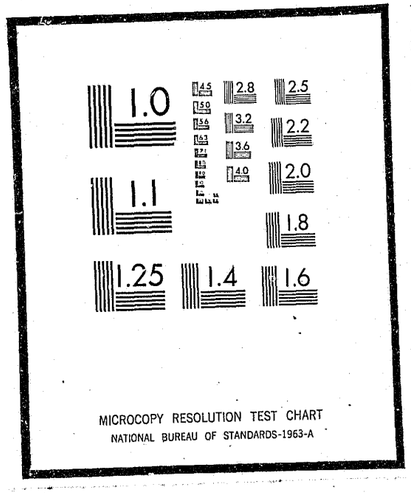

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A Designed Treatment Program of Sociopathy by Means of Drugs: a Summary Report

A Monograph in the Criminal Justice System Series

Number 29

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A DESIGNED TREATMENT PROGRAM OF SOCIOPATHY BY MEANS OF DRUGS: A SUMMARY REPORT

by

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December 1974

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CHAPTER I

INTRODUCTION

Sociopathic personality[1] has traditionally been a neglected stepchild of the behavioral sciences, a "wastebasket" category for deviant behavior which could not readily be subsumed under some more obvious category. In the last few years, however, an increasing amount of clinical interest and research has concerned the character disorders, and especially the antisocial sociopathic personality.

Antisocial sociopathic personality, or sociopathy, is a common, confusing, and intractable psychiatric problem whose course, mechanism, and etiology are presently unknown. Previously and less specifically referred to as psychopathy, constitutional psychopathic state, and psychopathic personality (Maughs, 1941) sociopathy has been attributed to genetic, biologic, interpersonal, and cultural causes (Cleckley, 1962; Noyes and Kolb, 1963). Antisocial sociopathy refers to (American Psychiatric Association, 1952: 38):

> chronically antisocial individuals who are always in trouble, profiting neither from experience nor punishment, and maintaining no real loyalties to any person, group or code. They are frequently callous and hedonistic, showing marked emotional immaturity, with lack of sense of responsibility, lack of judgement [sic] and an ability to rationalize their behavior so that it appears warranted, reasonable, and justified.

Clinical evidence (Gregory, 1961) indicates that antisocial sociopaths constitute from one to three percent of all adults of both sexes. Even if this estimate of prevalence is too high, which is quite likely considering the extent of dissensus on the classification of this disorder or group of disorders, there is little doubt that antisocial sociopathy constitutes a serious clinical, behavioral, and social problem. For example, this

chronic disorder is estimated to affect approximately 20 percent of the adult correctional population in the United States (Cleckley, 1950; Maughs, 1941: 480). These institutionalized offenders are often disruptive to the point of negating rehabilitative efforts for the remaining inmates by focusing institutional efforts on custody rather than on resocialization. Furthermore, they condition public thinking about criminals, thereby precluding public support for enlightened institutional reforms; were it not for these offenders, it is possible that there would be greater demand for noninstitutional and community rehabilitation efforts, such as probation and parole, vocational and educational retraining, and work release and other furlough programs, as well as for reduced institutional sentences.

In contrast with the relative ease of management of the antisocial person in the smaller, more constraining and restrictive communities of rural settings, the modern urban setting makes it very difficult to control deviants of any type and especially the chronically antisocial, impulsive, and sometimes aggressive sociopath. Whatever the precise etiologies of antisocial behavior--the extraordinary disruption of the modern family, the increased geographic mobility, the "eclipse" of community, the elaboration of the matriarchal household, and of physical and mental impairment, all of which are conducive to impaired socialization--the increased social demands and disorganization occasioned by urbanization seems to have exacerbated the problem. The sociopath creates problems for the urban community; the urban community fails to contain the sociopath. The spiral effect is seen in the changing composition and institutional behavior in inmate populations. Experienced corrections people are now more than ever disturbed by this trend and freely confess that they are unable to deal successfully with these unreachable inmates.

Despite the number of incarcerated sociopaths and the management problems which they present in and out of correctional settings, little headway has been made in devising specific treatment techniques. Our experience indicates that nearly all correctional officers feel that no effective therapy exists and, even worse, that antisocial sociopathy is irreversible, and that these character disorders are not amenable to resocialization. Thus, study of the antisocial sociopath is warranted by the immensity of the problem and by the need for knowledge, especially for treatment and prevention.

Despite the long-standing interest, particularly by European investigators, in the biological substrates of criminal behavior, few modern American behavioral scientists have considered it relevant to examine these aspects of criminal conduct.[2] There are, of course, a variety of justifications for this neglect. For one thing, academic criminology in the United States is located in departments of sociology, rather than in schools of law and medicine as has been traditional in Europe and Latin America. Given their training and orientation, few sociologists are versed in, or sympathetic to, a biologic perspective. Instead, Ameircan criminology has been distinguished by its strong sociocultural emphasis, and its view of criminal behavior as essentially learned and adaptive conduct. Another and, perhaps, even more important reason for this neglect of biologic investigation, has been the sorry history of this perspective in the last hundred years. The extravagant claims, meager empirical evidence, naivete, gross inadequacy, and stated or implied concepts of racial and ethnic inferiority in the work of the constitutionalists (e.g., Lombroso and Hooton), the morphologists (e.g., Kretschmer and Sheldon), other European traditionalists (e.g., Lenz and Vervaeck), and the endocrinologists (e.g.,

Berman et al.) deservedly discredited the biological framework in the study of crime. Finally, American psychiatrists, at least those interested in criminology, have long been wedded to a psychodynamic orientation, focusing on the psychogenic and familial basis of intrapsychic and interpersonal pathologies rather than the psychophysiologic. Given this intellectual climate and disreputable history, there is little wonder that even the very few important empirical observations of a biologic nature were generally overlooked by students of deviancy.

It was not until 1949 that Funkenstein et al.[3] parenthetically mentioned the cardiovascular lability of chronically antisocial individuals. Funkenstein, a psychiatrist, and his colleagues reported on 15 sociopaths, 13 men and 2 women, selected from a group of court referrals to the Boston Psychopathic Hospital. They characterized these subjects ranging in age from 21 to 39 (mean, 25) as hostile recidivists. All had committed crimes of violence and exhibited no clinical signs of anxiety although they often claimed to be "nervous." Even though none of these volunteered any complaint of subjective discomfort after an intravenous injection of 50 μg of epinephrine, 13 of the 15 sustained a systolic blood pressure rise of 75 mm Hg as compared to only 19 of 85 psychotic and neurotic patients and 5 of 15 controls.

In 1955, Lykken,[4] a psychologist, reported on the performance of 19 "primary" sociopath felons (12 of whom were men) and 15 noninstitutionalized student controls (eight of whom were men) on eight assorted psychologic tests. On the two tests measuring autonomic function, the "primary" sociopaths produced a diminished galvanic skin response (GSR) to lying and a diminished conditionability of the GSR as compared to the noninstitutionalized controls. The first difference, the GSR response to

lying, approached the 0.05 level of significance. These differences were statistically different when the "primary" sociopaths were compared with a group of 19 incarcerated "neurotic" sociopaths (i.e., inmates who were labeled sociopathic by the prison staff but who did not meet Cleckley's clinical criteria).

In 1964 Schacter and Latané,[5] social psychologists, reported that 15 imprisoned male sociopaths showed greater increases in pulse rate following an epinephrine injection that did 15 inmate control subjects. (Whether the controls of Schacter and Latané more closely related to Lykken's "neurotic" sociopaths or to his controls is a moot point.)

In 1965 Lippert,[6] a psychologist, compared 21 "sociopathic" delinquents with 21 nonsociopathic delinquents, and found that their patterns of spontaneous GSR frequency were characterized by (1) lower resting levels, (2) lesser increases during experimental manipulation, (3) decreases to below resting levels following experimental manipulation, and (4) increased adaptation to repeated stimuli.

Hare[7] in 1968, like Lippert, found that, at rest, 21 primary psychopaths had higher skin resistance and less variability that 12 nonpsychopathic controls. Furthermore, the psychopaths' GSR, cardiovascular, and orienting responses to mild simuli, such as the solution of arithmetic problems, were less than in the controls.

Recently, Kakerem (oral communication, September 1968) observed an exaggerated pupillary response in a group of patients who were later-identified as "psychopaths." This parenthetical observation was neither pursued nor published.

Clinical Formulations

Even a cursory review of the literature reveals that the specific symptoms and behavioral manifestations of this disorder have been the subject of considerable debate through the years.[8] At one time or another, sociopathy was referred to as "moral insanity," "moral imbecility," manie sans delire, "moral alienation," and still more recently, as psychopathy, constitutional psychopathology, and constitutional inferiority (Maughs, 1941). It was Partridge who first used the term sociopath, describing it as a pathology involving the inability to conform to normative standards, rather than as a syndrome of intrapsychic symptoms. Generally speaking, and despite these disagreements, however, the following sixteen characteristic symptoms (Cleckley, 1950) embrace most of the previous and contemporary descriptions. Sociopathy involves:

(1) superficial charm and "good" intelligence;
(2) absence of delusions and other signs of irrational behavior;
(3) absence of "nervousness" or psychoneurotic manifestations;
(4) unreliability;
(5) untruthfulness and insincerity;
(6) lack of remorse or shame;
(7) inadequately motivated antisocial behavior;
(8) poor judgement 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 relations;
(13) fantastic and uninviting behavior with and sometimes without drink;
(14) suicide rarely carried out;
(15) sex life impersonal, trivial, and poorly integrated;
(16) failure to follow any life plan.

Most formulations have been derived from clinical experience with sociopaths, and little experimental research has been done in this area. As a result, replication and confirmation of these clinical impressions

have not been possible, and sociopathy has remained a vague and non-specific entity.

Although not appreciably different from the problems encountered in the nosology of other psychiatric disorders, the legal status of the sociopath as sane created special problems for both psychiatry and law. For this reason, and unlike other psychiatric disorders, sociopathy is better studied in the prison system than in the mental hospital. Since there are few psychiatrists in the penal system, the classification of sociopath has been left almost entirely to correctional officers who are not generally concerned with nosologic niceties. In addition, the sociopaths seen clinically are considerably different--in socioeconomic status, family background, education, and anti-social history--from those incarcerated in our prisons. Thus, while the study of the chronically anti-social personality type is more feasible in the prison than in any other setting, it is likely that chronically imprisoned sociopaths do not belong to the same universe--psychiatrically, socioculturally, and physiologically --as those seen in private practice (or not seen at all), limiting the potential generalizations drawn from such inmate populations. Those never, or frequently, imprisoned may have learned that they can stay out of mental hospitals on legal grounds and out of prison on psychiatric grounds. That is, those sociopaths who end up in prison most likely could have avoided prolonged incarceration had they, like their upper- and middle-class counterparts, voluntarily committed themselves to mental hospitals in the past, and thereby, obtained a psychiatric label.

While autonomic defects have been found consistently in all the studies of sociopaths mentioned here, caution in interpretation remains necessary at this point, since all sociopaths utilized in these studies

have been incarcerated, or at the very least, as in Funkenstein et al.'s patient, confined under court order. The differentials reported by others and our results below may be characteristic of the sociopath under restraint, and could conceivably disappear in the free world--as has so often occurred with the physiologic differentials identified in schizophrenia. To determine the generalizability of results in our project described below, the long-term investigation of biological substrates and potentials for treatment of sociopaths is continuing with psychiatric inpatients, such studies currently under the direction of Ohio State University psychiatrists and funded through grants from the Ohio Department of Mental Health and Mental Retardation.

The theoretical implications[9] of some of these studies were argued in 1965-1967 in a series of multi-disciplinary seminars which included clinicians, criminologists, experimental psychologists, and neuroendocrinologists. As a consequence of these discussions, we decided to repeat and expand the empirical investigation of Schacter and Latanė as the initial study in an intensive investigation of both biological and behavioral aspects of sociopathy, which is still continuing. The major purpose of these studies was to verify the Schacter and Latanė observation of a cardiovascular hyper-reactivity of sociopaths to epinephrine. In addition to studying the physiological responses of sociopaths, this investigation was also concerned with delineating their social and psychological characteristics and investigating the possibility of treatment of incarcerated sociopaths by means of drug therapy.

