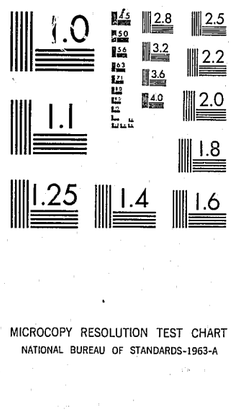

THE GENETIC ASPECTS OF PSYCHIATRIC SYNDROME RELATING TO ANTISOCIAL PROBLEMS IN YOUTH

Submitted to:

National Institute for Juvenile Justice
and Delinquency Prevention
Office of Juvenile Justice and Delinquency Prevention

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October, 1979

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Prepared under Grant Number 77JN990017 from the National Institute for Juvenile Justice and Delinquency Prevention, Law Enforcement Assistance Administration, U.S. Department of Justice. Points of view or opinions in this document are those of the author(s) and do not necessarily represent the official position or policies of the U.S. Department of Justice.

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I. INTRODUCTION

This report reviews the relevant literature on genetically influenced psychiatric syndromes which may adversely influence juvenile behavior, introducing the reader to a series of concepts which have policy implications for both the prevention and "treatment" of juvenile antisocial problems.

The report consists of a series of sections, discussing one specific approach to the antisocial personality and the disorders of alcoholism, drug abuse, affective disorder, schizophrenia, and the hyperactive child syndrome. Within each section, diagnosis, and/or definition, clinical course, genetic aspects of the problem, the association between the disorder and juvenile delinquency, and policy implications are discussed.

Before proceeding, it is necessary to establish some definitions. The term psychiatric disorder connotes a behavior problem pattern frequently seen by psychologists, psychiatrists or other mental health workers and discussed in the diagnostic nomenclature of the American Psychiatric Association (Spitzer, 1975:1187-1192). Genetic influence is established through the series of steps outlined in Section II on the antisocial personality and connotes the influence of an inherited trait which predisposes one

towards a disorder, recognizing that the final clinical picture will depend upon the interaction between genetic and environmental factors. The third term which must be defined is juvenile delinquency or antisocial acts. We tend to use delinquency in a broad sense as the commission of a crime by an individual under the age of 18, rather than simply a violation of a delinquency law (Sanders, 1976; Glueck and Glueck, 1950), which recognizes a maladaptation to social codes (including those of the family, school, or laws of the general society). Any child or youth whose actions repeatedly bring him into conflict with society and who comes into contact with legal authorities because of such actions is likely to be considered delinquent (Cavan, 1962:17), although in some instances one serious delinquent act might qualify an individual for such a label (Weiner, 1970:289-339; Becker, 1969). None of the wide variety of theories of delinquency which can be invoked (Sanders, 1976; Becker, H.S., 1969; Rodman and Grams; 1967:188-221; Sutherland and Cressey, 1972) will be described here in detail, as they will be the focus of other reports.

Finally, it is important that we note that any label or diagnosis in this report is applied from one particular bias. A label can be used to describe a condition at a given time, to indicate a hypothesized ideology, or to

diagnose for the purpose of indicating prognosis and response to treatment. The last approach has the greatest clinical usefulness, as the label can be used as a guide to estimating probable future problems and selecting between modes of treatment. However, this use of categorization is the most difficult, as it requires that the diagnostic criteria be stated in relatively objective terms which can be used in different settings, that individuals so diagnosed be followed up over periods of time to establish what their course might be, and that special efforts are made to rule out the possibility that the studied syndrome is not just a transient prodromal phase of yet another diagnosis (Woodruff, 1974; Guze, 1970: 662-671). Whenever a label is applied in this report, it is used as a prognostic tool, rather than a descriptive model.

We will now proceed with a discussion of one specific approach to the antisocial personality.

II. THE ANTISOCIAL PERSONALITY

A. Definition

Many schema have been used to outline the antisocial personality of sociopathic syndrome. The important descriptive work of Cleckley (1964:452-461)and Gray and Hutchison (1964) have added much to our understanding of the

cross-sectional picture one can expect with the antisocial personality. However, it is the prospective investigation by Lee Robins and Samuel Guze, among others, which has given us some understanding of the course of this disturbing syndrome (Robins, L.N., 1966; Guze et al., 1974:641-642; Guze and Goodwin, 1971:360-361). While not dismissing the importance of other work, it is primarily this prospective model which has the greatest usefulness in law and justice planning and which thus serves as the basis for this report.

Many careful observers have commented on the psychological characteristics of individuals with the antisocial personality and even though these are difficult to measure objectively, they will be reported here as a general background for the syndrome. In some samples, the antisocial personality (AP) individual is noted to have superificial charm, good intelligence, and no evidence of gross psychosis, but demonstrates impulsiveness, poor judgment, and an inability to learn from experience (Cleckley, 1964). He or she is reported to be unable to form deep, meaningful relationships, experience guilt, or to have no "moral sense," to be emotionally immature, and to be unresponsive to punishment as a means of altering behavior (Gray and Hutchison, 1964:452-461). While these attributes inferred

from patient behavior are probably correct, their very subjective nature makes their use more conducive to serious error than the direct reporting of symptoms of a more objective nature. It is these errors in reliability and validity which make it difficult to generalize from one diagnostician to the next and thus severely limit the practical usefulness of this diagnostic category.

Attempts have been made to utilize physiologic data to more carefully outline the syndrome. Thus, it has been noted that individuals with this diagnosis do not acquire conditioned emotional responses readily (Lykken, 1955), nor do they generalize conditioning as readily as other people (Hare, 1970). This may indicate an inadequate development of anticipatory fear responses and perhaps an inability to learn from punishment (Hare, 1970). Other physiologic correlations of this syndrome are electroencephalographic (EEG) differences from "normals," including such manifestations as enhanced percentages of slow theta waves (Knott, et al., 1953:363-370), as well as greater numbers of positive spikes and a general lowered level of excitability. Autonomic system abnormalities have been shown through the general lack of variability in measures such as heart rate and galvanic skin response (GSR), which may indicate a general under-responding of both sympathetic and

parasympathic nervous systems (Lykken, 1955; Hare, 1970). However, the overlay between AP subjects and the general population on these measures is so great as to limit the applicability of these findings and it is difficult to determine whether these are unique attributes of the sociopath or the result of brain trauma or lifestyle.

The criteria proposed by Robins (1966), Guze (1962), and Woodruff et al. (1974) do not address these physiologic changes nor the informative but rather subjective personality attributes. Rather, they look at a series of relatively objective events which, while not outlining the "essence" of the antisocial personality, have been shown on follow-up studies to correlate closely with the projected course of this disorder over an extended period of time. Simplistically, these criteria involve a failure to conform to societal norms in diverse life areas, beginning prior to age 16. More formally, these are presented in Table 1. In applying such criteria, it is important to note that many individuals will come close, but do not quite fit the label and thus could be diagnosed as "probable" AP subjects for whom a possible course can be outlined, although projections involve more uncertainty.

It is these criteria as presented by Robins and her coworkers which may be used in law enforcement areas to gain a

<u>general</u> picture of what can be expected in groups of individuals carrying the AP label. Special care must be taken before applying these generalizations to any individual, as it is impossible to predict with absolute certainty the degree of variability a given person might demonstrate from the average.

B. <u>Differential Diagnosis</u>

It is important to recognize that the commission of an antisocial act does not qualify an individual for the AP label. Rather, it is a constellation of problems, beginning early in life and affecting most life areas, which is the best predictor of future antisocial problems. This picture of frequent, widespread and severe antisocial behaviors in a large number of areas, occurring chronically and repetitively, is accompanied by certain psychological attributes which can be <u>inferred</u> but are difficult to measure. The following conditions must be considered in the differential diagnosis of the antisocial personality.

1. Alcoholism

While this syndrome is discussed in detail later in this report, it is important to note that once alcoholism has begun, antisocial acts of a limited nature may develop, but the individual is expected to run the course of alcoholism, not that expected from

the antisocial personality (Schuckit, 1973:512-521). On the other hand, individuals with an early onset of pervasive antisocial problems unrelated to drinking or drugs (i.e., the AP) can be expected to have periods of time when they are abusing alcohol and/or other drugs, but they will demonstrate the natural history of the antisocial personality, not alcoholism.

2. Drug Abuse

The meaning of "drug abuse" to law enforcement personnel differs from that of mental health professionals. To the former, drug abuse is the use of any illegal substance or legal medication in a manner which violates the prescribed restrictions. In this series of papers, the definition of mental health professionals--the use of drugs in a manner which causes serious difficulties in school, family, home, or with peers--is used.

