratings are presented in Table 11. The values in Table 11 have been adjusted so that for each scale 1 represents the low end and 7 the high end of the scale. The F ratios for each scale are presented in Table 12. None of the F ratios reached significance, indicating that none of the groups differed from each other in their overall ratings.

To compare Ss' ratings of their own cooperativeness and others cooperativeness, a repeated measures Groups X Cooperativeness analysis of variance was performed. The results of this analysis are summarized in Table 13. As can be seen, no main effect for Groups or interaction effect for Groups X Cooperativeness was found. There was, however, a significant main effect for Cooperativeness ($p < .01$). This indicates that all groups accurately perceived the "other person" as more cooperative than themselves. Rather than laboriously computing the matrix of covariances for this analysis, heterogeneity of covariance was assumed and the main effect for cooperation was tested against a critical value based on the adjusted degrees of freedom of 1 and 34 (Winer, 1962).

TABLE 11

Means and Standard Deviations for Rating Scores

<u>Groups</u>	Intelligence of other		Cooperation of other		Cooperation of self		Consistency	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
C	3.9	1.6	5.7	1.6	3.6	2.2	5.6	1.9
PS	3.5	1.7	5.4	2.1	4.1	2.3	5.6	2.1
NS	4.3	2.1	5.7	1.9	4.2	2.5	5.2	2.3

TABLE 12

Summary of Analyses of Variance for Rating Scores

<u>Source of Variation</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Intelligence of Other					
Between Groups	2	11.369	5.685	1.740	n
Within Groups	102	333.256	3.267		
Total	104	344.626			
Cooperation of Other					
Between Groups	2	1.844	.922	.255	n
Within Groups	102	369.142	3.619		
Total	104	370.986			
Cooperation of Self					
Between Groups	2	8.126	4.063	.738	n
Within Groups	102	561.713	5.507		
Total	104	569.839			

TABLE 12 (contd.)

	Consistency				
Between Groups	2	4.012	2.006	.455	n
Within Groups	102	449.942	4.411		
Total	104	453.954			

Note.--p > .10 is indicated by the letter n.

TABLE 13

Summary of Groups X Cooperativeness Analysis
of Variance for Rating Scores

<u>Source of Variation</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Groups	2	2.60	1.30	.274	n
Subjects within Groups	102	484.26	4.75		
Cooperativeness	1	142.52	142.52	32.550	.01
Groups X Cooperativeness	2	7.38	3.69	.843	n
Cooperativeness X Subjects within Groups	102	446.60	4.38		

Note.--Significance levels are less than the indicated values. p >.10 is indicated by the letter n.

Though the control and experimental groups were not found to be different in their rating scores, it was considered of interest to determine whether Ss' rating scores differed in relation to the degree of exploitative behavior exhibited in the PD. Presented in Table 14 are the product moment correlations for degree of exploitative response and rating scale scores for each group. For the correlations between exploitative response and rating of others' intelligence, significant inverse correlations ($p < .01$) were found for the NSs and Cs but not for the PSs. It appears that for the NS and C groups, the more exploitative Ss tended to devalue the intelligence of their partner.

The correlations between exploitativeness and cooperation of the other were all nonsignificant, but were all inverse, suggesting that there was a tendency for high exploitative Ss to misperceive their partner as uncooperative. This effect could have occurred as the result of some high exploitative Ss' attempts to rationalize their behavior by projecting uncooperativeness onto the other. It is also possible that this finding of an inverse relationship between degree of exploitativeness and cooperation of the other person comes from the general devaluing

TABLE 14

Product Moment Correlations of Percent Exploitative Response with Rating Scores

Groups	Exploitativeness and other's intelligence	Exploitativeness and cooperation of other	Exploitativeness and cooperation of self	Exploitativeness and other's consistency
C	-.45**	-.06	-.59**	.15
PS	-.28*	-.15	-.24	-.17
NS	-.55**	-.24	-.53**	.16

Note.--All values without asterisks have a p value >.10.

*p = .10

**p <.01

of the other person that would likely be associated with his willingness to be victimized. In completing the rating forms, a negative halo effect may have been operating which reduced the ratings on those scales which reflected on the worth of the other person.

The correlations for degree of exploitation and self cooperation were all in the negative direction. Significant correlations ($p < .01$) were found for the NSs and Cs but not for the PSs. For these two groups there was a trend for high exploitative Ss to rate their cooperativeness in accord with their exploitativeness. The nonsignificant correlation for the PS group suggests that these Ss were less willing or able to accurately label their exploitative behavior.

As anticipated, no significant correlations were obtained between degree of exploitation and subjects' perception of the others' consistency.

In order to determine if the correlations between degree of exploitative response and rating scores were significantly different between groups, the correlations were transformed to z scores and group differences were calculated. These are presented in Table 15. As can be seen from Table 15, none of the group differences reached

TABLE 15

Between Groups Differences of z Transformed Correlations
of Percent Exploitative Response and Rating Scores

Groups	Exploitativeness and other's intelligence	Exploitativeness and cooperation of other	Exploitativeness and cooperation of self	Exploitativeness and other's consistency
C-PS	.752	.348	1.756	.048
C-NS	.564	.732	.400	1.332
PS-NS	1.316	.384	1.356	1.284

Note.--The critical value for significance at the $p = .05$ level is 1.96.

significance. The one group difference closest to approaching significance ($p < .10$) occurred between the Cs and PSs for the relationship between degree of exploitation and self cooperativeness.

The means and standard deviations for Ss' perception of risk scores are presented in Table 16. The perception of risk rating scale was presented to Ss as part of the questionnaire because its content was most appropriate in that context. A 5 point scale was used. Analysis of the rating scores for heterogeneity of variance obtained an F max value of 4.44 ($p < .01$), indicating a violation of the homogeneity of variance assumption. Examination of the distribution of rating scores suggests that heterogeneity of variance occurred as the consequence of the control Ss' ratings clustering about the lower end of the rating scale. Analysis of variance (see Table 17) yielded an F ratio approaching significance ($p < .10$).