Footnotes: Chapter I

1. The material from this chapter was drawn from H. E. Allen, Bio-Social Correlates of Two Types of Anti-Social Sociopaths, unpublished dissertation, The Ohio State University, Columbus, Ohio, 1969. See also H. Allen, L. Lindner, H. Goldman, and S. Dinitz, "Hostile and Simple Sociopaths: An Empirical Typology," Criminology, Vol. 9, No. 1 (May 1971), pp. 27-47.

2. This section of the report is drawn in large part from an article by H. Goldman, L. A. Lindner, S. Dinitz, and H. E. Allen, "The Simple Sociopath: Physiologic and Sociologic Characteristics," Biological Psychiatry, Vol. 3 (1971), pp. 77-83.

3. D. H. Funkenstein, M. Greenblatt, and H. C. Solomon, "Psychophysiological Study of Mentally Ill Patients: I. The Status of the Peripheral Autonomic Nervous System as Determined by the Reaction to Epinephrine and Mechalyl." American Journal of Psychiatry, Vol. 106 (1949), pp. 16-28.

4. D. T. Lykken, A Study of Anxiety in the Sociopathic Personality, dissertation, University of Minnesota, Minneapolis, 1955. University Microfilms, Ann Arbor, Michigan, No. 55-944.

5. S. Schacter and B. Latanė, "Crime, Cognition and the Autonomic Nervous System," pp. 221-275 in M. R. Jones (ed.), Nebraska Symposium on Motivation (Lincoln: University of Nebraska Press, 1964).

6. W. W. Lippert, The Electrodermal System of the Sociopath, dissertation, University of Cincinnati, 1965. University Microfilms, Ann Arbor, Michigan, No. 65-12921.

7. R. D. Hare. "Psychopathy, Autonomic Functioning, and the Orienting Response," Journal of Abnormal Psychology, Vol. 73 (1968 supplement), pp. 1-24.

8. See L. Lindner, H. Goldman, S. Dinitz, and H. E. Allen, "Anti-Social Personality Type with Cardiac Lability," Archives of General Psychiatry, Vol. 23 (September 1970), pp. 260-267. This section is drawn in large part from this article.

9. Lindner, et al., p. 261.

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CHAPTER II

THE OHIO PENITENTIARY STUDY

Introduction

The major purpose of this initial multi-disciplinary investigation, conducted in 1967-1969 at the Ohio Penitentiary, was to confirm the cardiovascular hypereactivity of sociopaths to adrenaline. In addition to studying the physiological responses of sociopaths, this phase of the investigation was equally concerned with delineating their objective social and psychological characteristics.[1] With the active cooperation and involvement of the then Ohio State Deparmtnet of Mental Hygiene and Corrections, 1375 consecutive admissions to the Ohio Penitentiary were screened at intake by the Psychological Services staff of the prison in 1968 and 1969.

Presented in "flow chart" form, of the 1375 new admission subjects, half were lost to the age requirement (under 35); of the 685 who remained eligibles, about two-thirds were lost to the IQ requirement (100 or above). This left 200 eligibles; of these, roughly two-thirds did not score either over 12 (sociopathic) or under 5 (nonsociopathic) on the Cleckley criteria (Cleckley, 1964). Approximately 65 inmates remained. The health screening eliminated 15 more, and consent refusals accounted for 5 others. Of the 1375 then, 43 were actually studied on all of the levels: organic, psychological, and sociological.

To be classified as a sociopath, each of the experimental subjects had to score above the median in all of the major independent variables (those weighted one-fourth in the classification weights: Lykken Scale scores, number of arrests since age 18, and percentage of life incarcerated since age 18), or on a minimum of two of these three major and at least

two of the three minor criteria (those weighted one-twelfth in the classification weights: MMPI [Dahlstrom and Welsh, 1960] scales 4 minus 7 subscale scores, escapes, and Cleckley criteria). Subjects who scored above the median on either two of the major and none of the minor, or only one of the major and two of the minor criteria, were classified as "mixed." Subjects who met either none or only one major criterion or only two of the minor criteria were classified as nonsociopaths. On this basis, then, the 43 experimental subjects were categorized as 19 sociopaths, 10 mixed and 14 nonsociopaths.

Immediately after consent was obtained, the 43 subjects individually completed the Lykken, Srole Anomie (Srole, 1956), and the Taylor Manifest Anxiety Scales (Taylor, 1953). Approximately one week later--to separate the earlier from the experimental effect, and to provide comparability of our present investigative procedures with those of Schacter and Latané--the inmate subjects were brought individually into a room containing the experimental apparatus. The experimental procedures in this study were:

1. The subject was brought into a room in the prison's Psychological Services Building and seated before a small table bearing the manipulandum for the learning task. The appearance of this room patently had profound effects upon their "basal" levels of autonomic activity, and was a dominating influence upon the mental "sets" with which they approached their task.

2. Four (Beckman) electrodes were attached to the subject's body for continuous monitoring of heart rate and skin resistance (thenar eminence, hypothenar eminence, xyphoid process, sixth intercostal space of left anterior axillary line).

3. After a variable period of time for emotional adjustment to the

situation, the subject was instructed in the opeartion of the manipulandum and the objectives of the learning task.

4. The subject was given injection of 0.5 ml of sterile saline in the nondominant shoulder. Half of these injections contained, in addition, 0.5 mg epinephrine (Parke-Davis), assigned on a random basis.

5. Following a 3-minute wait to permit separation of the direct effect of the injection from the combined effect of the injection and work on the learning task (including the effects of repeated shocks), the subject was permitted to begin. He was permitted to proceed at whatever speed he might choose; in fact, subjects were instructed to take their time, that no credit would be given for speed of learning.

6. When the subject had achieved criterion (i.e., three successive perfect repetitions of the maze), he was instructed to stop, sit back, and rest for 5 minutes, during which period his heart rate and palmar resistance continued to be recorded.

7. After the rest period the electrodes were removed and the subject was taken to another room where he completed the Lykken and Srole Scales, and the Reckless Criminality Level Index (Reckless, 1965).

One week later, steps 1, 2, and 4-6 were repeated with only the drug conditions changed. No written instructions were administered following this second test session.

For both drug and placebo conditions, instantaneous heart rates were averaged for 5 minutes prior to the average time of appearance of the epinephrine action, and for 5 minutes at the average time of the peak of drug activity. The predrug average rate was subtracted from the average peak rate; then the placebo was subtracted from the drug response.

Results

The heart rate of the sociopaths, following epinephrine injection, increased by 9.92 beats per minute. In contrast, the heart rate of the 25 other subjects increased an average of only 5.21 beats per minute. Despite this difference of 4.71 beats per minute, the two groups, sociopaths and others, were not significantly different from each other in heart rate (Table 1). Since this finding conflicted with the Schacter and Latanè results, we reexamined the responsivity of each of our subjects, and found that the variability among the supposedly homogeneous sociopaths was sufficiently large to negate the mean differences in heart rate increase. Further examination revealed that the sociopath group markedly differed internally on the Lykken Scale. Eleven of the sociopaths scored above the institutional median for that scale, while 8 scored below the median. When the heart rate increase of these 11 sociopaths was examined, it was found that their increase of 12.81 beats per minute corresponded closely to the value reported by Schacter and Latanè. Again, in contrast, the eight high scorers showed an increase on only 5.95 beats per minute, which was similar to that of the other 25 subjects. Thus, the heart rate

TABLE 1

HEART RATE RESPONSES TO EPINEPHRINE INJECTION

Group	*N*	Beats per minute[a]	Level of significance
Sociopath	19	9.92	<0.10
Controls	25	5.21	

[a] These figures were derived for each individual case as follows: beats per minute = drug (peak-initial) – placebo (peak-initial). The individual values were then summed and averaged for each group.

increase of the 11 low scorers was significantly different at the 0.05 level from that of all the other groups.

Consequently, the 19 sociopaths were divided into two groups on the basis of the Lykken scale scores.* Later, following a detailed examination of their criminal records, we designated the high scorers "hostile" sociopaths, and the low scorers "simple" sociopaths.

This physiologic finding was paralleled on behavioral parameters. Despite the fact that there are only two years difference in age between the two types of sociopaths, at the time of investigation the hostile sociopaths were married less than half as frequently as the simple sociopaths (25 percent to 54.5 percent, respectively), and had been significantly less often married (an average of 0.63 and 1.46 times, respectively)(see data in Table 2). Furthermore, only 25 percent of the hostiles but 72.7 percent of the simple sociopaths came from intact families (defined as being reared by two parents until age 10). One of the most significant implications of this study is to be found in the marked didfferences in early family constellations of the two groups of sociopaths, of which intactness is but one example. Family deprivation seems, for example, much more characteristic of the hostile than of the simple sociopath.

*The Lykken Scale (1955), technically called an Activity Preference Questionnaire, contains 33 seemingly unrelated forced-choice questions. The (a) choice in each item involves doing something which is boring, routine, unskilled, and often both frustrating and physical in character (e.g., digging a rubbish pit, awaiting an overdue bus). The (b) choices tend to be anxiety producing (e.g., having your name in the paper for drunken driving, going out to dinner for the first time). In theory, antisocial personality type respondents should more often choose the (b) answer on the assumption that they have a much higher threshold for anxiety. Mildly anxiety-producing situations, such as the (b) choices, should provoke little or no anxiety in the antisocial personality and there is, therefore, no reason why he should avoid such settings or events. Indeed, out theory suggests that the antisocial sociopath actively seeks such sensory and motor inputs.

TABLE 2

SUMMARY OF THE SOCIAL CHARACTERISTICS OF THE FOUR POPULATION GROUPS

Social characteristic	Hostile sociopath ($N = 8$)	Simple sociopath ($N = 11$)	Mixed ($N = 10$)	Non-sociopath ($N = 14$)	Group ($N = 43$)
Mean age	25.9	28.1	27.0	27.2	27.1
Percent white	62.5	63.6	70.0	78.6	69.8
Percent reared in a city	50.0	54.5	20.0	18.6	37.2
Mean family of procreation size	4.4	5.3	4.7	4.8	4.8
Percent reared by two parents	25.0	72.7	40.0	42.9	46.5
Percent married	25.0	54.5	50.0	35.7	41.9
Mean number of times wed	0.6	1.5	0.6	0.9	0.9
Mean number of children	0.8	1.2	1.1	1.9	1.3
Mean last grade completed	9.2	9.5	9.0	10.9	9.8
Mean social class score	20.8	24.5	17.2	25.5	22.4
Mean number of jobs as adult	4.3	3.6	2.2	4.5	3.8
Percent Protestant	50.0	55.5	70.0	85.7	67.4

Military History

There were striking differences in the military histories of the two groups of sociopaths. Although none of the sociopaths received an honorable discharge, 75 percent of the hostile sociopaths, but only 36 percent of the simple sociopaths were ever inducted into the military service, despite the excellent intellectual abilities of both groups. Of those who ever served, hostile sociopaths were in military service a significantly greater number of months than the simple sociopaths (17.4 to 6.7 months, respectively) before being cashiered.

Criminal History

The differences in criminal histories were equally pronounced. Hostile sociopaths had been arrested an average of 5.3 times and incarcerated an average of 2.8 times (Table 3). The simple sociopaths had been arrested 6.4 times, and incarcerated an average of 4.1 times. Utilizing homicide, rape, and assault as indicators, the hostile sociopaths had been much more aggressive in their crimes for which committed than had the

TABLE 3

SUMMARY OF CRIMINAL HISTORIES OF THE FOUR POPULATION GROUPS

Criminal characteristics	Hostile sociopath ($N = 8$)	Simple sociopath ($N = 11$)	Mixed ($N = 10$)	Non-sociopath ($N = 14$)	Group ($N = 43$)
Mean number of arrests	5.3	6.4	3.5	2.9	4.4
Mean number of incarcerations	2.8	4.1	2.6	1.6	2.7
Mean counts on conviction	5.4	5.9	3.5	2.6	4.4
Mean counts on conviction, corrected for age	6.6	5.9	3.9	2.8	4.6
Mean crimes against person, corrected for age	1.1	0.9	0.7	1.2	1.0
Mean months incarcerated	55.0	81.0	52.7	16.4	48.6
Mean months incarcerated since age 18	49.5	69.6	44.5	13.2	41.7
Mean percentage of life incarcerated since age 18	53.0	61.2	41.0	13.6	39.5
Mean number of parole violations	0.6	1.4	1.0	0.2	0.8
Mean number of escapes	0.5	0.2	0.2	0.0	0.2

simple sociopaths, who seemed to specialize in crimes against property; 38 percent of the former's present incarcerations are for crimes against the person, while only about 18 percent of the latter had been committed for such crimes (Table 4). Similarly, hostile sociopaths had averaged at that time significantly less frequent parole violations than the simple sociopaths (0.6 to 1.4, respectively).