The restrictions outlined for alcoholism must also be noted for drug abusers. An individual can be expected to run the course of drug abuse, not encountering the additional serious problems associated with the antisocial personality if an antisocial act occurs after the onset of the first major life problem related to drugs or only in the midst of drug misuse.

On the other hand, if an individual establishes a pattern of antisocial but drug-free problems in major life areas prior to age 16, then begins to abuse drugs, he can be expected to show the pattern of persistent and serious antisocial difficulties as outlined below.

3. Hysteria or Briquet's Syndrome

This disorder, seen primarily in women, involves the onset, prior to the age of 30, of a lifestyle centering around multiple bodily complaints affecting every body system but having no medical basis (Woodruff et al., 1974; Guze, 1975:138-141; Guze et al., 1972: 745-748; Guze et al., 1971:957-960). There is a close association between this disorder and the antisocial personality: the male relatives of women with Briquet's Syndrome have an elevated risk for the antisocial personality, and the female relatives of men with the AP have an elevation risk for Briquet's Syndrome (Guze et al., 1973:138-141; Guze et al., 1972: 745-748; Guze et al., 1971:957-960; Arkonac and Guze, 1963:239-242; Guze et al., 1957:651-659; Guze et al., 1970:1773-1776). In addition, women with Briquet's tend to demonstrate serious antisocial behavior and AP men show high rates of somatic complaints, including conversion symptoms (a neurological symptom other than

pain with no known medical basis (Guze, 1964:580-583; Guze et al., 1971:643-646). It may be that these two disorders are closely linked or perhaps even the same syndrome manifesting differently in men and women. However, the course of antisocial disorders in women with Briquet's Syndrome needs further study.

4. Primary Affective Disorder

As discussed later in this report, antisocial problems may develop in the midst of depressions or manias. This is especially true when a mood change occurs during adolescence, where either overactivity or depressive syndromes may be "masked" by irritability, impulsiveness, and "acting out" behavior.

5. Organic Brain Syndromes

These disorders are characterized by confusion and disorientation associated with any physical or emotional stress which can disrupt normal brain functioning (Woodruff, et al., 1974). Individuals in a confused state may commit crimes, although these tend to be rather foolish, non-purposeful acts. Careful observation of the patient will reveal an obviously confused state and past history will demonstrate a paucity of antisocial behavior.

The AP syndrome can be carefully diagnosed through the use of objective criteria with established data available on prognosis and treatment selection. A variety of studies have demonstrated a high level of consistency in labeling when using this objective criteria. The more severe and pervasive the antisocial behavior, the more likely that an individual will receive the same diagnosis at two points in time (Guze, et al., 1974:641-642; Guze and Goodwin, 1971: 360-361). In applying this label, it is important to remember that the occurrence of anti-social acts is not pathognomonic for the antisocial personality and that relatively isolated antisocial behaviors can be seen in a variety of diagnoses.

C. <u>The Clinical Course of the Antisocial Personality</u>

This syndrome begins in childhood or early adolescence and is characterized by the combination of problems outlined in Table 1. The median age of onset of antisocial behavior in one longitudinal study is seven years for boys and thirteen years for girls (Robins, 1966). In addition to the more obvious antisocial problems, such as incorrigibility, frequent runaways, and vandalism, there are a series of non--antisocial problems such as enuresis, irritability, and a cold, distant affect, along with some sleep disturbances. The average child demonstrates approximately four

non-antisocial difficulties and six or seven anti-social symptoms, most frequently theft, incorrigibility, running away, truancy, keeping bad company, difficulty with contemporaries, staying out late at night, and verbal aggression (Robins, 1966). There is a strong association between a number of antisocial symptoms early in life and a more malignant clinical course (Robins, 1966). In Robins' prospective studies, children with frequent or serious antisocial behavior manifested serious or pervasive anti-social problem as adults.

Adults diagnosed as having antisocial personalities show a variety of characteristics that distinguish them from others. Few areas of their lives are unaffected. At a ten-year follow-up, Robins' (1975) antisocial patients showed an increased rate of mortality, with 43% of the deaths appearing as consequences of the behavior problems (e.g., murder, suicide, alcoholism, and death by homicide), while only 17% of a control group's deaths occurred for these same reasons. The antisocial group had a 10%-20% lifetime risk for suicide, usually occurring as a spur-of-the-moment response to a life crisis (Maddocks, 1970:511-515). In the Robins follow-up, the antisocial group also showed more injuries, accidents, disease, and hospitalizations.

AP subjects demostrate consistent difficulties with employment (Robins, E., 1966). At the time of follow-up, only 58% of the men had full-time jobs, and 78% of the AP subjects had been umemployed over the past decade, with a 19 month average period of joblessness. Those who were employed generally held unskilled or semi-skilled jobs and subsequently had low earnings. Most individuals changed jobs frequently, averaging seven jobs in ten years. As would be expected from this type of work history, subjects were frequently financially dependent, with 45% having received welfare and 63% aid from some public agency.

Marriage and family life was severly disrupted. Although antisocial subjects married at a normal rate, at a ten-year follow-up Robins (1966) found that 78% of first marriages and 54% of second marriages had culminated in divorce. These patients made poor marital partners, frequently deserting, being unfaitful, or failing to support their families. They also tended to choose spouses with serious behavior problems (Guze, et al., 1970:1773-1776). Their children showed significant behavioral difficulties, such as truancy, runaways, theft, and failure to proceed through school at a normal rate--problems, as discussed later, which might reflect a disorganized family or environmental or genetic predisposition towards antisocial problems.

The AP subjects reported on by Robins (1966) were frequently in conflict with authorities, with 94% demonstrating nontraffic arrests as adults and 73% an arrest for at least one major crime. Multiple arrests were common, with 78% having been incarcerated for a year and 38% for at least five years. Military records of these subjects show behavior similar to the civilian patterns, documenting frequent courtmartials and a dishonorable discharge.

These AP individuals had multiple psychological complaints, including 62% with serious problems related to drinking, 10% reporting having been addicted to drugs, and 21% having required psychiatric hospitalization (Robins, E., 1966). They tended to become isolated from their family, friends and social supports and show a very high level of somatic symptomatology (Guze, et al., 1971a:957-960; Guze, 1964:580-583; Guze et al., 1971b:643-646).

When identified as adults, there is a high rate of criminal recidivism in AP individuals. Guze and Goodwin's (1966:360-361) two to three year follow-up of a group of felons demonstrated that 95% of the recidivists had received the label of antisocial personality at the index interview. Among AP subjects, drug dependence and relative youth at the time of incarceration indicate a particularly poor prognosis, with 82% of young, drug-dependent AP men being rearrested

and 64% reconvicted in a two to three year period (Cloninger and Guze, 1973:266-269). A six-year follow-up also demonstrated drug dependence and, in this instance, homosexuality, as powerful predictors of recidivism. In addition, family histories of criminality in men and hysteria (Briquet's Syndrome) in women were also associated with the increased risks for serious and persistent criminal problems (Martin et al., 1978:207-214).

In summary, when rigorous criteria are applied, the AP label carries a serious prognosis, indicating persistent antisocial problems, high rates of dependence on public institutions, increased chances for an early death, and serious interpersonal difficulties. While alcohol and drug problems are part of this picture, when they occur after the onset of the antisocial personality the AP label more accurately predicts future course.

D. <u>The Genetics of the Antisocial Personality</u>

This is the first diagnosis for which genetics is being discussed and therefore it is important that some general quidelines be established. In human studies, it is impossible to control enough variables to demonstrate conclusively that genetic factors are involved. Nonetheless, it is possible to utilize our present methodologies to garner information regarding the probability that genetic factors

are important in any particular disorder. If a genetic influence is identified, it is probable that the transmission of the syndrome will be multifactorial (i.e., involving both genetic and environmental factors). It is most likely that an individual may carry a predisposition towards a disorder, manifestation of which would depend upon the genetic propensity and the balance between those environmental factors which tend to protect the individual and those which maximize the chances for uncovering the clinical syndrome.

It is unlikely that one would ever be able to say that any particular indivudual will definitely demonstrate a given syndrome. Rather, genetic information may help us to identify those individuals at highest risk, who can then be followed prospectively in an attempt to identify both physiologic and environmental factors which are important in the development of the syndrome. The following information relates a series of approaches to the genetic question, none of which alone gives an adequate answer, but which strongly suggest a genetic influence when combined.