Because the corollary to hypothesis 3 predicted that sociopaths would consider the risk as more favorable than would the controls, the rating scores for the control group were compared directly to the scores for both sociopathic groups by the use of Dunnett's t test (Winer, 1962). The mean rating scores for PSs and NSs being the same, a

TABLE 16

Means and Standard Deviations for
Perception of Risk Taking Scores

<u>Groups</u>	<u>Mean</u>	<u>Standard Deviation</u>
C	1.83	.57
PS	2.26	.92
NS	2.26	1.20

TABLE 17

Summary of Analysis of Variance for Perception
of Risk Rating Scores

<u>Source of Variation</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Between Groups	2	4.285	2.143	2.474	.10
Within Groups	102	88.343	.866		
Total	104	92.628			

Note.--The significance value is less than the p value indicated.

single value of Dunnett's t was obtained for the comparison of both these groups with the controls ($t = 1.94$, $df = 102$, $p < .05$). As predicted, sociopaths, as compared to normal controls, perceived the same risk contingencies as less risky.

Questionnaire answers. A questionnaire was included in the study to determine what strategies and motives Ss were able to articulate as affecting their decisions in the various phases of the experiment. Subjects' answers to each question were inspected and the motives that seemed to be operating were identified. Subjects' responses were then placed in the motive category that was most appropriate. The results for the questionnaire are sketchy at best. This is because a large number of Ss , in several instances nearly fifty percent, gave answers which were extremely idiosyncratic or incomprehensible. Such a large percentage of uncategorized responses diminishes the confidence that can be placed in the generalizability of these results. For this reason no attempt at a rigorous statistical analysis was made.

The first question put to Ss was, "What were you trying to do in the decision making situation with the other person?" In Table 18 the percent of Ss falling into

TABLE 18

Percent of Subjects in Each Motive Category Expressed
in Response to Questionnaire Item One

<u>Groups</u>	<u>Motive</u>			
	Economic	Competitive	Cooperative	Unclassed
C	6	43	11	40
PS	17	34	9	40
NS	20	31	20	29

the motive categories: economic, competitive, cooperative, and unclassified are presented. Economic motivation in response to this question refers to an answer which stated that the S was trying to make money, with no mention of winning or in any way assuming an advantage over the other person. Any statement which expressed or implied the idea of winning or doing better than the other was assigned to the competitive category. Cooperation was interpreted as any statement which incorporated the idea of sharing equally.

Review of Table 18 suggests that the predominant motive operating across subject groups in the selection of strategy in the PD was the competitive motive. Though no significant differences were found between groups on the behavioral measures of exploitation in the PD (see discussion above), Ss' responses to question one suggest that Cs tended to perceive themselves as playing most competitively and NSs as most cooperatively. This finding is consistent with the order of differences, though nonsignificant, of mean rating scores for the three groups ratings of their own cooperativeness (see Table 11). From the C groups' responses to question one it appears that, of the three groups, their choices in the PD were least motivated

by economic gain.

The question asked in item two of the questionnaire was, "What did you think the other person was doing in the decision making situation?" The replies to this question are categorized in Table 19. In addition to the three motives already identified in response to question one, for question two "color choosing" and "playing it safe" occurred frequently enough to be treated as separate motives. Color choosing simply refers to a S writing that his partner was picking red or blue with no attempt to elaborate the interpersonal implications of that choice. As can be seen from Table 19 the most frequent motive assigned to the partners in the PD was cooperation. On the average, 20% of the Ss in each group responded this way. However, a large percent of Ss, on the average 18%, attributed a competitive orientation to their partner, which does not speak well for the Ss' comprehension of the simulated other's unconditionally cooperative strategy.

Question three asked the following, depending on the subject's immediate-delay choice: "What made you take your money today?" "What made you wait a week for your money?" Summarized replies to this question are presented in Table 20 under the two major headings of Immediate and Delayed

TABLE 19

Percent of Subjects in Each Motive Category Expressed
in Response to Questionnaire Item Two

	<u>Motive</u>					
<u>Groups</u>	Economic	Competitive	Cooperation	Color choosing	Playing it safe	Unclassed
C	6	12	17	11	11	43
PS	9	23	26	9	3	31
NS	3	20	17	11	0	49

TABLE 20

Percent of Subjects in Each Motive Category Expressed
in Response to Questionnaire Item Three

Immediate						
<u>Groups</u>	<u>N</u>	Present need	<u>Motive</u>		Unclassed	
			Money not worth it	Negative attitude		
C	17	71	6	6	18	
PS	16	56	0	38	6	
NS	24	54	4	13	29	
Delay						
<u>Groups</u>	<u>N</u>	No present need	<u>Motive</u>		Unclassed	
			Economic gain	Positive attitude		
C	18	50	50	0	0	
PS	11	48	31	5	16	
NS	19	36	54	9	0	

gratification. The motives identified as operating for the immediate choice Ss were present need, money not worth it, and negative attitude toward waiting. For delay choice Ss, the motives were no present need, economic gain, and positive attitude towards waiting. Present or no present need refer to an explicit statement of need or its absence. For example, an immediate choice S saying he needed cigarettes, or a delay S saying he did not need anything now. Positive or negative attitude towards waiting applies to those answers which were more abstractly or philosophically stated, and which seemed to represent a general attitude toward waiting. An example of such a response would be an immediate choice S saying that, "Tomorrow isn't promised." The predominant motive for the immediate choice Ss was present need, 60% of the Ss on the average expressing this motive. For the delay Ss, the predominant motives were economic gain (45% of the Ss) and no present need (44.7% of the Ss). For both immediate and delay choice decisions, need orientation occurred as a strong determinant of choice. It is possible that immediate vs. delay Ss may be differentiated in terms of their need tolerance, Cs and PSs exhibiting the greater need tolerance.