TABLE 4

CRIME FOR WHICH CURRENTLY INCARCERATED FOR FOUR POPULATION GROUPS (IN PERCENTAGES)

Type of Crime[a]	Hostile Sociopath (n=8)	Simple Sociopath (n=11)	Mixed (n=10)	Non-Sociopath (n=14)	Group (n=43)
Criminal homicide	12.5	9.1	10.0	14.3	11.6
Rape	12.5	0.0	10.0	21.6	11.6
Robbery	25.0	0.0	40.0	21.6	20.9
Assault	12.5	9.0	0.0	0.0	4.7
Burglary	37.5	36.4	40.0	7.1	27.9
Larceny	0.0	36.4	0.0	35.7	20.9
Auto theft	0.0	9.1	0.0	0.0	2.0
Totals	100.0	100.0	100.0	100.0	100.0

a. This classification of crimes follows the procedure for reporting and classifying crimes as recommended by the Federal Bureau of Investigation, Uniform Crime Reporting Handbook (Washington, D.C.: Government Printing Office, 1965). Inasmuch as many of these subjects had been convicted for multiple offenses, only the most serious was scored.

Further evidence reflecting the significnat differences of these population sub-groups can be seen in the MMPI profiles in Figure 1 and the correlation of indicators in Table 5.[2]

FIGURE 1

COMPOSITE MMPI PROFILES OF THE FOUR POPULATION SUB-GROUPS

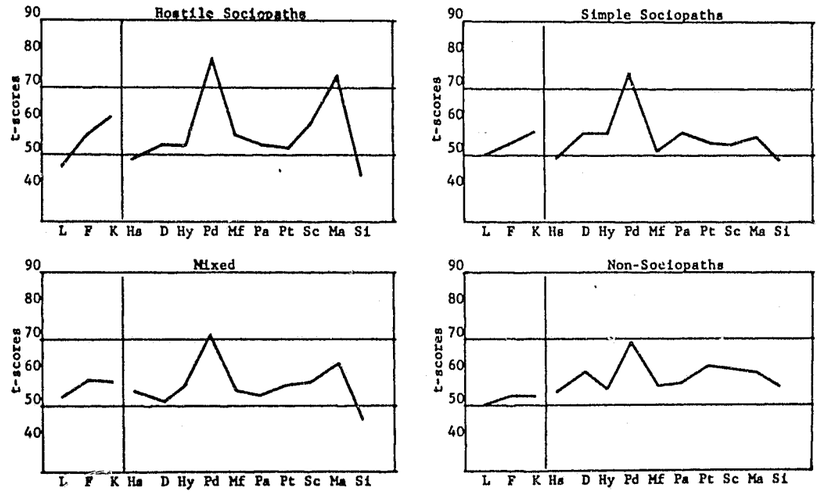

TABLE 5

INTERCORRELATION MATRICES OF INDICATORS OF SOCIOPATHY FOR HOSTILE AND SIMPLE SOCIOPATHS

Variable	Correlation Coefficient 1	2	3	4
Hostile Sociopath				
1. Cleckley Checklist		-.678[a]	-.570	.114
2. Psychopathic Deviate (Pd) Subscale			.924[b]	.045
3. Psychasthenia (Pt) Subscale				.141
4. Lykken Scale				
Simple Sociopath				
1. Cleckley Checklist	.481	.218	.208	
2. Psychopathic Deviate (Pd) Subscale		.672[a]	.814[b]	
3. Psychasthenia (Pt) Subscale			.417	
4. Lykken Subscale				

a. Significant at the .05 level.
b. Significant at the .01 level.

Observations from Ohio Penitentiary Study

As noted before, for both drug and placebo conditions, instantaneous heart rates were averaged for five minutes prior to the average time of appearance of the epinephrine action, and for five minutes at the average time of the peak of drug activity. The pre-drug (initial) average rate was subtracted from the average peak rate; then the placebo was subtracted from the drug response.

Most subjects manifested a marked tachycardia, in fact, the average heart rate for every group exceeded 90 beats per minute. Since all subjects were young men whose health had been carefully screened, these values must be regarded as very abnormal. While there is no doubt that some of these individuals were "high" on contraband sympathomimetics, this was unlikely to have been the case for so many subjects over a six-month period; in fact, any effect induced by contraband sympathomimetics should have been more than offset by the more commonly used depressants. We are inclined, therefore, to ascribe this tachycardia to apprehension generated by the strange and threatening appearance of the experimental room combined with the prospect of an unfamiliar task of unknown consequences. Also, nearly all subjects manifested a clear downward trend in heart rate long after any exercise effect should have passed, again, indicating the magnitude of the subjects' apprehension.

The sociopathic group averaged a substantially greater increase in response to their epinephrine injection; however, the magnitude of this differential response was less than one half that reported by Schacter and Latané and the variances, especially in the sociopathic group, were so great that the null hypothesis was rejected at the 0.10 level ($P < 0.10$).

While large variances had been expected in the other two groups because they were known to be quite heterogeneous, it was most unsettling in the supposedly more homogeneous sociopathic group.

With regard to conditioning, preliminary data failed to differentiate the three groups. All groups learned the avoidance task at the same rate under the conditions of epinephrine and placebo. These latter findings appear to conflict with Lykken's and Schacter and Latané's studies, but are consonant with Schoenherr's[3] study. In view of Schoenherr's findings, confirmed by Hare, our failure to find differential avoidance learning may be attributed, at least in part, to our use of the same fixed shock current for all subjects. This contrasts with Lykken's and Schoenherr's procedures in which they initially established the maximum tolerated current for each subject as a starting point in the experiment. This variable stimulus was designed to produce a relatively constant level of perception in all subjects. The method of Schacter and Latané, on the other hand, utilizing a simple capacitor discharge, insured neither a common level of perception nor a uniform stimulus. Under these circumstances it is not surprising that the results are dissimilar in the four studies. In view of Schoenherr's and Hare's demonstrations that sociopaths have markedly higher thresholds to shock, it is likely in retrospect that few of the sociopaths in our study perceived their shocks to be particularly objectionable. This design, replicating Schacter and Latané's, also precluded the evaluation of the separate effects of epinephrine, the learning task, and the shock.

Because of the criteria used, the 19 sociopaths of course differed from the 10 mixed subjects and the 14 nonsociopaths on the number of arrests, percentage of time spent in institutions, the number of escapes attempted and reported, and on the Cleckley Checklist, the 4 and 7 scales of the MMPI,

and on their Lykken Scale scores. On the sociocultural variables, the 19 sociopaths were different from the other two groups in the familial background, military service record, the heavier supervision and custody recommended for them (possibly related to psychologists' assessments on the Cleckley Checklist), more frequent parole violations, and on such other variables as IQ, urban status, and Reckless Criminality Level Index (see tables above).

Among the hypotheses which we entertained to explain the excess variance in the sociopathic groups it seemed most reasonable that the 19 subjects might include different types of sociopaths. In the hope that we had gathered sufficient information to distinguish any such speciation, we reviewed our data and noted that the cardiac reactivity seemed more highly correlated with the Lykken Scale score than with any other variables. More intensive analysis disclosed a greater variability on the Lykken test among the sociopaths, than any other measure.

Consequently, as noted above, we split the sociopathic group into two groups on the basis of the prison mean Lykken Scale score. Later, following a detailed examination of their criminal records, we designated the high scorers "hostile" sociopaths and the low scorers "simple" sociopaths. [These types, it should be noted, are not equivalent or analogous to primary and secondary (neurotic) divisions of such authors as Lykken or Karpman;[5] if anything, both are divisions of the primary type.]

Characteristics of "Simple" Sociopaths

When this separation was made, the increased cardiovascular reactivity was found to be characteristic only of the "simple" sociopaths; the other three groups did not differ significantly among themselves. The magnitude

of this increased reacitivty was approximately that recorded by Schacter and Latanè, and was significant at the 0.05 level.

This finding is especially significant because membership in the "simple" sociopath category precludes a qualifying score on the Lykken Scale. Since the Lykken Scale score accounts for 25 percent toward the diagnosis, it was necessary for the subjects to qualify on all other criteria to be included in the "simple" sociopath category.

The "simple" and "hostile" sociopaths were now found to differ markedly from one another on many more sociocultural variables some of which were described above. The "simple" sociopaths were older, from larger families, more often from intact families, a greater percentage were married, of slightly higher educational achievement, and of higher socioeconomic status. They had more previous arrests, more counts on conviction, more previous incarcerations and of longer duration, and had spent a greater portion of their adult lives in prison. Fewer "simple" sociopaths served in the armed forces and those who did had shorter military tenure before dishonorable or medical discharge. In general, the "simple" sociopaths were lower on several of the MMPI scales and particularly on the hypomaina (M_a) and the psychopathic deviate (P_d) scales. Using an even larger sample of 277 inmates, these differences were confirmed. Inspection of the socio-cultural data discloses that the two sociopathic groups bracketed the mixed and nonsociopathic groups on the additional sociocultural variables, and hence, obscured these relationships when grouped together.

Theoretical Implications

The simple sociopath's exaggerated autonomic responses demonstrates that his characteristic overt behavior is paralleled by a characteristic physiological behavior.

We believed that a logical case could be made for both abnormal autonomic behavior and abnormal social behavior in the simple sociopath resulting from a single, simple, structural biological defect. We suggest that the most parsimonious lesion consistent with the available physiologic data is simply a diminished function (partial or total) of catecholamine-secreting nerve endings including those involved with sensory receptors. Such a sympathetic denervation would produce a denervation sensitivity of the structures innervated by these neurons, of a sort long familiar to physiologists. Such a supersensitivity--of whatever origin--is testable by current technology. This hypothesis is no way precludes extension of the defect to monoaminergic interneurons modulating both sensory input and motor output at higher levels of nervous system integration.

It is reasonable to assume that a defect already observed for three disparate effectors--heart, skin, and pupil--is general among catecholamines secreting neurons. Since other evidence, both physiologic and anatomic, indicates that the sympathetic nervous system modulates sensory input at several levels, including interoceptors and exteroceptors themselves, one result of such a general sympathetic nervous system defect would be a reduction and distortion of incoming stimuli in the simple sociopath. In point of fact, both Schoenherr and Hare have already demonstrated an elevated threshold for electric shock in sociopathic prisoners. Such diminution and distortion of sensory data on a chronic basis must markedly modify conditioned responses to emotion-laden stimuli, thereby distorting

the attitudes and values erected during the formative years. If, in the presence of this sort of sympathetic nervous system defect, the simple sociopath retains an otherwise intact nervous system, the following predictions may be made.

(1) In reaction to perceived diminution of sensory input (c.f., the better sensory deprivation experiments of the 1950's) he will seek stimulation in an attempt to optimize his input.

(2) Due to his functional sympathetic denervation he will perceive emotional coloration only for events strong enough to trigger adrenal medullary secretion. Worse, as a result of denervation supersensitivity, he will perceive all such events as having a single-leveled maximum emotion. In other words, he would be expected to demonstrate "on-off," labile, impulsive behavior, and be quite unable to make graded emotional responses. Support for this predicted two-valued responsivity in the sociopath is found in the work of Schoenherr and Hare, both of whom have demonstrated that while normals have a low threshold to electric current, the sociopaths have a high threshold; the latter do not perceive and respond to electric current until the level of administration far exceeds that of the normals. Equally important, the maximum current level tolerated by the sociopaths is no more than that of the normals. Thus, the perceptual range of extreme sociopaths may be compressed into what is literally a switching function.