1. Family Studies

The AP syndrome runs strongly in families. Beginning with a sample of individuals labeled as antisocial personalities, one sees elevated risks in male

relatives for an AP diagnosis and in females for Briquet's Syndrome (Arkonac and Guze, 1963:239-242; Cloninger and Guze, 1970:303-311; Woerner and Guze, 1968:161-168), as well as other individuals within the family who show lowered levels of intelligence and lack of responsibity to punishment (Robins, 1966; Gibson and West, 1970:21- 31; Lefkowitz, et al., 1970:186-191). Family members of AP subjects also show a higher risk for drinking problems, chronic unemployment, marital discord, and inconsistent discipline offered within the family setting (Robins, E., 1975; Robins, L.N. et al., 1962: 480-489). Many of these factors have been reported as potential "causes" of th AP syndrome, but it can be seen that they could be manifestations of parental AP problems and not necessarily environmental causes of the AP syndrome itself.

There is some indication that it may be the constellation of antisocial relatives, rather than any one particular indivudual, which is most closely associated with AP problems in children (Robins, L.N., 1966; Robins, L.N. et al., 1972:480-489; Robins, et al., 1971:338-345). The familial nature of the problem, true for both blacks and whites, is demonstrated by the fact that 19% of male relatives of AP subjects receive

similar labels, with an additional 34% labeled alcoholic or probable alcoholic and 4% labeled drug abusers. These latter two problems may have involved individuals who were misdiagnosed, or might represent a possible "spectrum" of antisocial problems as discussed below (Robins, L.N., et al., 1962:480-489; Robins, L.N. et al., 1971:338-345; Robins, L.N. et al., 1975:125-140). The rate for antisocial labels in female relatives is 2% and for Briquet's Syndrome 5% (Guze, et al., 1967: 651-649). Looking at similar figures the other way, when one begins with a sample of women with Briquet's Syndrome, 15% of female relatives fulfill that diagnosis (versus a general population prevalence of 1% to 2%), with 10% of male relatives diagnosed as antisocial personalities and 24% alcoholic (Guze, et al., 1972: 512-521; Arkonac and Guze, 1963:239-242; Cloninger and Guze, 1973:266-269). The association between the two disorders is complicated by the fact that wives of men with an antisocial personality show elevated rates of all the above-mention syndromes (Guze, et al., 1970: 1773-1776).

In summary, the AP syndrome runs strongly in families and appears to be associated with Briquet's Syndrome in women and alcohol or drug abuse in men.

Thus, the evidence is consistent with (although it does not prove) the hypothesis that the anti-social personality is part of a genetically influenced spectrum of related disorders.

2. Twin Studies

This type of investigation compares the rate of concordance (or sameness) within twin pairs for the two types of twins: identical or monozygotic (MZ) twins who share 100% of their genes versus same sex fraternal, or dizygotic (DZ) twins who share only 50% of their genes. It is hypothesized that since both types of pairs are born at the samme time and reared in similar environments, any differences in the rate of concordance between MZ and DZ twins might reflect genetic rather than environmental factors.

Table 2 outlines the information on rates of concordance in the two types of twin pairs. While these studies relate to diverse samples in varying methodologies, they, nonetheless, tend to show higher rates of concordance in MZ than DZ twins.

In evaluating this data, however, it is necessary to look at the individual studies to determine such factors as the reliability of the methods used to establish whether an individual is a member of an MZ or

DZ pair. It is also important to note that the twin samples cannot be considered representative of the general population and to be aware of varying definitions of the antisocial personality in the different studies. It must be recognized that the twin studies do not control for differences in the prenatal environment and early rearing practices between MZ and DZ twins (Dalgard and Kringler, 1976:213-237; Guze, et al., 1969:583-591).

3. Separation Studies

The most important information comes from studies observing the outcome in individuals separated from their biological parents close to birth and reared without knowledge of their parents' problems. Data of lesser importance, but still useful, is generated from information on adoptees in general.

a. Adoptee/Family Studies

This small series of investigations looks at the characteristics of relatives (both biological and adoptive) of a group of adopted-out individuals who are studied as adults. One investigation by Schulsinger (1972:190-206) studied 57 adoptees who were diagnosed as "psychopaths" and a matched control sample, discovering that significantly more

of the 305 index biological relatives of the psychopathic adoptees demonstrated mental disorder (19% versus 13%); evidence of criminality, drug abuse, alcoholism, or hysteria (14% versus 7%); or received a diagnosis of psychopathy (4% versus 1.4%), when compared to controls. Hutchings and Mednick (in Fieve, 1975) used adopted populations in Denmark and discovered that 16% of adoptees versus 9% of nonadopted controls had criminal records. Further investigations of the 143 criminal adoptees showed that the antisocial outcome correlated with criminality in the biological parent as well as with that in the adoptive parent (in Fieve, 1975). Thus, this data lends support to the hypothesis that both genetic and environmental factors are important in the etiology of the antisocial personality.

b. Adoptee Studies

These investigations look at the adoptees themselves, rather than their families. Crowe (1975: 353-371) followed the adopted children born to women in a correctional institution, as well as the children of a control group. He discovered that 13% of the former versus 2% of the latter had

police convictions, 12% versus 0% had been incarcerated, and 15% were evaluated by psychiatric facilities versus 1% for adoptees without criminal parents. In a further folow-up, that same author demonstrated that 13% of the adopted-out children of an incarcerated mother versus none of the controls qualified for the diagnosis of the antisocial personality (1974:785-791). Bohmam (1977) carried out a similar study in Sweden and was unable to replicate Crowe's findings for criminality but did demonstrate a possible genetic determinant for alcoholism. Cadoret et al. (1976: 1316-1318), however, did find evidence for genetic factors in the antisocial personality for males which correlated with a syndrome of multiple somatic complaints for women, once again corroborating the possibility of a spectrum of antisocial disorders, ranging from a bona fide antisocial personality through alcohol problems and into hysteria or Briquet's Syndrome.

These investigations must be interpreted in light of a trend towards higher levels of social and psychological disturbance in adopted children versus non-adopted controls, although most of the

investigations did control for this to some degree (Offord, et al., 1969:110-116). It is also important to note that genetic factors, if they do exert an influence, probably work in tandem with such environmental factors as time spent in an orphanage or a history of placement in a temporary home (Crowe, 1974:785-791). This may be important, as individuals with antisocial or alcoholic biologic parents may be placed in permanent homes later than controls (Bohman, 1977).

Nonetheless, with the exception of Bohman's work, there is a general consensus that there are important genetic factors involved in the antisocial personality. This has been demonstrated despite marked differences in samples and study designs. Bohman's work must be interpreted in light of the fact that he studied many of the individuals at a very young age, many under the age of 15.

4. Conclusions on Importance of Genetics on the Antisocial Personality

Family studies, especially the careful investigation by Robins, have demonstrated that antisocial behavior in parents, as well as early childhood

antisocial behavior, are powerful predictors of an adult diagnosis of the antisocial personality. It appears as if there may be a series of related disorders, ranging from alcohol and drug problems or the antisocial personality to Briquet's Syndrome or hysteria, which tend to cluster within the same family. This familial tendency does appear to have a genetic basis, as shown by the twin studies and the majority of separation-type investigations.

5. Possible Genetic Models

If the anitsocial personality or a related spectrum of disorders is genetically mediated, it is possible to generate some potential models. The twin, family, and adoptive research does not indicate any clear Mendelian type of inheritance, nor is there enough information at the present time to indicate that the disorder or its spectrum is sex-linked or sex influenced. Some indirect data indicates that environmental (i.e., social) factors may help explain some of the differences between men and women without the need to invoke genetic influence.

The model which most closely fits the data is multi-factorial where genetic and environmental causes are combined into a single continuous variable labeled "liability." In this model, individuals whose

liability (both genetic and environmental) exceeds a certain threshold demonstrate the disorder. The genetic influence probably involves multiple genes and the difference in rates between men and women appears to be cultural. The fact that antisocial males tend to have children with women of similar characteristics (i.e., assortive mating) helps to explain some of the familial patterns observed (Cloninger, et al., 1975b:11-225; Cloninger, et al., 1975a:23-32).

6. Some Related Genetic Issues

The vast majority of AP individuals demonstrate no chromosomal abnormalities. In the scientific and popular literatures, some evidence has been presented that males with an extra "Y" chromosome (XYY) may be more liable to demonstrate mental retardation, antisocial conduct, and other behavioral abnormalities (Forssman, 1970:353-363). However, this syndrome is seen in such a small percentage of individuals with violent antisocial behavior and noted in so many men with no known behavioral abnormalities that the XYY genotype has a limited clinical significance (Griffiths, et al., 1972:365-368).

A related question is the evidence that male prisoners with significantly higher levels of plasma

testosterone are more aggressive and dominant (Ehrenkranz, et al., 1974:469-475). As interesting as this data might be, the number of studies involved is quite limited and, even if the data were correct, cause and effect are so difficult to establish that this information should be considered only speculative.