In Table 21 are presented the percent of Ss in each motive category expressed in response to question four which asked, depending on the S's risk choice: "What made you decide to spin the dial?" "What decided you against spinning the dial?" The motives for the high risk condition were economic gain and positive attitude about gambling, and, for the low risk condition, fear of losing, recognition of poor risk, negative attitude towards gambling, and poor risk and fear of losing combined. Recognition of poor risk refers to a statement such as "The odds were too great." The predominant motive for high risk Ss was economic gain, 50% of the Ss expressing this attitude. For the low risk condition, recognition of poor risk was the chief motive, 45% of the Ss' responses coming under this heading.

TABLE 21

Percent of Subjects in Each Motive Category Expressed
in Response to Questionnaire Item Four

High Risk					
<u>Groups</u>	<u>N</u>	Economic	Positive attitude about gambling	<u>Motive</u>	Unclassed
C	2	100		0	0
PS	8	50		38	13
NS	2	0		50	50
Low Risk					
<u>Groups</u>	<u>N</u>	Fear of losing	Negative attitude about gambling	<u>Motive</u>	Poor risk and fear of losing Unclassed
C	33	24	15	52	6 3
PS	27	15	26	48	7 4
NS	33	21	36	36	3 3

C H A P T E R I V

DISCUSSION

The question of whether the concept of sociopathy represents a meaningful diagnostic category was the stimulus for the present research. To date, acceptance of the existence and dimensions of sociopathy has been based almost exclusively on clinical observation and case study. Given the lack of objective measurement inherent in clinical observation, the need for more rigorous experimental verification was clear. The present study was an attempt in that direction.

Egocentricity

One of the cardinal traits associated with the sociopath is the superficiality of his emotions. The media, as well as professional writings (Cleckley, 1964; McCord & McCord, 1964), call attention to the self-centeredness of the sociopath. He is consistently depicted as a ruthless individual concerned with meeting his own needs at the expense of, or through the manipulation of others. The title of Truman Capote's book In Cold Blood probably best captures the fear that the lay person associates with the possible consequences of the sociopath's incapacity to

to feel towards others.

Given the vivid and ubiquitous picture of the sociopath's extreme egocentrism, hypothesis 1 was proffered with some confidence. It stated that sociopaths would be significantly more exploitative than normals in their game playing strategies in the prisoner's dilemma. The hypothesis was not confirmed. No significant differences were found between the groups. The PSs were, however, consistently more exploitative over the course of play than either the NSs or controls. This finding suggests (albeit weakly) that primary sociopaths may be more egocentric than normals, and that a difference may exist between primary sociopaths and neurotic sociopaths in egocentricity. This would be consistent with theoretical formulations. It has been argued by Karpman (1948b) and Schmauk (1967) that neurotic sociopaths resemble primary sociopaths only in the gross aspects of their behavior and that the primary sociopath is the "true" sociopath.

Particular attention was paid to the strategy choices made on trials one and two of the PD. Trial one was of special interest because it best reflected a S's initial reaction to his partner and the payoff matrix. As such, it was a measure of S's initial trust or suspicion of

his partner. Trial two, in turn, following the feedback that the partner would cooperate, served as a measure of the trustworthiness of the subject. No significant differences were found between the groups for these two trials, but on both trials the sociopaths exhibited a greater tendency toward exploitativeness.

The behavior of the groups on the second matrix, with greater absolute values, once again showed no significant differences in exploitativeness, though again there was a slight margin in the predicted direction for the sociopaths.

On all the measures of exploitativeness, no significant differences were found between the three groups. On nearly all the measures, however, sociopaths tended to evidence small margins of greater exploitativeness.

Additional perspective may be gained by considering the present results within the context of related literature. In interpreting the results, it is important to consider the experimental circumstances within which they were obtained. Because the PD was used as an experimental paradigm, it is necessary to assess its discriminative sensitivity to personality and attitudinal variables and the nature of these variables.

In a review article, Vinacke (1969) pointed out that differences have been found in PD play for sex, age, culture, family background, psychopathology, and attitudes and traits differences. Of particular interest here are the differences that have been found in attitudinal and personality variables. Wrightsman (1966), using scores on a personality inventory called the Philosophies of Human Nature Scale, found that persons who believed human nature to be altruistic, trustworthy, and independent behaved in a two-trial version of the PD in more trusting ways than did Ss with unfavorable attitudes toward human nature. On trial one, Ss were told that their choice would be revealed to their partner before he chose. Under these conditions, the Ss with the more favorable attitudes toward others chose cooperation more frequently, indicating their trust in the other person. McClintock et al. (1963) and Lutzker (1960) have both looked at the politically related attitudinal variable of internationalism - isolationism as a predictor of cooperative behavior in the PD. Internationalism - isolationism was assessed by a 36 item scale developed by Lutzker. An internationalist was defined as one who trusts other nations, is willing to cooperate with them, perceives international agencies such

as the U.N. as deterrents to war, and considers international tensions reducible by mediation. An isolationist was defined as one who demands national strength and might in lieu of international mediation, and who does not encourage commerce or transactions with other nations.

Lutzker (1960) employed three groups of Ss isolationists, internationalists, and controls in a 30 trial free play "chicken" variant of the PD. He found that internationalists made significantly more cooperative responses than isolationists and that Cs cooperated as often as did internationalists. Lutzker concluded that the differences found between the two experimental groups were due to the greater uncooperativeness of the isolationists. McClintock et al. (1963), also using the "chicken" form of the PD, had two groups, internationalists and isolationists, play 60 trials of the PD against three experimenter programmed strategies: 85% cooperative, 50% cooperative, and 15% cooperative. McClintock found that isolationists were more competitive than internationalists and that strategy did not significantly affect behavior. Terhune (1968) investigated the relationship of dominance on the achievement, affiliation, and power motive, as determined by TAT stories, on cooperation in the PD. Terhune's Ss