(3) As this altered perception of incoming information becomes chronic, the maturing organism accumulates a store of faulty learned responses (more correctly, fails to accumulate a store of mature responses) which prevents its making socially acceptable emotion-laden decisions. (Parenthetically, consider also that it this formulation, the sociopath must represent one

extreme along the continuum of sympathetic nervous system function. It follows then, that one must anticipate the existence of the other extreme, the case in which sympathetic function is excessive. As a result, one can anticipate in the adult an augmentation and a different pattern of distortion of sensory input.) This being the case, it would follow that there would be: (1) Hyposensitivity of sympathetic effectors to catecholamines; (2) an attempt to optimize input by avoiding stimulation; (3) perception of an extreme emotional coloration for all events--a "one-valued" logic again precluding graded emotional responses; and (4) a faulty learned program precluding acceptable emotion-laden decisions secondary to the chronically distorted reception of incoming information. This describes the behavior of certain classes of schizophrenics.

No evidence is currently available to permit a choice (or even to narrow the choice) among the essentially limitless genetic and acquired etiologies possible for the postulated "defect," nor does any evidence preclude its being the common consequence of multiple causes. It is as conceivable that the defect is "congenital" and "innate" as that it is "environmental" or "acquired." The very location and character of the postulated neuronal defect is obscure. For example, it may occur at the nerve terminal, it may be ganglionic or preganglionic or it may be extra-neuronal, even involving structures such as the liver. We thus planned to differentiate among the first three localities by measuring the subject's response to an injection of tyramine, sampling plasma dopamine-β-hydroxylase and, possibly, utilizing imipramine (Tofranil), a potentiator of released catecholamines from sympathetic nerve endings.

Assuming that the defect is in the catecholamine-secreting neurons, two classes of etiologies may be distinguished: (1) those in which the

neurons fail to develop normally, a hypoplasia or "arrested or delayed maturation"--if maturation should be merely delayed, a possible mechanism for the often postulated "burn out" of older sociopaths is apparent; and (2) those in which the neurons develop normally, but later regress or degenerate. Merely as one example of plausible etiologies, the operation of the nerve growth factor[6] may be involved in either class. In the first, failure of nerve growth factor secretion (either genetic origin or due to the absence of a necessary environmental stimulus) could be the mechanism of the delayed or arrested maturation; in the second, the sociopath might produce antibodies to his own nerve growth factor, either as a result of a genetic defect or due to an untimely environmental stimulation of nerve growth factor secretion having increased the probability of antibody formation.

It is conceivable and desirable that lesions such as those mentioned could be reversed or at least compensated by medical means. Such medical treatment would probably suffice as a preventive measure when applied prior to the onset of the disease. But in those in whom detection is delayed until the syndrome has developed, the defect will have influenced behavior already; years of faulty programming would continue to determine behavior even after any original biologic basis had been removed or compensated. Hence, even a medical solution to the sociopath's problem would be insufficient; if our assumptions are correct, therapeutic intervention of necessity would have to include reprogramming and resocialization.

Footnotes: Chapter II

1. This first section is drawn in large part from H. Goldman, L. A. Lindner, S.Dinitz and H. E. Allen, "The Simple Sociopath: Physiologic and Sociologic Characteristics," Biological Psychiatry, Vol. 3 (1971), pp. 77-83.

2. Figure 1 and Table 5 are from H. Allen, L. Lindner, H. Goldman, and S. Dinitz, "Hostile and Simple Sociopaths: An Empirical Typology," Criminology, Vol. 9, No. 1 (May 1971), pp. 27-47.

3. J. Schoenherr, Avoidance of Noxious Stimulation in Psychopathic Personality, dissertation, University of California at Los Angeles, 1965. University Microfilms, Ann Arbor, Michigan, No. 65-8334.

4. W. C. Reckless, "The Development of a Criminality Level Index," in W. C. Reckless and W. C. Newman (eds.), Interdisciplinary Problems in Criminology (Columbus, Ohio: College of Commerce and Administration, The Ohio State University, 1965).

5. B. Karpman. "The Structure of Neurosis: With Special Differentials Between Neurosis, Psychosis, Homosexuality, Alcoholism, Psychopathy and Criminality," Archives of Criminal Psychodynamics, Vol. 4 (1961), pp. 599-646.

6. R. Levi-Montalcini and P. U. Angeletti. "Nerve Growth Factor," Psychological Review, Vol. 48 (1968), pp. 534-569.

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CHAPTER III

PRE-INSTITUTIONAL, INTRAMURAL AND PAROLE CAREERS OF SOCIOPATHS: AN OUTCOME STUDY

Introduction

This section of the report is concerned with the 277 Ohio Penitentiary subjects who were a part of the 1967-1969 study, the data on which served to establish criteria for determining the distribution of classification variables for the medical experimentation subjects. As such, this section details the pre-institutional (prior to the instant offense), intramural and parole careers of the cohort of 277 consecutive admissions to the Ohio Penitentiary in 1968 and 1969. In this group of inmates were 47 hostile and 23 simple sociopaths; our estimate of the incidence of sociopathy in this prison group was 25 percent.

A combination of circumstances, including the "crime in the streets" furor, the black and student disorders, the spate of hijackings and air piracies, have rekindled lay interest in the anti-social personality, more commonly called the psychopath or sociopath. Unlike that of the public, professional interest never lagged, although futility of studying and treating the sociopath discouraged all but a few clinicians and researchers. The recent introduction of community-based alternatives to incarceration has caused the unleavening of the inmate population, the piling up of chronically anti-social inmates in our prisons, and has fanned the unrest and discontent in our institutions. All these forces have focused attention of penologists on the management and resocialization of the hard-core offender. Most of all, the successful drug treatment of other disorders, particularly schizophrenia and depression, has at least presented the possibility of biomedical intervention in sociopathy.

The prospect that sociopathy might be a treatable disorder has suddenly attracted multidisciplinary interest. As a result, a great deal has been learned about biomedical (cardiovascular, pupil, EEG) characteristics, psychological profiles, and sociodemographic attributes of institutionalized and officially labeled sociopaths. Enough is already known that sophisticated empirical research might now begin. Too little, however, is as yet known to warrant optimism about successful treatment in the near future.

Our multidisciplinary group has been engrossed in the study of the institutionalized sociopath since 1967. In a series of reports and as noted above, we have described the problem, reviewed the literature, tested the cardiovascular responsivity of sociopaths and "normal" prisoners to epinephrine injection, and concluded that sociopathy is a disease entity encompassing at least two very different sub-types. We have also hypothesized a biological dysfunction as etiologic in one of these two sub-types (see Chapter II). Our project designed to intervene pharmacologically as a necessary precondition to the resocialization of these offenders is described in Chapter IV.

This chapter is concerned with 274 of the original cohort of 277 consecutive admissions to the Ohio Penitentiary in 1967. We have followed the institutional and post-institutional career of these 274 inmates with considerable care and interest for a 42 month period beginning at admission. Controlling for the interaction of age and race with sociopathy, we have attempted to learn whether our 47 hostile and 23 simple sociopaths (the hypothesized biologically-impaired group) have had different institutional careers than the 66 mixed and 141 nonsociopath inmates. The research hypothesis has been that the simple sociopaths, because of their organic

dysfunction, would present a continuing management problem in their institutional careers and that they would also continue to engage in chronic anti-social behavior both while in prison and after their release. We hypothesized that the hostile sociopaths, on the other hand, would begin to "burn out" and would more closely approximate the institutional and post-institutional career patterns of the mixed and nonsociopathic inmates.

We have detailed above (and elsewhere) the criteria used in the classification of these 277 consecutive admissions as simple, hostile, mixed or nonsociopathic inmates. Rather than repeating this discussion, it should be sufficient to indicate that six criteria were used for classificatory purposes. These included (1) the subjective ratings of the psychological services staff of each inmate on the 16 item Cleckley symptom checklist; (2) the number of arrests since age 18 that had not been dismissed; (3) the percentage of one's life incarcerated since age 18; (4) the MMPI scale 4 (Pd) minus scale 7 (Pt); (5) the presence of any recorded escapes from any penal or correctional setting such as a jail, detention center, juvenile institution or prison; (6) the Lykken Activity Preference Questionnaire (APQ) scale score. The use of these criteria derived from our attempt to follow the diagnostic procedures of Schacter and Latané in an attempt to replicate their original work on the institutionalized sociopath. At any rate, after the criteria scores were weighted, it was possible to derive three more or less mutually exclusive groups of subjects--sociopaths, mixed and non-sociopaths. Within the first, however, a further subdivision seemed mandatory on the basis of earlier findings on 43 even more carefully selected Ohio Penitentiary subjects. This was done by over-weighting the Lykken scale scores. Within the sociopathic group,

the lower APQ scores were hostiles(n=8), using the institutional mean scores on the APQ as the cutting point. The simple sociopaths were characterized by significantly increased cardiovascular reactivity to injected epinephrine.

The simple and hostile sociopaths were compared with one another on a considerable number of other relevant variables including the socio-demographic factors, military history, criminal history and instant offense, MMPI profiles and related variables. In all, 39 separate variables were intercorrelated and sign, t- and chi-square tests were used in this analysis.

Earlier Findings

1. Demographic Variables

The 47 hostile sociopaths averaged 30.8 years of age as compared with the much older simple sociopaths, whose mean age was 39.7. Both groups were at least two-thirds white, of urban background, and undistinguishable in terms of religious affiliation. At the time of imprisonment, nearly three-quarters of the hostiles and 64 percent of the simples were either single, divorced, or separated. The former had been wed an average of 0.8 times, as contrasted with 1.2 marriages for the simples. The hostiles, in line with their less frequent marriages, had fathered an average of only 0.8 children, while the simples showed a mean of 1.2 children. Looking backwards, many fewer of the hostile than of the simple sociopaths came from intact family situations, in which they had been reared by two parents until age 10. Along the same lines, the hostiles came from families with slightly fewer children than did the simple sociopath subjects (5.1 versus 5.4). The socio-economic status level as measured by Reiss' occupational

criteria showed the hostile group to be of slightly higher status than the simples. Finally, the average grade school attainment level was 9.7 for the hostiles and 8.1 for the simple sociopath subjects (see Table 6).

For the 274 cases, on nearly every one of these measures, with the exception only of the above-mentioned last grade completed in school and socio-economic status, the direction of the results is identical to that obtained when the eight hostile and 11 simple sociopaths were contrasted. It appears, therefore, that the application of the Lykken criterion reliably differentiates the same sub-groups in the larger cohort on these demographic characteristics. Whatever it may be that the Lykken Scale is tapping seems to distinguish these sub-categories from each other. By the same token, the weighted criteria differentiate both sociopathic groups from the mixed and the non-sociopaths.

2. Military History

The three variables concerning military history which were presented in the analysis of the 43 experimental subjects were: percent ever serving in armed forces, termination of military service, and average months in military service. Comparable data were obtained on the 47 hostile and the 23 simple sociopaths on all three variables (see Table 7). While the proportions of subjects in the four groups who ever served in the military is approximately the same, only 44.7 percent of the hostiles and 52.2 percent of the simples ever served in the military. Of the total groups, 14.9 percent and 26.1 percent of the hostile and simple sociopaths respectively received honorable discharges, while about 30 and 26 percent, respectively, received other than honorable discharges. Interestingly enough, none of the hostile or simple experimental sociopath subjects received honorable discharges. Despite this minor discrepancy, the

TABLE 6

SUMMARY TABLE OF THE SOCIAL CHARACTERISTICS OF 277 CONSECUTIVE ADMISSIONS

Social Characteristic:	Hostile Sociopath (n=47)	Simple Sociopath (n=23)	Mixed (n=66)	Non-Sociopath (n=141)	Total Group (n=277)
Mean Age	30.8	39.7	31.8	34.8	33.8
Percent White	66.0	69.6	62.1	66.4	66.1
Percent Reared in a City	51.6	65.2	45.5	29.1	39.7
Mean Family of Procreation Size	5.1	5.4	5.1	5.0	5.1
Percent Reared by Two Parents	46.8	60.0	72.7	63.6	61.8
Percent Married	25.5	34.8	34.8	44.7	38.2
Mean Number of Times Wed	.8	1.2	.9	1.1	1.0
Mean Number of Children	.8	1.2	1.4	2.4	1.8
Mean Last Grade Completed	9.7	8.1	9.9	9.3	9.4
Mean Social Class Score	16.4	14.7	17.1	14.7	18.1
Mean Number of Jobs as Adult	4.0	3.4	3.4	3.9	3.7
Percent Protestant	70.2	77.3	85.0	69.6	62.8

TABLE 7

MILITARY SERVICE HISTORIES OF THE 277 CONSECUTIVE ADMISSIONS

Military Characteristic:	Hostile Sociopath (n=47)	Simple Sociopath (n-23)	Mixed (n=66)	Non-Sociopath (n=141)	Group (n=277)
Percent Ever Served	55.3	47.8	51.5	50.0	47.3
Percent Receiving Honorable Discharges	14.9	26.1	27.3	35.7	29.2
Mean Months Served	8.9	11.4	15.2	17.6	15.1

direction of difference in both cohorts--experimental and consecutive admissions--was the same.