E. Association Between Antisocial Personality and Juvenile Delinquency

Defining juvenile delinquency as the repeated occurrence of antisocial acts during the pre-teen and teenage years, it is not surprising that there is a close association between the carefully applied AP level and continued antisocial behavior. The association probably rests with the dictum that past behavior, especially when pervasive or involving many areas of an individual's life, is the best predictor of future behavior. This has been demonstrated cross-sectionally, longitudinally, and retrospectively by a variety of authors who have related this both to continued juvenile delinquent acts and adult antisocial behavior. In Robins' (1966) sample of young men seen in a child guidance clinic, 45% of those who had received an AP label were subsequently referred to juvenile court.

An additional important link between delinquency and the antisocial personality is seen in the children of AP men and women. A review of the familial and adoptive literature shows that children of antisocial parents are more likely than those of "normals" to themselves receive the diagnosis of the antisocial personality. While not necessarily dealing directly with an AP label, 45% of the boys in one study whose fathers had been arrested were delinquent compared with 9% of controls, with rates for girls of 24% and 0% respectively (Robins, L.N., et al., 1975:125-140). Thus, whether reacting to environmental influences or as a reflection of their own development of an AP disorder or other problems which might be part of the same spectrum, there is a close association between juvenile crimes and having an AP parent.

F. Policy Implications

The present data on the genetics of this disorder is impressive enough to warrant prospective studies attempting to observe, and hopefully intervene in, the course of problems of the offspring of AP subjects. There are limited data to indicate that this syndrome (both in children and adults) responds in a limited way to authoritative, environmental control with the use of intense group pressures to produce conformity (Clark, 1977:563-564). It is important

that the possibility of an AP label be considered for any individual engaging in repeated antisocial acts.

The general resistance to change seen in individuals with this disorder would indicate that rehabilitation and treatment efforts aimed at juvenile offenders should be evaluated separately for those with AP labels and those without. If all juvenile offenders are lumped together, an intervention technique which might have significant results in non-AP subjects would be obscured by mixing the groups.

The probable genetic components of the AP syndrome indicate that it may be possible to prospectively study a group of high-risk individuals to understand more about those genetic and environmental factors which combine to produce this syndrome. Also, it is important that those individuals engaged in reseach looking at psychological and sociological variables separately analyze data for subjects with a family history of AP problems and those without, in an attempt to control for environmental factors which might still be important after genetic factors are considered.

Finally, it is important that we learn more about the close relationship between alcohol, drug, antisocial, and hysterical problems which might consititute a spectrum of related disorders. When one considers the cost in money, police time and interrupted lives associated with these

disorders, more research and some carefully controlled intervention programs are justified.

III. ALCOHOLISM

A. Definition

Throughout this report, diagnosis is applied only when relatively objective criteria have been developed which have been demonstrated through follow-up studies to indicate prognosis and response to treatment. Such a definition for alcoholism in adults has been developed based on the occurrence of any one of a series of major life problems related to alcohol, including marital separation or divorce, multiple arrests, physical evidence that alcohol has harmed health, or a job loss or layoff related to alcohol (Schuckit, 1973:157-164). THis definition outlines a group of people who drink relatively heavily, are psychologically dependent on alcohol, and who run a course of relatively predictable life problems related to alcohol (Shuckit and Winokaur, 1972:672-678).

However, it must be emphasized that no acceptable criteria have yet been produced for alcoholism in adolescents. There are a number of important ongoing studies applying different diagnostic approachs to young people with alcohol-related problems. These investigations are now

carrying out follow-ups to determine which, if any, approach to juvenile "alcoholism" is appropriate.

Most studies to date do not clearly distinguish between investigations of drinking patterns, transient alcohol-related problems, and alcoholism. Therefore, we will carry out a brief review of drinking patterns, problems, and alcoholism in youth.

By the end of high school, 90% of both boys and girls report drinking at least occasionally over the prior year (Schuckit, et al., 1977; Schuckit, 1977), with the majority drinking between once a week and once a month and 5% to 10% drinking daily (Alcohol Task Force, 1975). As alarming as these findings are, this is not a new phenomenon and reflects similar (although slightly lower) drinking patterns in the 1960's, with the most marked change being the trend towards an equality of drinking practices between boys and girls (Schuckit, 1977). Nor are these findings surprising in light of the high prevalence of drinking in our society in general (Cahalan, et al., 1969) and the fact that adolescence is a time for assumption of adult roles and experimentation with adult skills, including drinking. There is little, if anything, from the drinking pattern data which will allow us at present to infer the possible rates of alcoholism.

Alchol problems have been studied from a wide variety of perspectives, ranging from those who call any drinking under the legal age a problem to those who look at any one or more minor difficulties (such as interpersonal arguments or coming to work or school late because of drinking) as a drinking problem and those who try to center on more severe or pervasive difficulties. Late adolescence has historically been a heavy drinking time associated with a series of minor but transient alcohol difficulties (seen in more than one-third of young men (Cahalan, 1973). Thus, the fact that alcohol problems, including having experienced drunkeness, have been reported in over one-quarter of young people by the time they finish high school is an alarming statistic, but does not necessarily reflect a change over the last 10 years, nor does it necessarily indicate alcoholism (Schuckit, 1977). Two important follow-up studies have both demonstrated that the more minor alcohol-related problems do not predict pervasive future difficulties (Cahalan, 1970, Fillmore, 1975:882-907).

One study has looked at almost 1,500 adolescents who were referred to alcohol counseling centers or a county juvenile detention center for alcohol-related difficulties (Schuckit, et al., 1977; Schuckit and Morrisey, 1978:339-356). Even in this sample, serious and pervasive alcohol

problems were relatively rare and no youth evidenced convincing signs of having gone through alcoholic withdrawal. Those individuals who did show tendencies towards drinking daily, who imbibed excessive amounts, and who showed the greatest number of alcohol-related difficulties, were, almost without exception, engaged in serious and pervasive poly-drug use. Thus, alcohol involvement, while serious, represents only one aspect of multiple substance abuse. Those with the most severe problems fulfilled fairly rigid diagnostic criteria for the antisocial personality as described earlier in this report (Woodruff, et al., 1974; Schuckit, 1973:157-164). This underscores consistent findings throughout the 1950's, 60's, and 70's that those groups demonstrating the highest rate of alcohol intake and problems and those who are also having other police-related difficulties.

In summary, using the diagnostic approach which is most useful in clinical and law and justice settings, there are no acceptable criteria for alcoholism in adolsecence. While some prospective studies are gathering relevant information, at present it is enough to say that the majority of youth drink, that many have transient alcohol-related difficulties, and that the most severe alcohol problems are seen in those

young people who are already engaged in polydrug misuse and those who would fulfill the criteria for the antisocial personality.

B. The Clinical Course of Alcoholism

The data on the natural history of alcoholism has been gathered on adults and thus there is very little to relate on this topic to an adolescent population.

C. The Genetics of Alcoholism

Using present methods, it is almost impossible to prove beyond a doubt that any behavioral disorder is genetically influenced. However, the data on the genetics of alcoholism is so consistent, seen with so many different methodologies, and has closed off so many alternate explanations for the data that such an influence is highly probable.

The information comes from a variety of studies, each of which, despite its flaws, points toward a genetic influence. The first series of investigations show that alcoholism runs strongly in families, with the chance of a child developing alcohol problems as an adult increasing with the severity of alcoholism in his close relatives and the number of relaties ill. The propensity is strong enough for the lifetime risk for alcoholism in the son of a severely alcoholic father to be as high as 50% (Schuckit and Haglund, 1977:15-27).

A second type of study has compared the degree of similarity for alcoholism (i.e., concordance) in groups of identical twins with the concordance rate for alcoholism in same sex, two-egg, or fraternal twins--the latter being no more genetically similar than any two siblings. If the rate of similarity for alcoholism is higher in the identical than fraternal twins, this difference might reflect genetics. Summarizing most of the studies in this area, the concordance rate in identical twins approaches 65%, while that in two-egg twins is closer to 35% (Schuckit and Haglund, 1977:15-27; Goodwin, 1976).

A third approach uses an animal model to evaluate whether drinking preferences might be inherited. It has been possible to demonstrate that different strains of rats or mice demonstrate preferences for alcohol solutions of varying percentages (Schuckit and Haglund, 1977:15-27; Goodwin, 1976). While these animal experiments do not demonstrate that alcoholism is necessarily inherited, it does show a potential mechanism for such inheritance and demonstrates that some alcohol practices appear to be biologically mediated.