played three one-trial games and a 30 trial game varying in payoff. He found that high need achievers were the most cooperative regardless of game matrix. Need affiliates were highly cooperative when playing with a matrix which was structured so that defection from a cooperative strategy was attended by a large loss if both players chose uncooperatively, and by little gain if the defector was successful in his strategy change. Persons high on need for power were most uncooperative and tried to exploit their partner more than the other groups. In Marlowe's (1963) study on psychological needs and cooperation, first year medical students played a PD game for 30 trials against a confederate who made an unconditionally cooperative choice on every trial. Marlowe's results indicated that cooperative Ss scored higher on need abasement and deference. Psychological needs were measured by the Heilbrun adaptation of the Gough ACL. Deutsch's (1960) study focused on the relationship of trusting and trustworthy behavior in the PD with scores on the F scale of authoritarianism. Subjects played the game two times, each time presumably with a different person. The first time, Ss' choices were announced first. The second time, the other person's choice was announced first. A significant relationship was found between Ss' scores on

the F scale and game behavior. Subjects low on the F scale made more trusting and trustworthy choices than high scoring subjects.

From examination of the studies cited above, a composite profile of the cooperative and competitive PD game player can be extrapolated. The cooperative individual tends to need or desire to establish and maintain friendly relations with others. He trusts and believes in the basic altruism of others. He tends to be more intellectually sophisticated and motivated to achievement with high standards of excellence. The competitive individual tends to hold a cynical and unfavorable attitude toward human nature, is aggressive, and is independent. In his dealings with others he prefers to be in a position of power and strength, needing to gain and exert control over them.

Given the above descriptions of the cooperative and competitive game player, and the current conceptions of sociopathy, one might have expected sociopaths to manifest more competitive behavior than normals. This expectation also seemed reinforced by the fact that the personality differences found in the above PD games were assessed principally by paper and pencil tests, while the measure of sociopathy used in this study was based on a solid foundation of behavioral criteria, namely,

criminalism and recidivism. That no differences in exploitativeness were found suggests the possibility that clinical description has exaggerated the role of egocentricity in sociopathy.

Additional support for the position that sociopaths may not be as exploitative as currently believed may be found readily. In one study (Berger & Tedeschi, 1969) delinquents played the PD game. While a delinquent population as such is a more heterogenous grouping than PSs and NSs combined, there are no doubt more sociopaths among delinquents than among normals. For this reason, Berger and Tedeschi's findings have a direct bearing on the issue of exploitativeness and sociopathy. Their subjects were 10-13 year old delinquents, dependent children, and normals. They played a 50 trial game against a 50% cooperative random strategy. The game was modified by giving \$s the option after every seventh trial of "zapping" the other by taking \$10.00 from the other at a cost to themselves of \$2, \$5, \$8, or \$11.00 depending on cell assignments. Subjects played for "M & M" candy on a one "M & M" for \$1.00 basis. No main effect for groups and cooperative strategy selections was found. There were also no differences related to the frequency of exercising the option of punishing the other. The only finding

which suggested that delinquents were more exploitative was their tendency to be more competitive than their normal counterparts when the dummy other cooperated on the trial preceding the "zap" option.

Sutker's study (1970) is directly related to the present study and in a number of ways complements it. Sutker's investigation, like the present one, tested experimentally the clinical description of the sociopath as being insensitive to the feelings of others. A vicarious conditioning paradigm was used to test her hypothesis of reduced sensitivity in sociopaths. Unlike the present investigation which worked with incarcerated sociopaths, Sutker's study employed a group of uninstitutionalized sociopaths whose names had been obtained from several mental health agencies as having been diagnosed as sociopathic personality within a year's time. In addition to the diagnosis of sociopathic personality, an elevated T-score on the Pd scale of the MMPI was required for inclusion in the sociopathic group.

The results of her study indicated that there were no differences between sociopaths and non-sociopaths in basal skin resistance. Contrary to prediction, she found that sociopaths reacted with significantly greater GSR conductance changes to all stimuli across trials.

The sociopaths, however, responded with less anticipation of shocks to the stooge than when they observed the actual discomfort of the stooge associated with the specifically shocked stimulus number. On Sutker's other measure of interpersonal insensitivity, the relinquishing of quarters, no significant differences were found between groups. The direction of differences, however, were in the favor of the sociopaths being more altruistic. This was also true for sociopaths' answers to a post-session questionnaire on which they evidenced a stronger dislike for the other individual's discomfort.

Sutker interpreted her findings of greater change in GSR activity for the sociopaths as evidence of vicarious instigation, but she was reluctant to conclude that the sociopaths empathized with the other person. She stated that it is uncertain whether the sociopaths experienced emotions similar or dissimilar to the stooge. That the sociopaths reacted significantly more than non-sociopaths was interpreted in accord with the position of Schacter & Latané (1964) that the sociopath overresponds to exciting situations in general. Sutker explained her findings of greater altruism in sociopaths as probably originating from their expertise in social manipulation, and knowing

that they were being monitored, they gave up their quarters for the socially desirable effect. It appears to the present investigator that Sutker's explanation of her unexpected findings is in itself a refutation of the characteristic of sociopathy under investigation. Basic to the concept of sociopathy is the assumption that sociopaths are indifferent to the needs of others and are lacking in the need for social approval. Because it was of no advantage to the sociopaths to act in a socially desirable manner, imputing this motive to them is tantamount to describing them as not sociopathic in the traditionally-described sense.

While the present investigator is aware of the hazards involved in accepting the null hypothesis that there are no differences in exploitativeness between sociopaths and normals, the weight of accumulating evidence nonetheless suggests that no differences in exploitativeness, or differences of small magnitude, may exist between sociopaths and normals. It is the responsibility of future research to grapple with the question of whether a reconceptualization or abrogation of this aspect of the concept of sociopathy is in order. Future research designs should, ideally, be more reality bound and offer

a large and clear cut advantage for exploitative behavior.