Another reversal occurred on the variable of number of months in military service. In this instance, the hostile group averaged 9 months of service while the simple sociopaths were somewhat higher at 11.4 months in the military (see Table 7).

Neither of these discrepancies seems to offset the preponderant weight of the evidence that the simple sociopaths are likely to engage in more frequent but less aggressive anti-social behavior. This is attested to by a considerable number of criminal history variables.

3. Criminal History

To begin, the distribution of instant offenses for which committed indicates that hostile sociopaths committed more than twice the rate of crimes against the person (criminal homicide, rape, and assault) than did the simple sociopaths--19 percent to 8.6 percent, respectively (see Table 8). The simple sociopath subjects (see Table 9) averaged 5.3 officially recorded arrests as opposed to 4.6 for the hostile sociopaths. The latter had 3.4 previous incarcerations while the simple averaged 3.7 previous prison sentences. The hostile sociopaths had spent some five years (66 months) in correctional institutions, which was significantly less than the mean of nearly 12 years (140 months) spent by the simple sociopaths in institutions. The picture is much the same when one looks at the record of incarceration since age 18--62.0 months for the hostile and 134.0 months for the simple sociopaths. Perhaps an even better way of showing the same thing, while at the same time controlling for the nine year age difference, is the percentage of time incarcerated since age 18. The

hostile had spent about 44.5 percent of their adult lives behind bars and the simple sociopaths 49.4 percent.

As far as escapes are concerned, the hostiles averaged 0.2 and the simple sociopaths 0.8 escapes. Finally, the hostile sociopaths showed far fewer previous parole violations (0.79) than the simple group, which averaged 1.26.

With regard to all these variables but one, it is fair to say that the direction of difference in means or percentages were of the same order and in the same direction as those obtained in the comparisons of the eight hostile versus 11 simple experimentals on these variables. The single reversal concerned escapes in which, as already noted, the simples had succeeded more often than the hostile sociopaths (see Table 9).

4. I.Q. and Cleckley Checklist

In selecting the experimental subjects, an I.Q. minimum of 100 on the OPCT was used as a screening criterion. Hence all subjects were above this level of I.Q. It will be recalled that the two experimental sociopath groups averaged 120 or over while the average for all 43 subjects was 114. With regard to the 277 (for whom I.Q. was not used as a screening variable), the mean I.Q. on the OPCT was 101.5. Both sociopath groups, though nearly identical to one another, were above this mean, at approximately 104.

5. MMPI Subscale Scores

The composite MMPI profiles of the four population groups among the consecutive admissions are presented in Figure 2, and it is fairly clear that although the peaks vary slightly between the two cohorts (experimental and consecutive admissions), the 8 experimental hostile and the 47 consecutive admission hostile sociopaths are not appreciably different.

TABLE 8

TYPES OF OFFENSES FOR WHICH PRESENTLY INCARCERATED FOR THE 277 CONSECUTIVE ADMISSIONS (IN PERCENTAGES)

Offense:	Hostile Sociopath (n=47)	Simple Sociopath (n=23)	Mixed (n=66)	Non-Sociopath (n=141)	Group (n=277)
Criminal Homicide	4.1	4.3	6.1	18.5	11.6
Rape	2.1	0.0	3.0	11.3	6.9
Robbery	23.4	30.4	15.1	6.4	13.4
Assault	12.8	4.3	9.0	7.8	8.7
Burglary	30.0	39.1	31.8	19.1	25.6
Larceny	19.1	17.6	28.8	31.9	27.8
Auto Theft	6.4	4.3	4.5	2.1	3.6
Other[a]	2.1	0.0	1.7	2.9	2.4

[a]With one exception (one case of perjury), the "Other" category includes only violations of drug laws.

TABLE 9

CRIMINAL HISTORIES OF THE 277 CONSECUTIVE ADMISSIONS

Criminal Characteristic:	Hostile Sociopath (n=47)	Simple Sociopath (n=23)	Mixed (n-66)	Non-Sociopath (n=141)	Group (n=277)
Mean Number of Arrests	4.6	5.3	3.6	1.7	2.9
Mean Number of Incarcerations	3.4	3.7	2.6	1.4	2.2
Mean Counts on Conviction	3.9	4.2	3.5	2.1	2.9
Mean Counts on Conviction, Corrected for Age	6.6	4.2	5.5	2.7	4.1
Mean Crimes Against Person, Corrected for Age	1.0	.5	.8	.8	.8
Mean Months Incarcerated	66.2	140.0	51.4	13.3	42.0
Mean Months Incarcerated Since Age 18	61.9	134.7	47.4	12.2	39.4
Mean Percentage of Life Incarcerated Since Age 18	44.6	49.4	30.7	49.4	24.2
Mean Number of Parole Violations	.8	1.3	.6	.2	.5
Mean Number of Escapes	.2	.8	.1	.0	.3

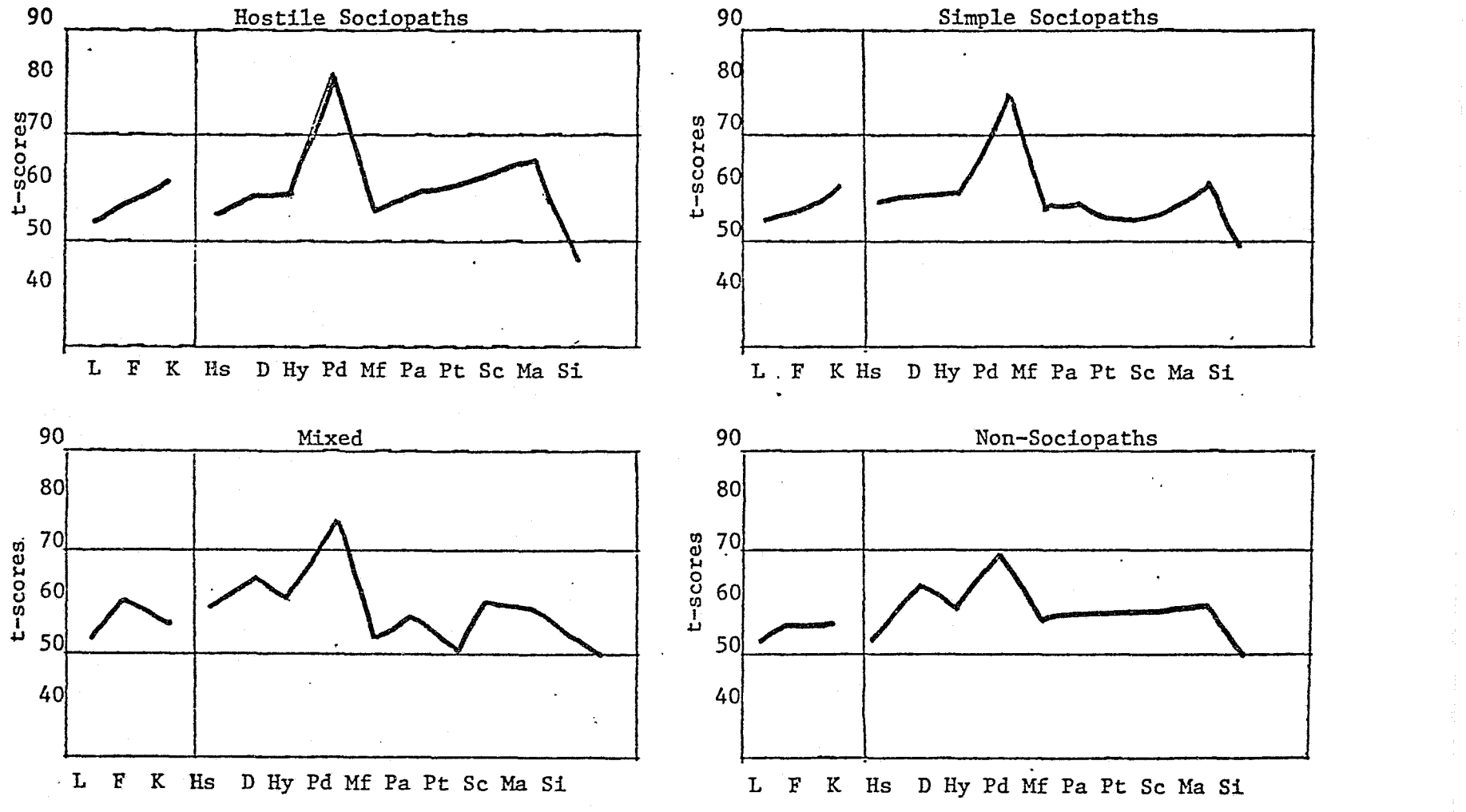
TABLE 10

I. Q. AND CLECKLEY CHECKLIST SCORES OF THE 277 CONSECUTIVE ADMISSIONS

Psychological Variable:	Hostile Sociopath (n=27)	Simple Sociopath (n=23)	Mixed (n=66)	Non-Sociopath (n=141)	Group (n=277)
I. Q.	104.3	104.4	103.2	99.3	101.5
Cleckley Checklist	10.3	10.0	9.0	8.7	9.1

FIGURE 2

COMPOSITE MMPI PROFILES OF 219 CONSECUTIVE ADMISSIONS



The same holds for the two sets of simple sociopath subjects.

As before, the subscales which seemed to differentiate most effectively were the Pd and Ma subscales. There were also some differences in the averages on the K, Pt, Sc and Si subscales. On the Pd (Table 11), the respective means for the hostile and simple sociopaths were 31.6 and 29.5; on the Ma, 22.7 and 20.6; on the K, 18.2 and 16.6; on the Pt, 28.0 and 26.1 (something of a reversal); on the Sc, 28.5 and 25.4; and on the Si, 20.9 and 23.3. It should be noted that with the exception of the Pt, the direction of these differences parallels those obtained between the hostile and simple experimental sociopathis subjects.

With regard to the MMPI subscale scores and profiles, it is again necessary to emphasize that the two groups of sociopaths when combined differed from the mixed and non-sociopath groups among the consecutive admissions in very much the same manner and to approximately the same degree as did the 19 experimental sociopaths from the 24 experimental non-sociopaths.

These data make abundantly clear that so-called sociopaths are a heterogeneous population. Previous attempts to treat them in unitary fashion probably accounts for the inability of many previous research groups to isolate postulated biogenetic, psychogenetic, and other significant differences between sociopathic inmate subjects. Most previous investigators appear to have been more concerned with experimental design and refined biological monitoring techniques than in identifying homogeneous subtypes of psychopaths in whom this unique biological response might be found. We have shown that there is, indeed, a type of psychopath that exhibits an autonomic nervous system abnormality.