The fourth set of studies utilizes genetic markers, genetically influenced characteristics such as blood type that can be relatively easily measured. Any association, either within families or within populations, between alcoholism and a genetic marker might indicate that the alcohol problems are inherited and give some information on the mode of inheritance or the particular genes involved. A number of investigations have been able to demonstrate such associations, but while these findings are consistent with a genetic influence, it has been difficult to replicate studies (Schuckit and Haglund, 1977:15-27; Goodwin, 1976).

The most important information comes from the separation-type studies where the adult outcome of children of alcoholics who were raised separately from their biological parents is evaluated along with the outcome in suitable controls. Such investigations have consistently demonstrated as high as a four-fold increase in the chances of alcoholism for children of alcoholics, no matter who raises them, while adopted-out controls show rates similar to that of the general population (Goodwin, 1976). These findings remain the same whether the children (either of alcoholic or non-alcoholic parentage) are reared by alcoholics or go on to experience broken homes once they are adopted out.

Taken together, these investigations also show the importance of environmental factors, as demonstrated by the 65% concordance rate in identical twins. However, these studies do indicate that alcoholism is a familial disease transferred from generation to generation, regardless of gross environment.

D. The Association Between Alcoholism and Juvenile Delinquency

Because alcoholism is a familiar disorder (whether genetic or not) and because alcohol problems tend to be disruptive to families, a number of studies have investigated the problems of children of alcoholics (El-Guebaly and Offord, 1977:357-365). Some authors have centered on the psychological results of living with an alcoholic parent, finding that such children suffer depression, nervous symptoms, somatic complaints, and behavioral problems more than children from nonalcoholic homes. These difficulties include the commission of crimes centering around alcohol, drugs, truancy, difficulties within the home, and social problems at school (Nylander, 1960; Mackay, 1963:29-38; Haastrug, et al., 1970:61; Cork, 1969). However, these investigations did not usually control for the possibility that the antisocial and interpersonal difficulties could reflect early manifestations of a biologically-influenced

disorder. In fact, the results reported by Goodwin (1976) and others show there are increased problems in children of alcoholics, no matter who raises them.

One special problem assocated with the children of alcoholics which ties in with delinquency is the high rate of hyperactive symptoms, frequently of great enough magnitude to justify a label of the hyperactive child syndrome (EL-Guebaly and Offord, 1977:357-365; Morrison and Stuart, 1971:189-195). As discussed in other sections of this report, hyperactive children do have school, interpersonal, and familial problems and could be mislabled as antisocial, with a chance of finding themselves in the juvenile justice systems. The best data to date indicates that hyperactivity per se is a symptom of a wide variety of difficulties (Fish, 1971:193-203) and that the hyperactive child syndrome probably reflects minor neurologic damage (Wender, 1977). The increased risk for hyperactivity in the children of alcoholics could thus reflect anything from familial chaos to a common neurologic disorder underlying both hyperkinesis and alcoholism, but much more data is needed before any final conclusions can be reached.

It is important to expand upon one subject already noted. The association between polydrug misuse and alcohol misuse might indicate that in the earliest stages of

alcoholism, multiple drugs are abused. This hypothesis would have to be carefully followed up prospectively.

In summary, the children of alcoholics have higher rates of antisocial problems, polydrug misuse, and alcohol difficulties. While these have been thoroughly discussed in a recent review (El-Guebaly and Offord, 1977:357-365), it is important to note these difficulties here.

E. Policy Implications

The close association between familial alcoholism and antisocial problems raises a large number of potential treatment and intervention strategies. These underscore the necessity for beginning a series of prospective studies attempting to observe these biological and psychological, as well as sociological factors, which may detemine which, if any, high-risk individuals go on to develop alcoholism. It is also necessary to screen all juvenile offenders for polydrug and alcohol-related difficulties in an attempt both to meet their current treatment needs and to establish a prognosis.

IV. AFFECTIVE DISORDER

A. Definition

In dealing with the mood (or affect) disorders, it is important to distinguish between a normal change in mood, a grief reaction (which tends to be self-limited, with the individual returning to a functional level within one to two weeks), and depressive disease. It is also important to distinguish between a pathological mood state occurring as an integral part of a pre-existing psychiatric disorder, such as alcohol or drug misuse (i.e., secondary affective disorder), and a mood state occurring in the absence of major pre-existing psychiatric disorders (primary affective disorder). This section will deal with a very specific definition of primary affective disorder.

There are two poles or extremes of mood which can qualify one for a diagnosis of affective disorder--serious depression or extreme euphoria. Probably two-thirds of individuals demonstrating affective disturbances show serious depression and, even if they have repeated episodes, they never demonstrate elation or mania. Those people showing only a single pole of depression are labeled as having a unipolar affective disorder (Woodruff, et al., 1974; Winokaur, et al., 1969).

The diagnosis of depression, whether occurring in a unipolar or bipolar individual, is based on the occurrence of persistent sadness, representing a change in the normal level of functioning, with a fairly rapid onset accompanied by changes both in body and mind functioning. In the sphere of bodily disorders, individuals demonstrate such problems as lethargy, constipation, and insomnia. In mind functioning, they tend to feel that their thoughts are slow, they can't concentrate, they lose interest in things, and their future tends to look hopeless. An individual who fulfills the diagnostic criteria for a depressive episode in the absence of pre-existing psychiatric disorders and who has no history of mania is labeled as having a primary unipolar affective disorder.

A bipolar diagnosis applies when an individual presents with mania or with depression but has a past history of mania. A manic episode involves a change from the normal level of functioning lasting at least two weeks, with a fairly abrupt onset, involving a mood of elation or euphoria in the midst of mental changes (including the symptoms of racing thoughts, poor judgment, etc.) along with changes in body functioning, such as little desire for sleep or an inability to sit still. When this picture occurs in the absense of pre-existing psychiatric disorders (e.g. such a

picture can be seen in the midst of amphetamine abuse), the label of bipolar primary affective disorder is warranted. This syndrome must be distinguished from unipolar disorder because the bipolar patient is more likely to have an early onset, more frequent episodes, experiences greater life impairment, and tends to respond to a different set of medications, such as lithium (Winokaur, et al., 1969).

B. The Differential Diagnosis

In evaluating a youth demonstrating depression, as well as antisocial actions, there are a variety of possible reasons which must be considered. First, the person may have an antisocial personality and be presenting with the symptoms of sadness due to his present situation. This judgment is fairly easily made, as the antisocial personality is characterized by ongoing deviant behavior beginning prior to age 16, while adoloscents exhibiting symptoms of primary affective disorder tend to show a rapid onset of change from the normal level of functioning, accompanied by the above-mentioned disorders of mental and bodily function.

A second distinction must be made between a depressive disorder and sadness occurring in the midst of alcohol or drug misuse. This rather complicated process is based on the age of occurrence of first major life problem (alcohol or drugs versus depressive) as well as a family history of

related disorders. It must be remembered that in the midst of a heavy drinking episode or the abuse of drugs (especially stimulants or depressants), sadness is often a usual symptom, but disappears rapidly with cessation of drug misuse.

Finally, in the midst of a severe depression or mania, an individual may demonstrate hallucinations and/or delusions, thus demonstrating that he has lost contact with reality (Carlson, et al., 1977:919-922; Taylor, et al., 1978:678-682). The distinction between a more long-term and serious psychotic disorder (e.g., schizophrenia) and an affective disorder rests with the fact that affective problems tend to have a rapid onset and also an increased rate of ocurrence in the families of individuals with similar disorders.

C. The Clinical Course of Affective Disorder

As is true of most psychiatric disorders, the majority of data is available on adult populations. The average person presenting with a unipolar depression is in his or her 40's, demonstrates a fairly rapid onset of serious depression and an inability to function, but rarely shows antisocial behavior. The same is true for the bipolar patient in a depressed phase, although the onset of first episode tends to be at a somewhat younger age. During an

episode of mania, however, with its associated poor judgment and hyperactivity, one might more frequently see the commission of crimes. These are usually the direct result of the disorder and include such things as overspending on credit cards, cashing checks for which there is not enough money, or an episode of uncontrolled anger resulting from the irritability seen during many manias.

The picture is less clear for the adolescent. Common sense dictates that the behavioral reaction of a child or adolescent to a given stress may be different from that of an adult. Thus, while some young individuals demonstrate classical depressive or manic pictures, it is hypothesized that others react to their mood changes with increased irritability and antisocial behavior.