Delay of Gratification

Observational impressions of delinquents and sociopaths suggest their inability to delay gratification. Life styles which are characterized by lack of persistence of effort, dropping out of school, poor job performance, and lack of direction seem to provide ample evidence for the sociopath's inability to delay gratification. For delinquents, clinical observations have been consistent with research findings. Mischel (1961) performed an investigation of delay behavior with delinquent and non-delinquent Trinidadian Negroes aged 12 to 14. He used three measures of delay of gratification, and found his non-delinquents chose the delay option significantly more frequently.

Based on Mischel's findings and clinical descriptions of the sociopath, hypothesis 2 stated that normal controls would exhibit a greater preference for delayed gratification than sociopaths. The present data support hypothesis 2 only for the NSs. The PSs demonstrated a capacity for delay behavior equal to that of the controls. Some support for the present finding that subgroups of a delinquent population are not equatable in their delay

behavior comes from the research of Erikson & Roberts (1971) who worked with two groups of institutionalized delinquent males matched for age, IQ, and length of institutionalization. The experimental group of delinquents consisted of boys who had chosen to live in a special cottage and attend public school even though this choice was made with the understanding that it would delay their release from the institution. The groups were compared on a verbal measure of delay of gratification, as well as on measures of foresight and planning ability, impulsiveness, internal vs. external control, and adjustment ratings. To determine delaying capacity each boy was asked the following question: "A boy won \$1,000 in a contest, what do you think he did with it?" The question was scored on whether the money was spent immediately or not.

Erikson and Robert's data revealed that a significantly greater number of the experimental group of delinquents responded with answers indicating that they would delay spending the money. The experimental group delinquents were less impulsive and more internally controlled than the C group, but no differences were found in measures of foresight and planning ability or

adjustment ratings. These findings of no group differences in measures of foresight and planning ability or adjustment ratings are of particular interest since the inability to delay gratification is often imputed from the presence or absence of these very qualities. That the groups were differentiated on behavioral and verbal measures of delay, and not on planning, foresight and adjustment, suggests that these variables should be kept conceptually apart. It is possible that PSs are mistakenly thought to be deficient in delaying capacity because of their poor judgment, adjustment, foresight and planning ability. It is unfortunate that Erikson and Roberts did not compare their experimental group of delinquents' verbal delay behavior against a normal control group. It would have been instructive to see the degree and direction of differences.

The generalizability of the findings of the present study are limited by the present experimental constraints. Only one delay period, one week, was used; sociopaths were institutionalized and controls were not; and the incentives for a delayed choice were only roughly comparable for the sociopaths and controls. Future research should consider different experimental situations, and

different periods of delay and incentives for delay.

As researchers well know, correlation per se does not necessarily imply a cause and effect relationship between variables. With this in mind, examination of the correlates of delay behavior may, nevertheless, be helpful in fostering a more complete understanding of the mechanisms of delayed gratification. A particularly promising correlate as revealed by research has been time orientation or future time perspective. One of the early studies demonstrating a relationship between future time perspective and delay behavior was done by Mischel & Metzner (1962). Their measure of future time perspective was a series of questions pertaining to the age and time of occurrence of certain events identified by children aged 5 to 12. The measure of delay was a simple choice preference under five different delay intervals. Mischel and Metzner found that delay Ss made more moderate and realistic estimates of future events, whereas immediate Ss made either extremely short or extremely long estimates.

Having established a relationship between time orientation and delayed gratification, it should follow that delinquents should be more extreme in their time

perspective. Barndt & Johnson (1955) studied time orientation in delinquents and non-delinquents. Their Ss ranged in age from approximately 15 years to 17 years and were matched on age, IQ, academic achievement, and SES. Future time perspective was measured through the use of stories obtained from all Ss in response to verbal instructions which included only the beginning of the story. The stories were recorded and scored in terms of the length of time covered by the action of the stories. The investigators found that delinquent boys produced significantly shorter time spans for their stories. Siegman (1961), working with delinquents and men in the Israeli army, compared their future time perspective using a procedure similar to that used by Mischel & Metzner (1962). Subjects were asked to name a number of events that referred to things which they may do or which may happen to them in the future. They were then asked to indicate what age they would be at the occurrence of each event. Future time perspective was then determined from the ages indicated. In accord with previous research, the delinquent group obtained significantly lower future time perspective scores.

More recently, Klineberg (1969) studied future time

perspective and preference for delayed reward, breaking down future time perspective into three components: "Length of time perspective" was determined by the time span of the action in TAT stories and the median age of Ss' predictions when asked to guess how old they would be at the occurrence of a number of different personal future events. "Everyday concern with future events" was based on a measure of the proportion of references to events in the past, present or future. "Sense of reality of future events" was a measure designed to reflect the degree to which the subject conceived of the future as an orderly unfolding of events in logical and predictable successions. Klineberg's Ss were youngsters ranging from 10 years to approximately 13 years. He used two measures of delayed gratification, a behavioral measure and a verbal measure. Though Klineberg did not work directly with delinquents, he pointed out that research has shown the delinquent to have a foreshortened perspective on the future. He underscored the fact that this future orientation is responsible, at least in part, for the delinquent's impulsivity, but he also stressed that where events are only a short time away the inability to envision events many years away should be less likely to

be relevant. In this regard, he found no significant relationship between preference for delay behavior on both of his measures and length of time perspective, a finding which does not agree with Mischel & Metzner (1962).

Significant relationships were found between preferences for delayed reward and more realistic and consistent outlooks on the personal future as a whole, and greater everyday preoccupation with future events.

Some of the questions pertaining to the relationships of sociopathy, delay of gratification, and time orientation could undoubtedly be tied together within a research design incorporating all these factors. Also of practical importance would be a research project which would explore the possibilities of increasing delay behavior in sociopaths by changing their time orientation.