TABLE 11

SUMMARY TABLE OF MMPI SUBSCALES OF 219 CONSECUTIVE ADMISSIONS

Subscale:	Hostile Sociopath (n=41)	Simple Sociopath (n=18)	Mixed (n=59)	Non-Sociopath (n=100)	Group (N=219)
Mean Lie (L) Score	5.1	5.3	4.8	4.5	4.8
Mean Infrequency (F) Score	6.3	5.1	6.6	4.7	5.6
Mean Correction (K) Score	18.2	16.6	15.3	16.6	15.6
Mean Hypochondriasis (Hs) Score	13.1	13.5	14.5	13.3	13.6
Mean Depression (D) Score	20.3	20.4	22.6	20.4	21.5
Mean Hysteria (Hy) Score	19.4	21.3	22.3	21.0	21.1
Mean Psychopathic Deviate (Pd) Score	31.6	29.5	28.6	26.6	28.3
Mean Masculinity-feminity (Mf) Score	22.8	22.6	22.3	23.1	22.8
Mean Paranoia (Pa) Score	10.9	9.7	10.4	10.2	10.3
Mean Psychasthenia (Pt) Score	28.0	25.2	23.0	26.3	27.0
Mean Schizophrenia (Sc) Score	28.5	25.4	27.0	26.0	26.7
Mean Hypomania (Ma) Score	22.7	20.6	20.2	19.7	20.5
Mean Social Introversion (Si) Score	20.9	23.3	26.9	25.7	24.9

Adjustment Findings

The institutional and post-institutional adjustments of the 274 (out of 277) consecutively-received inmates were studied for 42 months following their reception at the Ohio Penitentiary. This length of time was sufficient to permit generalizations about the in-house (intramural) behavior of the simple, hostile, mixed and nonsociopath subjects. Unfortunately the time span was too short to permit definitive generalizations about the post-institutional outcome of the four types of offenders.

Institutional Adjustment

1. Incarceration and Custody Level

The 274 consecutive cases spent an average of 27.6 of the 42.0 months under study in custody. By type of offender, however, the non-sociopaths averaged 24.3 months in prison, the mixed subjects 29.9 months, the simple and hostile sociopaths, 31.5 and 32.2 months in prison, respectively. This pattern was statistically significant ($F=7.09$, $df=3, 266$, $P=.001$). While race had no bearing on length of stay, younger offenders (those under 35 years of age) spent significantly more time in prison than the older prisoners, especially in the simple and non-sociopath groups. Overall, younger offenders averaged four months more in prison than their older counterparts. Thus, the young, simple sociopath is likely to be imprisoned for a substantially longer period than any of the other offender types.

An analysis of custody level--high, medium and low--indicated that the mixed subjects generally had more severe custody restrictions than did the other types, followed by the simple, hostile and non-sociopath groups. These differences, however, were minimal since the custody level options

are fairly restricted to medium security by the physical properties of Ohio prisons.

Race appeared to be unrelated to custody level, but younger offenders spent more months under medium security, while those above 35 were more often granted minimum custody. All three variables--offender type, race and age--varied in the expected direction (heavier security for the sociopathic, black and younger offenders), but not enough for statistically acceptable generalizations.

2. Court Calls and Rule Infractions

Although there are more positive ways to gauge favorable attitude and behavioral changes of inmates, institutional personnel and parole board members usually rely heavily on rules infractions data in their decision-making processes. Inmate grievances invariably focus on rules infractions procedures as chancy, subject to the personal whims of correctional officers, and anti-rehabilitative. Whatever the merits of these assertions, and inmate perceptions are the reality, court calls are an important element in the daily lives of inmates.

At the time of this study, rules infractions subject to court call involved a variety of behaviors--assaultive, threatening, officer harassment, overspending, theft, sexual misconduct, freeze-ups (refusal to work), mush-faking (altering institutional property for forbidden purposes), possessing or dealing in contraband, being out of place, breaches of trust, and many others. Each of these infractions was examined by type of offender, race and age. Total court calls and rules infractions in relation to length of incarceration were also evaluated.

The results of these efforts were as predicted with the exception, once again, that the mixed subjects led all the rest in court calls and

infractions per months incarcerated. The mixed group was followed by the hostile, simple and non-sociopath inmates. Numerically, the mixed subjects averaged 3.27 total calls and a ratio of .10 calls during incarceration while figures for the hostile were 2.64 and .09, for the simple sociopaths, 1.91 and .06, for the non-sociopath, 1.67 and .05.

Black inmates averaged more court calls both totally and by ratio to incarceration in three of the four groups (all but the hostile sociopaths). Totally, Blacks had 60 percent more court calls than whites (3.07 to 1.81), and in ratios (.08 to .06). The racial discrepancy was particularly noteworthy for the mixed subjects. In this group the 25 Blacks averaged more than five reported infractions each compared to the less than two infractions per man for the 42 whites.

Age, too, made a difference in court calls. Younger offenders were overrepresented by far, both totally and proportionately. Thus, the younger inmates were reported for 3.23 infractions and the over-35 year old group for 1.36 violations. Proportionate to length of imprisonment, the respective ratios were .09 and .04 for the under- and over-35 year old groups respectively.

Special attention was devoted to an analysis of the specific rules infractions recorded for the four offender types. There were, however, too few specific rules infractions to permit generalization in most areas. For example, there were a total of 33 court calls for assaultive behavior recorded for all 274 offenders. Proportionately more of these were charged to the non-sociopath and mixed subjects than to the hostile and simple sociopaths. There were only 13 court calls for threats to others and these involved primarily the mixed subjects. Similarly, there were only 8 overspending infractions, 17 theft violations, 11 sexual behavior problem

calls, 13 mushfaking violations and 14 other miscellaneous violations. None of these, of course, permitted statistical analysis.

On the other hand, the 274 inmates were charged with 179 officer harassment violations. Committed by the mixed, hostile, simple and normal subjects in that order, this rank order was not statistically significant. Interestingly, the Black inmates were charged with 0.88 such court calls per man compared to only 0.53 for each white inmate. The Blacks were particularly over-represented in the normal and mixed groups and under-represented in both sociopathic groups. There are some interesting implications involved in this distribution. It is clear that discrimination plays some role in court calls for vaguest offense--officer harassment--except in the case of individuals who are chronically anti-social. In the latter, correctional officers are so hardput to manage these offenders that color considerations may play a relatively minor role.

The tendency for demographic considerations to be critical in the vaguer violations is also evident in the distribution by age. Younger inmates in all four offender groups were significantly more often charged with officer harrassment offenses than the over-35 year old prisoners. Thus, the former averaged 1.01 court calls for this infraction compared to 0.33 for the older offenders ($F=13.76$, $df=1$, $P=.001$).

There were 27 freeze-up infractions listed, with no significant differences by offender category or by race or age. However, the data do suggest that there is a significant interaction relationship between race and offender type ($F=3.60$, $df=3$, $P=.025$). The small number of cases, however, might account for this significant interaction.

There were 61 contraband infractions which were significant neither by offender group, race or age. It appears that contraband problems bear no relationship to the three major variables studied.

Being out of place is a violation similar to officer harassment. Both are sufficiently general so that officer whim and prejudice could play a role in determining whether an inmate gets written up or not. In the case of being out of place, the rank order of offender groups was mixed, hostile, normal and simple--an order not statistically significant. However, there was a significant interaction between race and offender type (F=3.40, df-3, 266, P=.025), with Blacks in the mixed group having been recorded five times as often as whites in that group. Overall Black inmates averaged 0.44 such infractions and whites 0.25. By age, twice as many younger as older offenders were listed for such infractions. The ratios were 0.30 as against 0.15 for the younger and older offenders, respectively.

Breach of trust violations were recorded for 134 of the 274 inmates. Again the mixed subjects were more often involved than the others but offender category was not a statistically significant variable. Race was. Blacks averaged 0.75 recorded violations and whites 0.35 (F=7.89, df=1, 266, P=.005). Again younger offenders were more often involved than the older offenders (0.60 vs. 0.39), but not significantly so.

Summarizing the court calls data, it may be concluded that the two sociopathic groups of subjects were not as over-involved as had been predicted. Their institutional adjustment as measured by these infractions was poorer than that of non-sociopaths but considerably better than that of the mixed subjects. On the other hand and as predicted, the younger and Black inmates were brought before the disciplinary court far more often than mere chance would dictate. On all infractions for which any data existed, these inmates were over-represented. They were particularly over-represented in the areas in which correctional officers normally exercise their greatest degree of discretion, as for example, in officer harassment and breach of trust infractions.

3. Intra-Institutional Movements

One of the best indicators of institutional adjustment is movement within (and between) prisons in the system. Three measures of movement were used in this investigation. First, total changes in status were analyzed. Second, an analysis was made of intra-institutional movements involving promotion or betterment of the inmate. Third, data on the demotive movements of inmates were also analyzed.

The results of these analyses indicate no significantly definitive pattern as regards the sociopathic as opposed to other types. Thus, the normal population (numbering 138 subjects) averaged 3.14 moves during their period of incarceration. In contrast the simple sociopaths had 2.68 moves, the hostiles 3.28 and the mixed 2.70. On the other hand, while offender status was not significantly related to total institutional movements, color made a difference but age did not. White inmates averaged 3.34 moves while Blacks averaged 2.42 (F=13.50, df=1, 266, P=.001); older offenders had a slightly greater number of moves (3.09 compared to the 2.94 for the younger offenders).

More important from our point of view was the analysis on institutional reassignments signifying promotion or improvement in status. The official records indicate that the normal subjects averaged 2.48 such reassignments while the simple group mean was 2.18; the average for the hostiles 2.13; and for the mixed 1.97 (F=2.68, df=3, 266, P=.05).

White inmates had significantly more promotive reassignments than did the Black inmates (F=8.70, df-1, 266, P=.005). Again the older inmates received more (3.09 vs. 2.94) promotive reassignments than the younger inmates but not significantly more.

Finally, and not unexpectedly, the demotive movements were related to offender type in the expected direction. Thus, the hostile sociopathic subjects averaged 1.15 moves, the mixed .70, the normals .66 and the simples .50. Again race was a significant variable in demotive reassignment but a direct opposite to the expected. White inmates had an average of .90 such reassignments, Blacks .44. As for age, the younger inmates had just slightly more demotions than the older offender.

4. Institutional Programs

To the Parole Board at least, inmate participation in institutional programs is believed to be a highly significant variable. Many an inmate has been "flopped" for failure to involve himself in prison activities. As a result of the importance of inmate programs as a measure of adjustment, complete analysis was undertaken of subjects' participation by offender groups in available programs. First, we analyzed the total number of programs, all types in which inmates participated. The results indicated that there was no significant difference by offender category. For example, normal subjects participated in an average of 1.42 programs and simple sociopaths in 1.91. The other two groups were in between.

Race was not significantly related to program participation although Black subjects were involved in a slightly greater number than whites. On the other hand, age was a highly significant variabel ($F=10.27$, $df=1, 266$, $P=.001$). Younger inmates averaged 1.87 programs and older inmates 1.30. The interaction between age and sociopathic status was statistically significant.

As for institutional programs completed, no difference was observed by offender group, but both age and race and their respective interactions

with sociopathic status were statistically significant. Thus, Black subjects completed more programs than white (.73 vs. .43); young offenders more than older offenders (.68 vs. .40).

Two research variables concerned an analysis of the official situations for non-attendance and lack of interest in institutional programs. With regard to non-attendance, the simple sociopaths were the most frequent offenders and the non-sociopaths most consistent attenders. Neither race nor age was significant. As for citations for lack of interest in institutional programs, offender category and race were found to be unrelated areas. Age proved to be a significant variable. The younger offenders average .29 citations each for a lack of interest as opposed to .09 for the older offenders.

5. Specific Programs

Of the 274 inmates, 158 were involved in education programs sometime during their institutional stay. The sociopaths were slightly more frequently enrolled in educational activities. Both race and age were significantly related to educational involvement. Black and younger inmates were more often enrolled in these programs. Also, the interaction between both race and age and offender status was statistically significant.

In terms of vocational training programs, the mixed group averaged more involvement than any of the others. The respective number of programs for each of the four groups of subjects was .52 for the mixed, .40 for the hostiles, .27 for the simple and .20 for the nonsociopaths. Classification, therefore, was statistically significant ($F=4.14$, $df=3$, $P=.01$). Race was not a significant factor although Blacks participated in more training programs per man (.41 to .27). Age, however, was statistically significant

with the younger offenders participating in three times as many training programs as men over 35 years of age (F=22.96, df=1, P=.001.

As with vocational training programs, the mixed subjects participated in more of the character-building programs than offenders in any of the other groups. More important, however, was the racial distribution which indicated that Blacks were the more frequent participators across the board (F=3.93, df=1, P=0.5). Age was not statistically significant as a variable but younger offenders were more frequently involved in these groups than older ones.