When evaluating the literature on the subject, it is important to clearly distinguish between sadness, which is probably seen in the majority of delinquents at the time of incarceration or during interactions with courts (Chivast, 1967:575-584; Shainberg, 1966:258-270), and bona fide affective disorder, representing a definite change from a normal level of functioning, accompanied by depression which persists daily for at least two weeks. Also, it is necessary to recognize the difficulty in dealing with the "causes" of depressive episodes, as most studies looking for

associations between a particular event (e.g., early parental loss) and depression do not establish whether the association is the result of a high parental incidence of depressive disease (Beck, 1967; Brown, n.d.; Keeler, 1954: 109-120; Shoor and Speed, 1963:540-558). Information available on the actual importance of hypothesized dynamic mechanisms for the development of depression (Lorand, 1967; Weiner, 1970) is no better.

The older the individual is at the time of onset of his depression or mania, the more likely that the clinical picture will resemble an adult affective disorder (Weiner, 1970; Coon, 1961:116-132; Gould, 1965:228-246; Rosen, et al., 1965:1563-1577). Affective episodes are also more likely to be seen in individuals who themselves have family histories of depressive disorders (Barrett, 1931:205; Connors, 1976). Many depressions in childhood and adolescence show some of the more typical depressive symptoms, although these might occur as part of an antisocial picture. These symptoms include elevated rates of insomnia (Connors, 1976), high rates of somatic complaints (Connors, 1976; Cytryn and McKnew, 1972:149-155), fatique, feelings of hopelessness, and a decreased ability to concentrate (Cytryn and McKnew, 1972:1439-155).

In addition to these symptoms, the adolescent with depression or mania is more likely than the adult to present with outward manifestations of irritability and frustration. Thus, one is likely to see a rapid change in level of functioning toward aggressiveness (Cytryn and McKnew, 1972:149-155; Burkes and Harrison, 1962:416-422), social withdrawal, sexual acting-out, and boredom or restlessness. The youth's personality can acquire an unpleasant mixture of irritability, along with a lack of self-esteen and a paradoxical braggadocio (Burkes and Harrison, 1962:416-422). This may progress to frank delinquent behavior.

These adolescents commit delinquent acts for personal and private reasons. Some research has indicated that a number of delinquents function in a solitary or maladaptive way, as distinquished from the more social, adaptive delinquents (Jenkins, 1957:528-737). It may be that young people showing more socially unacceptable behavior in a social or isolated context have higher levels of depressive disorders.

Thus, the possibility of a diagnosable and therefore treatable affective disorder of either the unipolar or bipolar type must be considered as part of the differential diagnosis in any young person demonstrating the rapid onset of antisocial behavior, accompanied by signs of lack of self-esteem or some of the more common symptoms of

depression, the onset represents a change from their normal level of functioning and persists for weeks on end. As discussed below, these syndromes are relatively responsive to treatment, at least in adult populations. Failure to diagnose would be most unfortunate. There is a risk of both attempted and completed suicides in such populations, and without intervention, the antisocial lifestyle may persist.

D. The Genetics of Primary Affective Disorder

Primary affective disorders of both the unipolar and bipolar types appear to be genetically influenced. While most of the studies have been carried out in adult populations, family histories of such disorders may be important in trying to recognize instances where affective disorder is masked by antisocial behavior in adolescence (Schuckit and Chiles, 1978:165-176). In the following brief discussion, we will separately outline information on unipolar and bipolar illness discussed by Allen (1976:1476-1478) as they appear to be genetically distinct.

1. Unipolar Illness

Until recently, studies of affective disorder did not adequately distinquish between unipolar and bipolar problems. Important recent data has indicated that, following the same line of logic outlined under the genetic discussion of the antisocial personality,

unipolar illness has been demonstrated to run strongly in families and identical twins have much higher rates of concordance for this disorder than fraternal twins (Allen, 1976:1476-1478). Adequate separation or adoption-type studies have not been carried out, but the information at present is strong enough to indicate a probable genetic influence.

2. Bipolar Illness

Manic depressive disorders run strongly within families, with a two-to-fivefold increased risk for the close family members of anyone with this disorder (Perris, 1976:1476-1478; Woodruff, et al., 1971:33-38). Twin research has demonstrated a two-to-threefold increase in concordance rates for identical versus nonidentical twins (Winokaur, et al., 1969; Reich, et al., 1969:1348; Price, 1968). Additional interesting information has been generated through studies of genetic markers, especially those dealing with blood types (e.g., the Xg marker) (Reich, et al., 1969:1358).

Thus, an adolescent presenting with a rapid onset of delinquent behavior which represents a change from his usual level of functioning and who demonstrates either a personal or family history or unipolar or bipolar illness should be considered at high risk for

demonstrating primary affective disorder himself. This information can be useful in attempting to gauge prognosis and choose proper treatments.

E. Treatment

Discussions of therapy are generally not considered in this manuscript. However, it is important to briefly note the excellent evidence that individuals with unipolar primary affective disorder respond quickly to anti-depressant medications such as Elavil and Tofranil, while those with bipolar manic depressive disease respond well to lithium (Baldessarini, 1977). Thus, it would appear as if controlled studies using lithium or anti-depressants are appropriate in adolescents with atypical histories of rapid onset of irritabilty and antisocial behavior. It is only after such controlled studies, however, that such treatments could be considered for general clinical use.

F. Policy Implications

Little research has been conducted on the interaction between affective disorder and antisocial behavior during adolescence. Because affective disorder is eminently treatable, missing such a diagnosis in a young person in trouble could result in a terrible waste of an individual's potential. It is important that studies attempting to identify these young people and to adequately treat them

(including evaluation of such treatment's effectiveness) be carried out. The familial nature of affective disorder leads us to conclude that a family history of serious depressive disorder in association with a rapid change in a person's level of functioning could help pick out those individuals with masked affective disorder.

V. SCHIZOPHRENIA

A. Diagnosis

Schizophrenia is a classic example of the use of a label by different practitioners to indicate different things--i.e., clinical picture versus possible etiology versus a guide to prognosis and treatment. Historically, psychiatry in the United States has tended to use the descriptive or etiologic approaches to diagnosis, but in recent years it is swinging towards labeling for prognosis and treatment. This label is of increasing importance to law and justice personnel, as recent changes in mental health laws placing restrictions on commitment and the closing down of state hospitals have resulted in increasing numbers of psychiatric patients finding their way into the criminal justice system (Becker, A., 1976: 255-261; Chadoft, 1976:496-501). Historically, there have been at least two important schools of thought on schizophrenia, one tending to outline what would today be called process or nuclear schizophrenia with

a poor prognosis, and the other using less objective terms to describe people whose thought processes are impaired but who represent a heterogeneous group of prognoses. The reason for this confusion is that loss of contact with reality (i.e., psychosis) and unusual thinking or emotional distance, as well as hallucinations, frequently occur in the midst of other disorders, ranging from drug-induced problems to primary affective disorder (Goodwin, et al., 1971:76-80; Taylor and Abrams, 1973:520-522). As described here, schizophrenia follows the definition originally presented by Kraepelin (Woodruff, et al., 1974) and further expanded by Langfeldt (1956). It is the slow, insidious onset (over a period of months or even a year) of symptoms of social withdrawal, emotional unresponsiveness, and unusual thinking, as characterized by delusions and hallucinations, occurring in an individual who is not seriously depressed or not abusing drugs (Woodruff, et al., 1974). Using this definition, the patient so diagnosed will probably run a course of chronic impairment with periods of improvement but not return to the normal level of functioning without antipsychotic medication (e.g., Thorazine).

When the psychotic picture has a rapid onset, it is usually labeled "acute schizophrenia" (Taylor and Abrams, 1973:520-522; Taylor and Abrams, 1976:741-742).

Unfortunately, as clinically used, this label outlines a heterogeneous group of people, some of whom have manias, and some for whom drug or alcohol problems should be the primary diagnosis. Therefore, while some individuals carry the label of "acute schizophrenia" do go on to run the course of a schizophrenic disorder, most have probably been mislabeled and would not represent schizophrenia at all.

B. The Clinical Course of Schizophrenia

The usual clinical course of nuclear or process schizophrenia is one of either chronic deterioration with increasing social withdrawal, as well as hallucinations and delusions, or a stability of impairment (but not total improvement) at any given level. While some level of improvement can be expected spontaneously, significant changes in functioning usually require antipsychotic medication.

The usual onset of this disorder is prior to the age of 30, and it almost always occurs by the age of 40. The symptoms of emotional blunting, social withdrawal, and "crazy" thoughts usually develop slowly in a person who has been heretofore functioning normally. Adult schizophrenics can commit crimes, sometimes acting on their paranoid delusions with resulting violence. However, this is a relatively rare occurrence.