Risk Taking

Hypothesis 3 stated that sociopaths, as compared to normals, would exhibit greater risk taking behavior. The hypothesis was confirmed only for the PSSs. The relationships between NSs, PSSs, and Cs in risk taking are equivocal because of a problem of interpretation introduced by the experimental design, the nature of which was elaborated in the preceding chapter. Briefly stated, a high risk

choice was effected by S's prior choice of immediate or delayed gratification, and groups, with the exception of the PSs and Cs, were not equatable in their immediate vs. delay choices. After roughly comparing the relative proportions of Ss choosing delayed gratification for the NSs against the PSs and Cs with the number of Ss in each group choosing high risk, it appears that the NSs fall between the Cs and PSs in their proclivity for high risks.

The three subject groups were also compared on their subjective perception of the degree of risk involved in their spinning of the dial. Subjects' rating scores indicated that the PSs and NSs perception of risk was the same and that the sociopaths saw the risk involved as significantly more favorable than did controls.

The present findings of greater risk taking and subjective underestimation of risk among sociopaths are consistent with those of Claster (1967). Claster matched a group of delinquents and non-delinquents on age, IQ and race. A questionnaire was administered which was constructed to measure S's perception of the risk of arrest and conviction for the commission of hypothetical offenses. It was found that delinquents perceived themselves to be more immune from arrest, but no group differences were

found for perception of conviction. It is important to note that the delinquents perceived themselves as immune from arrest in spite of the fact that many of them were recidivists.

How do we understand the sociopath's minimization of risk? One possibility is that underestimation of risk is related to the sociopath's poor conditionability of fear (Hare, 1965; Lykken, 1957; Schmauk, 1970). Much of the recent research with sociopaths has demonstrated that they are less anxious generally than normals, and that, in comparison to normals, a fewer number of cues are capable of eliciting an anxiety or fear response (Schmauk, 1970). Inherent in the experience of risk is the recognition of the contingency of an unfavorable outcome, examples of which might be loss of money or being arrested. If the sociopath is less emotionally responsive to the aversive consequences of an unfavorable outcome of a risk situation, he is then more likely to perceive the degree of risk as less.

Present findings that sociopaths preferred higher risks than Cs are consistent with the results of a number of studies dealing with personality correlates of risk taking. Cameron & Myers (1966) found that Ss high

in exhibitionism (attention getting behavior), aggression, and dominance tended to prefer bets with high payoff and low probabilities of winning. Scodel and his associates (1959) observed that low risk individuals, in a gambling situation, were higher on measures of fear of failure and need for achievement. Atkinson, Bastian, Earl, & Litwin (1960), in concordance with Scodel, showed that high need for achievement college men, making imaginary bets, preferred intermediate risks over extreme risks. While no experimental measure of need for achievement is available for delinquents or sociopaths, the face validity for their being low in need for achievement is extremely strong. This being so, their preference for high risks in the present study is in agreement with the relationship found by Atkinson et al. between risk taking and need for achievement.

Perception of Self and Others

The sociopaths and the normal controls did not differ from each other in their mean ratings of the other person's intelligence, the other's cooperativeness, their own cooperation, and the other's consistency of strategy choice. A comparison of the self cooperation and other's cooperation scores showed that Ss correctly

perceived the other person as being more cooperative.

While groups did not differ in their overall ratings, correlations between the degree of exploitativeness within a group and several of the ratings did show significant relationships. Both the NSs and Cs evidenced a significant trend for the more exploitative Ss to accurately label their behavior as less cooperative than did the low exploitative subjects. This relationship was not found for the PSs, suggesting that PSs may either be unwilling or unable to correctly label their exploitative behavior.

Inverse correlations between degree of exploitativeness and intelligence of the other person were found for both the NSs and Cs but not for the PSs. It appears that for the NSs and Cs, the more exploitative Ss tended to devalue the intelligence of the other. It seems likely that the high exploitative Ss may have considered their partners less intelligent because they permitted themselves to be exploited. Weakness, or letting oneself be taken advantage of, may be associated generally with lack of intelligence. That PSs did not evidence a significant relationship between degree of exploitativeness and other's intelligence is consistent with their not labeling

their competitiveness as accurately. High exploitative PSs, tending not to see themselves as exploitative, could hardly be expected to see the other person as a victim of exploitation.

The correlations obtained for the relationship between degree of exploitativeness and cooperation of the other were all inverse but nonsignificant, suggesting that there was a tendency for high exploitative Ss to misperceive their partners behavior as uncooperative. The misperception that did occur could be understood as a S's defense against admitting that he was exploitative without provocation. Projecting uncooperativeness onto the other serves as a rationalization for one's own lack of cooperation. This finding of high exploitative Ss perceiving their partners as uncooperative could also be the result of the high exploitative Ss' general devaluing of the overall worth of their partner, and this being reflected, as a negative halo effect, in the rating scores for cooperation.

Conclusion

In conclusion, it appears that the well accepted clinical doctrine of a strong association between sociopathy and egocentricity demands reexamination. Results

of the present study suggest that there are little or no differences between normals and sociopaths in egocentric behavior. Support for this position is found in the work of Berger & Tedeschi (1969) and of Sutker (1970).

As regards the capacity to delay gratification, unexpected differences were found between the neurotic and primary sociopaths, primary sociopaths tending to delay gratification more frequently than the neurotic sociopaths. Surprisingly, the delay behavior of the normals and primary sociopaths was similar. This is particularly puzzling when one considers the life styles of sociopaths involved in the study. All had exhibited behavior which is generally associated with an incapacity to delay gratification. All sociopaths were criminal offenders and recidivists. It is generally taken for granted that the inability to follow a life plan or work productively is synonymous with poor delaying capacity. The results of the present study suggest that this may not be so, or that the relationships between these variables is more complicated than is presently thought, or that the experimental measure of delay of gratification was unreliable.

While PSs were more like normals in their delay

behavior than were NSs, this relationship was reversed for risk taking behavior. Primary sociopaths were clearly more attracted to high risk contingencies than were normals, and the neurotic sociopaths inclination to take high risks seemed to fall in-between these two groups.

Reserving final judgment on the outcome of future research, present results and those of other studies suggest that a reconceptualization of the concept of sociopathy may be necessary. One area of investigation which appears promising is the further exploration of the differences between neurotic and primary sociopaths.