One special interest is the enrollment in Alcoholics Anonymous during incarceration. All told, 88 of the 274 subjects were recorded as having been AA members at some point in their institutional stay. The simple sociopaths had the highest average participation followed by the normals, hostile and mixed subjects--differences significant at the .02 level. In general, more whites than Blacks belong to AA and more older than younger offenders were enrolees. None of the other specific programs involved a sufficient number of the 274 subjects to merit statistical analysis.

6. Visits

During the imprisonment of our 274 subjects (which averaged 27.6 months per man), the differences in visiting patterns were analyzed. The 138 non-sociopathic subjects received an average of 15 visits each during their institutional stay; the mixed subjects 12.5 visits, the hostile group 14.5 and the 30 simple sociopaths only 5.8 visits each. Overall 12.9 official visits were recorded for each of the 274 subjects. It appears, therefore, that the chronically antisocial and manipulative histories of the simples is nowhere better reflected than in the rejection of them by their own

relatives. On the average, each simple sociopath received 2 visits a year compared to 5 a year for the non-sociopaths. The hostile and mixed groups were between these extremes (F=6.29, df=3, P=.001). Neither race nor age was significantly related to the number of visits received. However, the white and younger inmates did receive a slightly higher proportion of the total visits.

These visiting patterns correspond to some extent to the data on personal letters sent from the inmates to eligible persons on their writing lists. During the 27 months average of incarceration, the simple subjects sent the fewest letters per man, 71; the hostile, 78; the normals, 82; and the mixed, 103. All 274 inmates averaged 85 personal letters during this period. Based on the number of letters sent per months incarcerated, it is clear that the mixed and normal inmates were in more frequent contact with the outside world than were the 2 sets of sociopaths. These differences were statistically significant (F=4.18, df=3, P=.01). Unlike the pattern with visiting, Black inmates averaged one letter more per month than the white inmates and the older inmates did more writing than the younger ones. [Residents may now write and receive unlimited and uncensored mail.]

7. Work, School and Dorm Ratings

It was, of course, predicted that the simple sociopaths would have the highest percentage of unfavorable ratings in all aspects of their institutional careers. Unfortunately, the number of available ratings do not permit confidence in the data collected in these respects. In general, the two groups of sociopaths received better work ratings than either the mixed or the normals--a finding contrary to the hypothesis. However, as expected, whites had better work ratings and so did the older offenders.

Of special interest was the interaction between simple sociopathy and being over 35 years of age. These subjects had by far the poorest work ratings.

The school rating evaluations were comparable to the work ratings and inconsistent with the hypothesis that the simple sociopaths did show greater difficulties than subjects in the other classifications. The same finding was evident also in the area of official dormitory ratings. The simple and hostile subjects had proportionately more top ratings than the other two groups, but again the numbers were too small to warrant any generalizations.

8. Parole Continuances

Although the institutional data were highly equivocal as noted above, the information on parole "flops" was testimony to the role that a "rep" may play in parole decision-making. The number of flops was exactly as predicted. Thus, the simple sociopaths averaged 1.14 parole rejections before release, the hostile subjects 0.83, the mixed 0.81 and the normals 0.36. Put another way, parole was denied three times as often to the simple sociopaths as to the nonsociopaths. These differences were statistically significant (F=8.88, df=3, P=.001). Finally, Black inmates were flopped over 25 percent more often than the whites. Only in the hostile group were there more white than Black flops recorded.

Even more obvious was the relationship between age and parole rejection. In every group (hostile, mixed, normal and simple), younger offenders were rejected for parole significantly more often than inmates 35 years of age and over. The raw data are worth reporting in this respect; overall, the younger group had a mean of 0.78 flops compared to 0.46 for the more mature offenders. For the simple sociopath subjects, the discrepancy was

2.33 vs. 0.69; for the hostile subjects 0.80 vs. 0.71; for the mixed 0.86 vs. 0.73; and for the normals 0.49 vs. 0.26. Thus, our classification as a sociopath, age, and the interaction between them were all statistically significant. The Parole Board evidently was operating more on certain general assumptions regarding simple sociopaths than on their institutional adjustment. Needless to say, these assumptions are grounded in areas of experience in dealing with various inmate groups.

9. Community Adjustment

Of the 42 months between intake and follow-up, the 274 subjects averaged 15 months in their respective communities. Inevitably, their recidivism rates were checked as were their parole violations: both technical and for new offenses. Also carefully checked were the parole officers' evaluations of their community adaptations. In the comparatively short time of liberty, the 274 subjects had already logged 101 arrests. These arrests included 10 for violent personal crimes, 1 for robbery, 4 for unarmed robbery, 10 for breaking and entering, 6 for larceny, 5 for auto theft, 8 for falsification and fraud, 2 for rape, 24 for drunkenness, 5 for carrying concealed weapons, 2 for receiving and concealing stolen property, 3 for nonsupport, 1 for sexual offense involving a "crime against nature," and 27 for miscellaneous offenses.

The entire group averaged 0.71 arrests after release. The simple sociopaths were considerably below average at 0.57, the mixed even lower at 0.49 and the hostile and nonsociopaths were at 0.4 and 0.79 respectively. Since arrest is at least in part a function of time on the streets, the average number of arrests per month for the four groups was determined, and the simple sociopaths had already logged in an impressive but depressingly high average (see Table 12). There thus is substantial

TABLE 12

AVERAGE MONTHLY ARRESTS RATES FOR FOUR GROUPS

Group	Average Months of Incarceration	Follow-up Period, Less Prison Time*	Average number of Arrests	Arrests per Average Month of Opportunity
Non-Sociopaths	24.3	17.7	.79	.045
Mixed	29.9	12.1	.49	.040
Hostile Sociopaths	32.2	9.8	.40	.041
Simple Sociopaths	31.5	10.5	.57	.054

*In months.

evidence in these data, therefore, to support the parole board in its higher rate of "flops" for the simple sociopaths.

The two groups of sociopaths also had more than their share of the violent offenses committed after release, but were proportionately lower on the property offenses. The most interesting finding of all was the fact that not a single simple sociopath was arrested for drunkenness or disorderly conduct after his release. This is a strong confirmation of the hypothesis about the negativism of simple sociopaths towards the use of CNS depressants. The declared parole violations data confirm the arrest information. In all, there were 62 such parole violations, with the hostile subjects averaging 0.43 and the other three groups 0.20 or less.

The white inmates had nearly twice as many total arrests as the Blacks, and the same held for the declared parole violations. In contrast, age was found to be unrelated to both arrests and parole violations after release.

Finally, an analysis of 671 parole officer ratings indicated that the nonsociopathic subjects were far and away the most positively evaluated group, with the simple sociopaths ranked second, followed by the mixed and then the hostile subjects. These ratings were significantly different by category but not by race (even though the whites were evaluated as doing better than the blacks), or by age (although the older offenders had higher ratings than the younger ones).

Conclusions

This follow-up study of the intramural and parole histories of the four sub-groups among the 277 consecutive admissions had disclosed

significant differences on many dimensions: length of time incarcerated, rearrest on parole, demotive movements in prisons, vocational training participation, contact with the outside world, evaluations by parole officers, etc. These differences further reinforce our argument that there are at least two types of sociopathic offenders, and that the behaviors of these sociopathic inmates require sharply different treatment modalities.

Of particular interest to students in sociopathic behavior is the aggressivity difference as indicated by previous criminal history and the instant offense, intramural court calls, demotive movements of inmates, continuations by parole board, declaration as parole violator, and evaluation of parolee behaviors by parole officers. Evidently, aggressive behaviors continue following incarceration; this could be in part due to lack of appropriate treatment.

Our drug-treatment of incarcerated sociopathic subjects at the Chillicothe Correctional Institute was predicated on rendering the simple sociopath subjects amenable to resocialization through ingestion of arousal-producing drugs such as imipramine or amphetamine. Coupled with psychotherapy and other resocialization techniques, this should indicate the efficacy of intervening medically and psychologically with at least this one type of sociopath.

The hostile sociopath, however, will probably require other treatment modalities. Perhaps maturation can be effected through the aging process, coupled with relatively long periods of humane incarceration. In any event, however, the differentiation of types of sociopaths increases the probability of isolating effective techniques, and the increased interest in sociopathy can yield valuable insights not only in this disorder but also in our general understanding of human behavior.

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CHAPTER IV

TREATMENT OF THE SOCIOPATHIC PERSONALITY BY MEANS OF DRUGS: THE CHILLICOTHE CORRECTIONAL INSTITUTE EXPERIMENT

Despite enormous investment of time, energy, and money, no approach, treatment, or rehabilitative framework has been demonstrably successful in preventing, reducing and controlling recidivism. So great has been our failure in altering anti-social patterns and life styles that the entire people-changing enterprise has been condemned as both ineffective and, worse, as unjust. Many, if not all, seriously concerned behaviorists now firmly believe that the total institution is an historical aberration and must be eliminated with all due haste (Rothman, 1972). This nihilism is not undeserved. At a time when our institutions are more than ever inundated with dangerous, intractable patients, we have reached the end-of-the-line with traditional techniques of management and/or treatment intervention. Words like therapy, treatment, rehabilitation, reformation, and resocialization have become platitudes, believed neither by the public, clinicians, correctional personnel or inmates.

The major traditional intervention techniques--individual counseling group psychotherapy, guided group interaction, educational, vocational and other such programs--have rarely been effectively implemented; even when they were, they have basically failed (Martinson, 1974). As a result of such persistent failure we are witnessing the introduction of aversive conditioning, electronic monitoring, behavior modification, psychosurgery, and other radical procedures. Everything considered, there is no reason to believe that these more recent and more personnaly intrusive techniques will prove to be any more successful than the moral, educational, and psychic interventions of the past.

Despite our general pessimism about treatment, we nevertheless have reason to believe that a limited number of well-defined chronic anti-social offenders and patients are amenable to specific amelioration of symptoms and control of antisocial behavior by pharmacologic means. Our guarded optimism is based on initial and tentative findings of an experimental drug treatment program with sociopathic offenders at a medium security prison, the Chillicothe Correctional Institute.

Since 1965, as noted above, we have been involved in a series of investigations in and out of prisons designed to test the hypothesis that some chronically antisocial personalities have unusual and characteristic autonomic nervous system dysfunctions. Initial research with adrenaline enabled us to distinguish two types of primary sociopaths, only one of which (which we designated a "simple" sociopath) shows exaggerated cardio-vascular responsivity to adrenaline (Schacter and Latané, 1964; Lindner, Goldman, Dinitz, and Allen, 1970; Funkenstein, Greenblatt, and Solomon, 1949). We concluded further, on the basis of our own evidence as well as the research by others on additional autonomic indices (Lykken, 1955; Lippert, 1965; Hare, 1968; Hakarem, 1968), that the subtype with the unusual cardiovascular responsivity was also unable to make graded responses to emotion-laden stimuli (Lindner, Goldman, Dinitz, and Allen, 1970).

On these and other grounds (see Hare, 1968) we eventually decided that this so-called "simple" sociopath type was possibly sensorily hypoaroused as well (Goldman, 1973). In short, in many ways--behaviorally and possibly organically--the "simple" sociopath mimics, and may be an adult version of, an untreated hyperactive child (Goldman, 1973). Since hyperactivity in children has lent itself to effective treatment by drugs which produce arousal, there was reason to believe that the "simple" sociopath also could

be symptomatically treated by chemotherapeutic arousal (Arnold, Kirilcuk, Corson, and Corson, 1973). We do not mean, nor have we ever meant, to imply that remissions of gross behavioral symptoms is equivalent to value and life style restructuring. Resocialization, as we have argued elsewhere (Lindner, Goldman, Dinitz, and Allen, 1970), is more likely to occur only after such biomedical intervention. Altered normative standards for behavior are not conferred by molecular structures.

When the unique physiology of the hard-core intractable "simple" sociopath was postulated to the professional and correctional communities, we were asked to develop a treatment program for these offenders employing a variety of readily available and widely used compounds in an experimental format. While the study, but not the data analysis which will require several months of processing, is complete the interim evidence makes us think that one of the drugs, imipramine, is able to reduce at least the grosser behavioral symptoms associated with this chronic antisocial personality syndrome.