The major reason for including this disorder in the present discussion rests with the symptoms which sometimes develop in late adolescence during the early phases of schizophrenia. The social withdrawal and unusual thinking is often associated with the development of a "loner" lifestyle. The disturbance can, as is true for affective disorder, result in nonspecific aggressiveness and irritability and commission of what appear to be non-goal-oriented crimes. This has been demonstrated by certain authors who have shown an increased rate of antisocial behavior in the years prior to the onset of gross schizophrenia in some patients.

Watt has examined the school records of hospitalized schizophrenics to determine the characteristics of their preadolescent pictures. From grades 1 to 7, preschizophrenic boys could not be differentiated from their normal peers, but at puberty they tended to become more unpleasant, aggressive, and defiant of authority, engaging in antisocial acts and becoming behavior problems, (Watt, 1978:160-175). "Preschizophrenic" girls were, retrospectively, felt to be more emotionally unstable, introverted, and passive from grade 1 on, with a progression to greater degrees of aloofness at puberty.

Gross antisocial behavior does occur, but it does not seem to have the same quality as for the antisocial personalities and there do not appear to be enhanced levels of schizophrenia in individuals committing serious crimes (Guze, et al., 1962:512-521; Guze, et al., 1967:651-659; Gunn, 1977:317-329).

When crimes are committed by schizophrenics, they are usually not violent crimes against persons, tending rather to be crimes against property and misdemeanors (Durbin, et al., 1977:80-83; Petrich, 1976:1439-1444). When the schizophrenic is arrested for a violent offense, he is likely to show a concomitant history of drug and alcohol abuse (Zitrin, et al., 1976:142-149). However, it is important to note that while the majority of evidence indicates that violent crimes are not a part of the course of the average schizophrenic, there is some contradictory information (Sosowsky, 1978:33-42).

In summary, when placed in the community with inadequate care, schizophrenics do tend to find their way into the criminal justice system, usually for nonviolent crimes. When violence occurs, it is most frequently seen in those schizophrenics demonstrating concomitant alcohol or drug misuse. While little good data is available, it is important to note that non-goal-oriented crimes, along with

social withdrawal, can be expected as part of the clinical picture of the early onset of schizophrenia in adolescence. The actual scope of this problem has not been adequately determined.

C. The Genetics of Schizophrenia

The evidence for genetic influence in schizophrenia mostly parallels what has already been outlined for the antisocial personality and alcoholism. While the morbidity risk estimate for schizophrenia in the general population is approximately 1% or less, the risk for parents of schizophrenics is over 4% and for siblings almost 8% (Rosenthal, 1970). Looking at this information slightly differently, the risk for schizophrenia in the children of one schizophrenic parent is almost 10%, while the risk when both parents are schizophrenic is almost 40% (Rosenthal, 1970). Thus, schizophrenia runs strongly in families, with an increased risk for the disorder when multiple relatives are ill. While these studies do not find any simple Mendelian ratios, it is probable that the mode of inheritance fits a multifactorial model, as discussed in the antisocial personality.

As was true with the AP studies, the concordance rate for schizophrenics in identical twins is a good deal higher than that in nonidentical or fraternal twins. While there

is a considerable range in concordance rates between different studies, almost all demonstrate a higher percentage of concordance for identical than for fraternal twins and there is some evidence that the concordance is the same for twins reared apart as it is for those raised together (Rosenthal, 1970; Slater, 1968:15-26).

A sophisticated series of adoption studies have also been carried out with schizophrenics. Kety et al. (1968: 345-362) conducted a study of five schizophrenic adoptees along with matched controls and demonstrated significantly more schizophrenic-type disorders among the biological relatives of the schizophrenic adoptees than in the control subjects. In an adoptee study, Rosenthal et al. (1968:377-391) examined adoptees with schizophrenic biologic parents, as well as a control group, and showed that one-third of the subjects displayed disturbances similar to schizophrenia, while the same was true for only one-seventh of the controls. Heston (1968:149-160) examined the adopted-away offspring of schizophrenic women and showed the morbid risk for schizophrenia to be 17%, which is comparable to that for children of schizophrenics reared by their biological parents. Wender et al. (1968:235-250) compared the biological and adoptive parents of schizophrenics with the parents of a normal control group. The findings showed that both types of

parents of schizophrenics had significantly high levels of pathology. It is possible to conclude that, like the antisocial personality, schizophrenia appears to exist as a spectrum of related disorders which are genetically influenced. The pattern of inheritance does not follow any simple Mendelain formula, suggesting that multiple genes are involved in an interaction with environmental factors.

D. The Association Between Schizophrenia and Antisocial Problems in Adolescence

This material has already been covered under the natural history of schizophrenia. It is worth noting once again, however, that the crimes committed by schizophenics tend to be against property, not persons, and tend to be relatively non-goal-oriented. Because schizophrenics are in need of antisocial act versus the "normal" youth versus the antisocial personality, it is very important that we establish the actual prevalence of schizophrenic problems in juvenile delinquent populations.

E. Policy Implications

It is important that juvenile justice workers acquaint themselves with the diagnosis and course of schizophrenia, that adequate studies be carried out to determine the prevalence of this disorder, and that we monitor the changes

in criminal justice statistics resulting from alterations in mental health commitment and treatment laws.

VI. HYPERKINESIS

A. Definition

The symptom of overactivity in children is related to a variety of causes, including a reaction to stress, an adverse reaction to medication, early manifestations of the antisocial personality, and a syndrome associated with minimal brain damage which is usually acquired at birth. We will discuss some of the possible diagnostic approaches and then set forth what we feel is the most acceptable criterion for use in law and justice settings.

Most authors agree that the diagnosis of hyperkinesis or the hyperactive child syndrome should depend on a constellation of symptoms rather than any one problem (Stewart et al., 1969:861-867). In some investigations, all of the symptoms are behavioral, but other authors note a requirement for neurological impairment. Wender (1978; 1973:187-202), in a series of studies, set forth criteria centering around difficulty in maintaining attention to tasks, poor impulse control, high levels of emotionality and altered interpersonal relatioships, along with motor abnormalities, perceptual-cognitive defects, and a number of possible

congenital bodily stigmata--all of which are subsumed under the heading of minimal brain dysfunction (Rapoport (1974: 386-389; Rapoport and Quinn, 1975:29-44) and others also note the presence of minor physical stigmata associated with hyperactivity, which they see as related to an identifiable subgroup within the broader category of children showing hyperkinesis. Other research presents a neurophysiological model which seems to focus on a low level of brain arousal and inhibition which result in disruptive behavior. Satterfield (1973:274-283) feels that this disruptive label only applies to a subgroup of children diagnosed as hyperkinetic, many of whom will show electroencephalographic (EEG) abnormalities.

From these authors, as well as a review of the literature, it is fairly apparent that hyperactivity itself is a symptom of a number of disorders or unusual circumstances and alone is insufficient to define a syndrome. Diagnoses centering only on behavioral symptoms may outline groups of individuals which overlay greatly with other diagnostic categories, especially those of the childhood antisocial personality. We favor Wender's criteria and designate the disorder as one of minimal brain dysfuention, feeling that

such a distinction is important to avoid dealing with heterogeneous groups of children presenting with a symptom of hyperactivity.

B. The Clinical Course of Hyperkinesis

The typical course of a child presenting with a minimal brain dysfunction and hyperactivity begins with a restless, difficult-to-satisfy infant as a toddler, who is always moving, constantly getting into things, destroying objects, and repeatedly injuring himself. As he enters school, more serious problems begin, as he has difficulties getting along with peers, is easily distracted and frustrated with academic work, and is resistant to guidelines established by teachers. As he progresses into adolescence, the physical overactivity tends to diminish but the problems with short attention span and impaired social interactions continue (Wender, 1978; Wender, 1973; Rapoport et al., 1974:386-389; Connors, 1970:667-682; Riddle and Rapoport, 1976:126-134; Schuckit et al., 1978:79-87).

A number of investigators have followed individuals with this syndrome into late adolescence and adulthood, showing continued problems with attention and concentration, associated with lower levels of achievement in school despite normal intelligence (Weiss, 1971:409-414). This is accompanied by symptoms of emotional immaturity, an

inability to maintain goals, and a poor self image, with some of these children showing antisocial behavior.

Neurologic abnormalities and signs of hyperactivity can continue in a minority of subjects into adulthood, as noted in one fourteen-year follow-up where children who earlier in life carried a hyperactive label also showed enhanced chances for psychiatric hospitalization (Tarter, et al., 1977:761-768; Menkes, et al., 1967:396-399).