Egocentricity, Delay of Gratification, and Risk

Taking in Sociopaths. (March 1972)

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The acceptance of the diagnostic category of sociopathy has been based nearly exclusively on clinical observation. A number of research studies have been conducted which have focused on anxiety and avoidance learning in the sociopath, but few studies have put other of the putative criteria of sociopathy under the experimental spotlight. It was the purpose of this study to help close this investigative gap and to experimentally examine three criteria of sociopathy, two of which were based on descriptions provided in the writings of Hervey Cleckley (1964), and the third of which was based on common sense impressions of the sociopath's life style. They were: egocentricity, experimentally phrased as exploitativeness; inability to delay gratification; and high risk taking.

Sociopaths were recruited from a reformatory

population, and normal controls were recruited from Philadelphia high schools. There were 35 primary sociopaths (PSs), 35 neurotic sociopaths (NSs), and 35 controls (Cs). Beyond the obvious distinction of criminal incarceration, Ss were assigned to their respective groups based on their MMPI profiles and Taylor Manifest Anxiety Scores (MAS). Primary and neurotic sociopaths were characterized by Pd-Ma profiles, with the neurotic sociopaths generally scoring higher on the anxiety scales: hypochondriasis, depression, hysteria, and psychasthenia. The NSs were also selected to have higher MAS scores. An attempt was made to match groups for age, funds available, race, IQ, and socioeconomic status.

Three major hypotheses were presented. It was predicted that sociopaths, as compared with controls, would exhibit greater exploitativeness, less capacity to delay gratification, and higher risk taking behavior.

The experimental procedure can be thought of as divided into four stages, three associated with measuring the criteria under investigation, and the fourth with the administration of a post-experimental rating form and questionnaire.

For the first phase of the experiment, all Ss

participated in a Prisoner's Dilemma (PD) game. They were led to believe that they were playing with a partner, but in reality no partner was present, and all Ss played against a 100% unconditional cooperative strategy. Rather than playing for a constant number of trials, Ss played the game until an upper limit of \$3.00 was approximated. The proportion of exploitative choices was the dependent measure.

For the second phase, Ss were given the option of receiving their earnings immediately, or of receiving them a week later with a \$1.00 bonus (for inmates, earnings were redeemable in canteen merchandise).

In part three of the study, Ss were given a chance to increase their earnings by spinning a dial with the numbers one to five on it. The odds involved were explained and the contingencies for a win or loss made clear.

Finally, a rating form, asking for valuations of the partner's intelligence, own and other's cooperation, and other's consistency of choice, was administered along with a questionnaire giving the S an opportunity to express his reasons for his particular decisions.

Predictions concerning exploitativeness were not

supported. On a number of measures of exploitativeness obtained within the context of the PD, sociopaths exhibited small margins of exploitativeness. There were, however, no significant differences between the three groups on any of the measures. In the light of relevant research, these findings were taken to indicate that there is not a strong association between egocentricity and sociopathy. Implications for future research focused on the desirability of using more reality bound experimental situations to test this reputed characteristic of sociopaths.

The data for delaying gratification supported hypothesis 2 only in part. As anticipated, NSs exhibited less delaying capacity than Cs, but, unexpectedly, PSs exhibited preferences for delayed gratification equal to that of the Cs. This finding was discussed with regard to the limits of its generalizability and possible directions for continued research. The importance of varying delay intervals and incentives for delay was stressed.

The results for risk taking did not allow for easy interpretation because of a weakness in the experimental design. Primary sociopaths did exhibit significantly

greater risk taking than Cs but the relationships for NSs and the other two groups were less clear. Essentially, based on post hoc examination of the data and the fact that sociopaths rated their perception of risk as more favorable than Cs, it was concluded that sociopaths underestimate degree of risk and exhibit a preference for higher risks.

No differences were found between groups on mean rating scores for intelligence of the other person, cooperation of the other person, cooperation of self, and the other's consistency, but differences were found between groups for the degree of exploitativeness and rating scores.

The findings of the present study raise doubt as to the general validity of the traditional conceptions of sociopathy. Dividing the disorder into two subtypes was shown to be meaningful, and the importance of further research was emphasized.

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APPENDIX A

Experimental Instructions

INSTRUCTIONS

It is part of the experiment that you do not know who your partner is. Do not speak during the experiment and do not try to find out who your partner is.

This experiment is being run under the direction of the University of Massachusetts. Nothing you do during the experiment will be reported to (the name of the agency goes here).

The purpose of this experiment is to study decision making where your decision has an effect on the other person as well as yourself.

There are two of you who are going to make a series of decisions. The decisions you make will determine how much money you make.

This is what each of you will do. You see in front of you a red card and a blue card. Each time that light in front of you goes on you will pick either the red or blue card and you will pass the card to me through the slot in the partition. It will help to make things clear if you look at the chart posted in front of you.

Notice that if you pick the red card two things can happen. If you pick red and the other person also picks

red, you get 10¢ and he gets 10¢. If you pick red and he picks the blue card, you get 5¢ and he gets 15¢.

Suppose you pick the blue card, again two things can happen. If you pick blue and the other person also picks blue, you get 3¢ and he gets 3¢. If you pick blue and he picks red you get 15¢ and he gets 5¢.

You will keep all the money you make. You won't get money after each trial but I will keep track of how much you have made. At the end of the experiment you will receive (scrip; a canteen slip. S is shown scrip; canteen slip.) showing the amount of money you earned. You will give this to (one of the secretaries; the canteen) who will give you your (money; canteen).

The experiment will continue for approximately twenty minutes. O.K. now we are ready to begin. When you see that light in front of you go on it means that both of you are to pick the red or blue card. Once you have made your choice put the card through the slot in the partition. After a few seconds you will receive a card telling you how much money you have made. The red or blue card will be returned to you at this point. When you have seen how much you have made on the payoff card return it to me through the slot and get ready for the

next trial. You will be told every few trials how much total money you have made.