Methods

The experimental treatment program began more than two years ago at a facility currently used for older, often medically impaired offenders. Our solicited proposal, as accepted by the Department of Rehabilitation and Correction and the specific prison administration, involved a double-blind experimental design initially utilizing five different pharmacologic agents. We sought to include as subjects those men who met the criteria of sociopathy noted above which we had established in previous investigations: number of arrests, percentage of adult-life institutionalized, number of attempted escapes, the MMPI profile with special emphasis on

subscales four and nine, and the Lykken Activity Preference Questionnaire (Lykken, 1955) score. Each prospective subject also had to pass a diagnostic screening by the project psychiatrist; this screen replaced the previously-used Cleckley check list (Cleckley, 1955) which has proved unreliable in the past. On the basis of these criteria and the additional criteria of age, IQ and medical eligibility, we divided the inmate population into four groups: "simple" sociopaths, "hostile" sociopaths, mixed, and non-sociopaths. Abstracts were prepared from the subjects' case folders on all relevant socio-demographic, criminal history, institutional adjustment, and medical-psychiatric variables. Subjects were given a battery of tests in order to obtain baseline parameters for comparison with subsequent observations. These tests included (in addition to the MMPI and Lykken Scales) the Cornell Medical Index (CMI), the stimulus-seeking scale of Zuckerman (Zuckerman, Kolin, Price, and Zoob, 1964), the Luscher Color Test (Luscher, 1969) and a project-designed tactile perceptual (disc) task.* Additionally, some of the more important variables measured were cardiovascular and electrodermal respon' 'ty to complex audio-visual stimuli.** The audio-visual present' was created

*The disc test apparatus consists of a series of eleven coins of different diameters; a coin midway between the largest and smallest serves as the reference. The subjects manipulate each coin, hidden from view, with the non-dominant hand, estimating its diameter relative to that of the referent. In nornal subjects, the relationship between actual and estimated diameters is essentially logarithmic; sociopathic individuals, on the other hand, display a more non-linear response than normals. By contrast, for hyper-aroused individuals, this relationship appears to be almost linear. Thus, this simple perceptual test discriminates between hypo- and hyperaroused subjects and may have diagnostic utility, as well as, reflecting the effectiveness of drug therapy. This test was devised by Dr. J. Shaffer as an outgrowth of his work with Dr. R. Fischer on drug-induced arousal states.

**The audiovisual task was devised by Dr. Alfred C. Clarke as a means of activating endogenous adrenaline secretion, thereby hopefully eliminating the need for exogenous administration employed in previous studies. The

to circumvent the parenteral administration of adrenaline to subjects by provoking the activity of the sympathetic nervous system. Instantaneous heart rate and palmar resistance were monitored continuously during the entire thrity minute audio-visual presentation which was divided into three approximately equal segments, with the middle section containing a variety of emotionally charged scenes. Most of these scenes illustrated a violent motif.

Once inducted, the study subjects were to receive a random sequence of four active substances and an inactive placebo during their six months on the project. The original protocol called for the oral administration of amphetamine, caffeine, imipramine, and chlorpromazine. It almost immediately became evident that the small number of subjects would make so ambitious a protocol impossible to achieve. This, plus difficulties with the Food and Drug Administration which delayed the start of drug administration for more than a year, plus the second thoughts on the administration of amphetamine, forced us to modify our design to include only imipramine pamoate or placebo in an orange-juice substitute.

The investigators remodeled space in a prison dormitory as an interview, psychometric testing, and projection facility. This space was located next to the prison medication dispensary, the "Pill Center" (later moved to the hospital). Subjects repaired twice daily to the "Pill Center" to receive their individually packaged medication. Each patient was monitored for side effects through periodic interviews, physical examinations

multi-media presentation involved six synchronized projectors, three screens, and integrated sound accompaniment. The presentation had three almost equally temporal phases--the middle section involving the arousing visual and acoustic stimuli. This section was encompassed on either end by emotionally neutral stimuli. The subject's heart rate and galvanic skin response were monitored continuously during the entire thirty minute sequence.

and EKG's, and the dosage was individually titrated on the basis of reported symptoms and observed physical status. No one on the project in the institution--project supervisor or his assistants--and no one in the prison administration was aware of the substance or dosage administered. Depending on the evaluation measure, all subjects were retested at least three times during the six month period. Additional information on their functioning was obtained from variuos institutional sources, including their friends, work and education supervisors, and correctional officers, as well as prison medical staff. Through interviews and "scuttlebutt" we attempted also to keep abreast of the involvement of our subjects with licit and illicit drugs. For example, it was necessary to terminate two of our subjects because of possible dangerous interaction of our drugs with theirs.

It would impose a burden to detail all problems which we encountered these last two years in conducting this experimental drug intervention program. In addition to the usual bureaucratic requirements, we experienced difficulties with the FDA, a suddenly aroused and increasingly politicized inmate population, new legal rulings, equipment failures, and changed University guidelines concerning research with humans.

Of the 558 consecutive admissions whose case folders were carefully screened for eligibility as drug treatment subjects, 132 cases were found to meet all of the requirements, including age, IQ, health status, and parole board date (to ensure that their stay in the institution would permit completion of the six month drug regimen). Of these prospective subjects, informed consent was obtained from 80 men through personal interviews in which all of the procedures and risks were explicitly explained. These interviews were always witnessed and in some cases

tape-recorded as patient safeguards, and to meet our own stringent requirements regarding informed consent as well as those of The Ohio State University and the Department of Health, Education and Welfare. The subjects were informed that they would be paid $3.00 monthly, and later were given an additional incentive of a carton of cigarettes per month (or its eqivalent) for not missing more than two drug doses. The interviewees were guaranteed total confidentiality of their records and performance in this study; this included complete anonymity. The correctional administration and prison hospital staff cooperated totally in helping us maintain our double-blind experimental design.

In all, 41 men, or 51 percent of those interviewed, agreed to cooperate for a six month period of drug treatment. These men were tested on the instruments noted earlier and immediately placed on placebo medication for a period of one month, after which they received imipramine pamoate for three months, followed by a final placebo period of two months; a subgroup received placebo only during this period. The medication, both drug and placebo, was delivered to the institution in individual marked containers and dispensed twice daily from the institution's "Pill Center." Patients' dosages were regulated using a symptom check list which was administered twice weekly, as well as daily verbal reports and monthly EKG's. Such monitoring enabled the titration of dosage to avoid side effects especially profuse sweating, the most consistently reported discomfort.

Results and Discussion

Of the 41 subjects, 22 men completed the program. Most of the other 19 were involved in the program long enough to permit tentative conclusions

about the effectiveness of drug intervention. Altogether there are nine totally qualified sociopaths who completed the program. These nine were predicted to benefit from drug-induced arousal. None of these nine had fewer than four previous arrests. All had spent a minimum of over 30 percent of their adult lives behind bars, one spending almost 88 percent of his adult life in prison. All but two of the nine had attempted to escape previously. Five of the nine subjects were institutionalized this time for armed robbery (one a bank robbery), two for forgery, one for assault, and one for arson. On the psychometric measures, the nine were suitably antisocial. Specific descriptions by prison psychologists confirmed and reinfroced our diagnoses; so did the task performance measures. For example, on the disc test measuring tactile perceptual acuity, the nine diagnosed sociopathic subjects differed significantly from the non-sociopaths ($p < .01$) during the initial placebo period.

Eight of the nine placed on the drug regimen, both in the placebo and active drug phases, were cooperative. There were, of course, periods of manipulativeness and rebelliousness. For example, one subject quit for a short period of time and another rejected the medication because he wanted the dosage increased. In general, during the active drug phase these subjects reported favorable weight changes; increases in those who appeared underweight, and a decrease in the one obese subject. In addition, performance on the disc test by sociopathic subjects became similar to that of non-sociopathic controls; performance of the latter group was unchanged by imipramine. Behaviorally, the improvement was generally obvious, not only to the on-side project investigators who were ignorant of the drug status, but also to institutional staff and other inmates; over half of the sociopaths were given jobs involving greater trust and lesser custody,

and two of the nine were actually permitted outside the prison fences while on active drug. [Later, during the placebo fade-out period, these two subjects escaped in a highly publicized episode. One of these escapees, having subjectively sensed his less effective placebo medication, approached us to be returned to his earlier drug status before departing for parts unknown.]

However, the great achievement of this program was neither in the organic symptom changes, the behavioral ratings, nor in subject cooperation but rather in the self-reported, positive changes in each subject's psychological status. They reported themselves to be more energetic, less anxious, having more restful sleep, better appetite, less impulsivity, decreased irritability and above all else, a markedly increased feeling of well-being. It should be noted that not all of the nine sociopaths reported improvement in each of these specific areas. However, for those who reported any improvement, such reports were consistent over time and ended only when active medication was tapered off prior to the substitution of the final placebo medication. In contrast, the controls reported either no change or even a worsening in their psychological and physical status during the course of the experiment.

Although only 9 of 41 experimental subjects, carefully diagnosed as sociopaths, represent a small fraction of the 558 consecutive admissions initially screened, it would be inaccurate to conclude that sociopaths were few in the general prison population. It is most important to note that the majority of the 558 consecutive admissions were rejected as subjects for age, medical reasons and/or too short a stay in prison. Moreover, several participating sociopathic subjects reneged during the first segment of the study when they received only placebo medication.

Given these constraints, we believe these 41 subjects are representative of the screened sociopaths and that our results are generalizable to a much larger segment of the anti-social sociopaths in prison.

With more than 1200 men in the institution, the successful treatment of nine is hardly the compelling therapeutic program so ardently sought by penologists. Furthermore, we have no way of knowing whether our drug has any long-lasting efficacy, particularly when men are returned to the street.* Nevertheless, these nine men did seem to respond beneficially compared to the non-sociopathic control subjects on the same drug regimen, and this difference was remarkable indeed. Finally, the return to their pre-drug mental and behavioral state after placebo indicates to us that for a well-defined and for now, small number of chronic sociopaths, some improvement can be achieved by the judicious use of drugs which produce nervous system arousal. Furthermore, we have reason to believe, on the basis of work with voluntary psychiatric patients, that our findings may generalize to non-incarcerated sociopaths. Our hope is that this approach will have the same impact on the treatment of chronic sociopaths as it has had in the treatment of hyperactive youngsters.

Since the initial results of this study were described, Tofranil has been tried by a small number of psychiatrists in the midwest with considerable success and no failures reported to us. In addition, the techniques for diagnosis have been refined and are now employed for diagnosis in an ongoing study in a psychiatric hospital in which Tofranil is administered together with psychotherapy, again with gratifying results. For example,

*It should be stressed in this connection that many of the sociopaths had reported using arousal producing drugs on the streets before their arrest and incarceration. In addition, these subjects drank between 12 to 15 cups of coffee daily and indicated that they avoided depressant drugs.

the "disc test" appears to discriminate not only between "normal" control subjects and sociopaths but also between certain types of sociopaths. Since, for certain sociopaths, performance on the "disc test" shifts towards a "normal" pattern during drug treatment, there is a strong possibility that this test can be utilized to monitor the efficacy of treatment. The hospital study of volunteer sociopathic and non-sociopathic subjects, however, must be supplemented with chronic treatment studies in order to determine whether sociopathic patients develop tolerance to the medication and to test the utility of rehabilitation and resocialization programs which must be concurrent (see page 27).

To the Future: Policy Implications

Assuming that diagnostic procedures are sufficiently precise, it will be necessary to obtain Food and Drug Administration sanction to utilize Tofranil in the treatment of antisocial sociopathy. Adequate treatment also will require extended psychotherapy and re-education. Assuming that improvement occurs in these patients and they are released from prison, protracted treatment for an indefinite period will be necessary in order to prevent recurrence of their symptoms with consequent return to prison. It seems inevitable therefore, that parole for incarcerated patients will have to be tied in some way to adequate therapy on an out-patient basis. The moral and ethical and legal implications of such a decision are enormous and, given the present climate, are properly to be viewed with concern by the public. The criminal justice system will have to surround the treatment of this severe behavioral disorder with every possible legal safeguard to prevent encroachment on the civil liberties of this population.

References: Chapter IV

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