C. The Genetics of Minimal Brain Dysfunction Syndrome

As it true elsewhere in this literature review, it is necessary to "cut some corners," grouping a number of studies together, even though the diagnostic criteria between such studies differ. However, it is possible at this point to gather a consensus opinion that the syndrome is genetically mediated.

1. Family Studies

Begining with a group of individuals demonstrating severe hyperkinesis but not necessarily signs of minimal brain dysfunction, Morrison and Stewart (1971:189-195) demonstrated an increased prevalence of antisocial personalitites, hysteria (Briquet's Syndrome) and alcoholism in the mothers and fathers of hyperactive children, noting that this behaviorally defined syndrome may be associated with the antisocial personality

and could be transmitted through families either genetically or environmentally. Using similar criteria, Cantwell found the same association between hyperactive children and parental diagnoses, but in addition noted that 10% of the parents had themselves been hyperactive as children (Morrison and Stewart, 1973: 888-891). These studies, however, were carried out on a heterogeneous group of individuals where it was possible that hyperactivity could be a symptom associated with the antisocial personality spectrum and not a diagnostic entity in itself.

2. Adoption Studies

Again using behavioral criteria, Morrison and Stewart (1973:888-891) interviewed the legal parents of 35 adopted hyperactive children, demonstrating a high prevalence of hysteria, the antisocial personality, and alcoholism in the biological, but not the adopting parent. Similar findings were presented by Cunningham et al. (1975:534-549) who also used behavioral criteria and found a possible association between hyperactivity and an antisocial personality spectrum in parents, while Goodwin et al. (1975:349-353) found that young men who grew up to be alcoholics often demonstrated hyperactivity as children.

These studies demonstrate the need for gathering more information, as it is impossible to reach a solid conclusion about the possible genetic influences on hyperkinetic children with the present data. Family and adoption studies utilizing behavioral criteria do not convincingly demonstrate the genetic relationship within a homogeneous group of hyperactive children, but rather underscore the heterogeneity associated with a behaviorally-oriented diagnosis, with the implication that this syndrome represents the early manifestation of the antisocial personality or alcoholism in at least some individuals.

D. The Association Between Hyperactivity and Juvenile Delinquency

If the most homogeneous and distinct populations of hyperactive children are those with minimal brain dysfunction, there is little data on the strong association between this diagnosis and serious antisocial behavior. However, general information about the symptom of hyperactivity indicates that children with this problem probably have increased chances of interpersonal difficulties, problems in school, and difficulties getting along with teachers and police. Wender points out that the poor implulse control of these children leads to stealing, vandalism, and sexual acting-out, which may well bring the child into contact with

authorities. He (1973) also states that minimal brain dysfunction is the most important cause of underachievement in school. The learning deficits and impaired interpersonal relationships of these children make normal progress through school very difficult.

Much more study is needed on the association between the specific diagnoses of minimal brain dysfunction and juvenile delinquency. Part of the difficulty is due to diagnostic confusion resulting from the poor use of labels.

Those children evidencing hyperactivity as a behavioral syndrome contains subgroups who probably represent pre-alcoholics and pre-antisocial personalities. Goodwin et al. (1975:349-353) found that as children, alcoholics often display hyperactivity. As adolescents, they are frequently truant, delinquent, and disobedient. Their antisocial acts appear to be related to impulsivity and agressiveness. Weiss et al. (1971:409-414) found that 60% of hyperactive subjects were functioning poorly in school, with teachers noting them as being more aggressive and showing more anti-social behavior. Cantwell (1972:414-417) and Morrison and Stewart (1973:888-891) have suggested a genetic association between hyperactivity and the antisocial personality, noting that it is possible that in adolescence or adulthood these

children (like antisocials) are more prone to alcoholism, criminal acts, and other antisocial behaviors.

E. Policy Implications

The entire area of hyperactivity in children is prone to misinterpretation. There is sufficient lack of agreement on diagnostic criteria in the literature to question whether hyperkinesis is part of a spectrum disorder of the antisocial personality, in which case it may be polygenically transmitted, or if it represents a distinct entity associated with minimal brain dysfunction. Before it is possible to come to any conclusions, children diagnosed as hyperactive, antisocial, and having minimal brain dysfunction, as well as their families, must be examined carefully for psychiatric and neurologic pathology. It is necessary to carry out good longitudinal investigations to determine the course of these disorders. In the meantime, there does appear to be a subgroup of individuals with the symptom of hyperactivity, frequently associated with neurologic abnormalities, who dramatically respond to stimulant medication, although the adequate use of any pharmacologic tool will depend upon an adequate definition of samples (Wender, 1978).

First studies rediagnosing children who have been labeled as hyperactive, having minimal brain dysfunction

or antisocial personalities must he done using the more standard diagnostic criteria mentioned in this report (Woodruff et al., 1974). At the same time, a careful examination of these children and their families may provide new distinguishing criteria. After groups can be reliably separated, treatment studies must be carried out to determine which group responds reliably to psychotherapy, to environmental control or to amphetamines and other chemical alterations. Until these series of studies are carried out, it is difficult to assess the literature accurately or to draw reliable conclusions.

VIII. SUMMARY

A careful review of the literature of a series of "psychiatric syndromes" associated with juvenile delinquency which might have a genetic basis uncovered no papers dealing directly with the impact of these problems on juvenile justic systems. We have demonstrated how each syndrome is theoretically associated with the commission of crimes by juveniles. Because each problem is familial and probably genetically influence, these disorders have a great potential impact in adequate treatment and prevention for juvenile crimes.

It is important that juvenile justice system workers learn the proper criteria and the expected natural history for these diagnoses. It is also important that they learn to recognize the enhanced chances for juvenile problems in children coming from the homes of people with these disorders. Furthermore, it is necessary to recognize proper treatments and to establish adequate mechanisms for proper referral.

This review of the literature has underscored the need for good research within juvenile justice systems into the scope of psychiatric disorders, the best methods for prevention and modes of treatment. Unfortunately, we have to start with the very basic step of applying objective and reasonable definitions to populations of young people who are then followed up over time. It is also possible to carry out concurrent studies exposing unique subgroups, such as those with affective disorder, to adequate treatments such as lithium. However, as with prevention studies, it is essential that no level of intervention be carried out except as part of controlled studies.

TABLE 1

SYMPTOMS OF THE ANTISOCIAL PERSONALITY

A. Antisocial	B. Nonantisocial
1) Pathological lying	1) Enuresis
2) Lack of guilt	2) Slovenly, dirty
3) Recklessness	3) Irritable, resentful
4) Sexual perversions	4) Low energy level, lazy, inactive
5) Incorrigibility	5) Inattentive, daydreams
6) Staying out late	6) Odd ideas, paranoid, feelings of unreality
7) Bad companions	7) Cold, unaffectionate
8) Impulsive	8) Sleep restlessness
9) Truant	
10) Runaway	
11) Physical aggression	
12) Poor employment record	
13) Premarital intercourse	
14) Theft	
15) Use of alcohol	
16) Vandalism	

17) Difficulty getting along with contemporaries
18) Use of aliases
19) Marriage before 18
20) Verbal aggression
21) Masturbation
22) Participation in rape
23) Participation in incest
24) Self-exposure
25) Illegitimate pregnancy or fatherhood
26) Excessive sex talk or play

TABLE 2

PAIRWISE CONCORDANCE FOR CRIMINALITY IN PREVIOUS AND PRESENT TWIN STUDIES*

	MZ		DZ--Same Sex		DZ-Opposite Sex	
	No. of Pairs	Percent Concordance	No. of Pairs	Percent Concordance	No. of Pairs	Percent Concordance
Lange, 1929, Germany	13	76.9	17	11.8	10	10.0
LeGras, 1933, Holland	4	100.0	5	0.0	--	--
Rosanoff et al., 1934, U.S.A.	37	67.6	28	17.9	32	3.1
Kranz, 1936, Germany	31	64.5	43	53.5	50	14.0
Stumpff, 1936, Germany	18	61.1	19	36.8	28	7.1
Borgstrm, 1939, Finland	4	75.0	5	40.0	10	20.0
Yoshimasu, 1961, Japan	28	60.7	18	11.1	--	--
Tienari, 1963, Finland	5	60.0	--	--	--	--
Christiansen, 1968, Denmark	81	33.3	137	10.9	226	3.5
Dalgard and Kringlen, 1976, Norway**	49	22.4	89	18.0	--	--
	31	25.8	54	14.9	--	--

* Only concordance rates for adult criminals are included in the table. Some studies include female same sex twin pairs, *i.e., Rosanoff, Kranz, Stumpff, and Christiansen.)

** Broad and strict concepts of crime, respectively.

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