(The Ss played the game)

Now I'm going to give you a chance to increase your earnings. I'm going to ask you to make a choice on whether you would like the money you have earned today or a week from today. If you like, you can have your money immediately after the experiment is over; or if you wait a week I will add a one dollar bonus to the amount you earned today. Indicate your preference by checking the appropriate box on that slip of paper and pass the slip through the slot in the partition.

(At this juncture a new matrix was introduced)

Please note the new amounts of money involved.

(The game was played for one trial)

(The S was now seen in a different room)

Now I'm going to give you another chance to increase your earnings. (Dial is presented.) If you want you may spin the dial only once. If you get a "5" I will pay you \$15. If you do not get a "5" you will lose all that you earned up to now (If S gets a \$1.00 bonus he keeps that). The odds are 4 to 1 against getting a "5." What would you like to do?

(After the S made his choice he received a rating form and a questionnaire to fill out).

APPENDIX B

Rating Form

I would like you to rate the other person's intelligence (how smart or bright you think he is), cooperation (how willing he was to make choices that would allow both of you to earn equal amounts of money, and not try to earn more than you), and consistency (how often he made the same choice on each trial).

Place a check mark above the number that gives the rating you want to make. For example, if you feel that your partner is very intelligent, you would place a check above the number "7." If you feel that your partner is not intelligent, you would place a check mark above the number "1." If you feel he is average, you would place a check above the number "4."

Place your check marks above, not between, the numbers.

INTELLIGENCE									
(How smart or bright you think he is)									
Not Intelligent	1	2	3	4	5	6	7	Very Intelligent	

COOPERATION

(How willing he was to make choices that would allow both of you to earn equal amounts of money, and not try to earn more than you)

Very Cooperative 1 2 3 4 5 6 7 Not Cooperative

(How willing you were to make choices that would allow both of you to earn equal amounts of money, and not try to earn more than him)

Not Cooperative 1 2 3 4 5 6 7 Very Cooperative

CONSISTENCY

(How often he made the same choice on each trial)

Very Consistent 1 2 3 4 5 6 7 Not Consistent

APPENDIX C

Questionnaire Form

I would like you to answer the questions below in your own words.

a) What were you trying to do in the decision making situation with the other person?

b) What did you think the other person was doing in the decision making situation?

c) What made you take your money today; what made you wait a week for your money?

d) What made you decide to spin the dial; what decided you against spinning the dial?

e) What did you think your chances of getting a "5" on the dial were?

(Check one.)

Excellent ___ Good ___ Fair ___ Not Good ___ Bad ___

APPENDIX D

Analyses of Variance

TABLE 22

Summary of Analyses of Variance for Group Matching
Variables: Age, IQ, SES, and Funds

<u>Source of Variation</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Age					
Between Groups	2	244.353	122.177	49.930	.01
Within Groups	102	249.560	2.447		
Total	104	493.953			
IQ					
Between Groups	2	180.348	90.174	.786	n
Within Groups	102	11704.900	114.754		
Total	104	11885.246			
SES					
Between Groups	2	110.867	55.434	.167	n
Within Groups	102	33946.801	332.812		
Total	104	34057.670			

TABLE 22 (contd.)

	Funds			
Between Groups	2	183.985	91.992	4.218 .025
Within Groups	102	2224.715	21.811	
Total	104	2408.700		

Note.--All significance levels are less than the p values indicated. p > .10 indicated by the letter n.

TABLE 23

Summary of Analyses of Variance for
MMPI-Based Variables

<u>Source of Variation</u>	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
L Scale					
Between Groups	2	10.413	5.207	1.136	n
Within Groups	102	467.428	4.583		
Total	104	477.841			
F Scale					
Between Groups	2	137.192	68.600	6.310	.01
Within Groups	102	1108.854	10.871		
Total	104	1246.046			
K Scale					
Between Groups	2	258.870	129.435	9.850	.01
Within Groups	102	1340.453	13.142		
Total	104	1599.323			

TABLE 23 (contd.)

Hs Scale					
Between Groups	2	249.726	124.863	18.455	.01
Within Groups	102	690.112	6.766		
Total	104	939.837			
D Scale					
Between Groups	2	425.846	212.923	19.962	.01
Within Groups	102	1087.996	10.667		
Total	104	1513.842			
Hy Scale					
Between Groups	2	701.536	350.768	33.522	.01
Within Groups	102	1067.309	10.464		
Total	104	1768.845			
Pd Scale					
Between Groups	2	2005.723	1002.862	127.103	.01
Within Groups	102	804.797	7.890		
Total	104	2810.521			

TABLE 23 (contd.)

Mf Scale					
Between Groups	2	62.524	31.262	1.551	n
Within Groups	102	2055.710	20.154		
Total	104	2118.233			
Pa Scale					
Between Groups	2	120.925	60.462	9.442	.01
Within Groups	102	653.198	6.404		
Total	104	774.123			
Pt Scale					
Between Groups	2	515.098	257.549	22.318	.01
Within Groups	102	1177.083	11.540		
Total	104	1692.181			
Sc Scale					
Between Groups	2	66.123	33.061	2.291	n
Within Groups	102	1472.050	14.432		
Total	104	1538.173			

TABLE 23 (contd.)

Ma Scale					
Between Groups	2	360.809	180.405	21.870	.01
Within Groups	102	841.427	8.249		
Total	104	1202.236			
Si Scale					
Between Groups	2	722.496	361.248	8.567	.01
Within Groups	102	4301.301	42.170		
Total	104	5023.797			
Total Anxiety Score					
Between Groups	2	34390.801	17195.398	59.830	.01
Within Groups	102	29315.250	287.404		
Total	104	63706.051			
Manifest Anxiety Score					
Between Groups	2	1849.208	924.604	46.091	.01
Within Groups	102	2046.171	20.061		
Total	104	3895.380			

Note.--All significance levels are less than the p values indicated. p >.10 is indicated by the letter n.

