The Long-Term Outcome of Antisocial Personality Disorder Compared with Depression, Schizophrenia, and Surgical Conditions

Donald W. Black, MD, Connie H. Baumgard, BSN, and Sue Ellen Bell, BSN, MA

The objective of this study was to assess the long-term outcome of antisocial personality disorder (APD) compared with depression, schizophrenia, and surgical conditions. Seventy-one men meeting DSM-III criteria for APD and hospitalized at the University of Iowa Department of Psychiatry between 1945 and 1970 were followed up between 1986 and 1990, an average of 29 years after discharge. Comparison groups, collected during the Iowa 500 study, included depressed subjects (n = 225), schizophrenic subjects (n = 200), and surgical control subjects (n = 160). Patients were rated as having good, fair, or poor adjustment for marital, residential, occupational, and psychiatric status. The Global Assessment Scale was also used to rate subjects. At follow-up, antisocial subjects were doing significantly better than schizophrenic subjects for marital and residential, but not occupational or psychiatric, adjustment. Both depressed subjects and surgical controls had significantly better adjustment than antisocial subjects in all areas except residential status. Although these data apply to antisocial men who had been psychiatrically hospitalized, we conclude that APD causes significant long-term impairment in important domains of life.

Antisocial personality disorder (APD) affects up to 5 percent of men and 2 percent of women in the United States and is associated with increased risk of physical illness, frequent use of health-care services, comorbid psychiatric illness, including substance abuse and depression, and high rates of mortality, including suicide and accidental death.[1–4] Additionally the disorder leads to frequent confrontations with the law, significant interpersonal strife, marital discord, poor occupational performance, uncontrolled hostility, and suicide attempts.[4] It is also a predictor of poor treatment response in certain populations.[5, 6] Thus, by any measure, APD cannot be considered benign.

Dr. Black, Ms. Baumgard, and Ms. Bell are affiliated with the Department of Psychiatry, University of Iowa College of Medicine, Iowa City. Address correspondence to: Donald W. Black, MD, Psychiatry Administration, UIHC, 200 Hawkins Drive 2887 JPP, Iowa City, IA 52242-1057.

Reports on the long-term outcome of APD are largely anecdotal. There is a wide variance of opinion regarding outcome, ranging from pessimistic (i.e., that APD is a chronic and hopeless disorder)[7, 8] to optimistic (i.e., antisocial behavior "burns out" by age 40 years).[1, 9, 10] Much of our knowledge about the course of APD comes from a pivotal study by Robins[9] at Washington University in St. Louis in the 1950s. In a longitudinal study of former child guidance clinic patients, she found that of those who were retrospectively diagnosed as sociopathic, 12 percent had remitted, 27 percent had improved, and 61 percent were unimproved. She defined remission as being free of antisocial behavior at the time of interview. In another study, Maddocks[8] followed up 59 antisocial males five years after they had presented to an outpatient psychiatric clinic, and found that one in five had "settled down." Settling down was defined as a reduction in impulsiveness, which allowed the subject to stay at the same job or to stay with the same partner, along with a reduction in the symptoms that had resulted in the original diagnosis. Apart from these studies, there are almost no data concerning outcome in APD that do not come from criminal or forensic settings.

The following data are derived from a long-term field follow-up of subjects with APD. The comparison groups were collected in the Iowa 500 study conducted in the 1970's,[11–13] in which the outcome of subjects with schizophrenia, depression, and surgical conditions was compared 30 to 40 years after index admission; those data are reproduced here to provide perspective. These three groups provide a robust frame of reference for outcome in APD.

Our goal was to follow up antisocial subjects admitted to a tertiary-care psychiatric hospital. Although these subjects may represent a more severe segment of the antisocial spectrum, the information gained is still of great value. Antisocial persons rarely enter psychiatric hospitals because of APD *per se,* but rather for treatment of depression, substance abuse, uncontrolled anger, or for forensic evaluation. Thus our data will be of value to clinicians working in inpatient settings who might benefit from learning about the long-term outcome of formerly hospitalized antisocial patients.

Subjects and Methods

Antisocial Subjects The University of Iowa Psychiatric Hospital records from the years 1945 through 1970 were carefully screened for patients having unequivocal APD. Because that diagnosis was not introduced until 1980, we carefully reviewed the records of persons who had received the diagnosis of *psychopathic personality, sociopathic personality disturbance,* or other diagnoses that suggested antisocial behavior (e.g., explosive personality, antisocial reaction). DSM-III[14] criteria for APD were applied to the case notes and 71 subjects were selected for the study. The study design and methods are described in detail elsewhere.[15]

The case notes were abstracted using an instrument designed by the investigators. We were particularly interested in gathering social, demographic, clinical,

treatment, and outcome data. In addition, based on the chart material, a Global Assessment Scale (GAS) score was assigned to each subject at index admission.[16]

Follow-up Procedures The follow-up took place between 1986 and 1990. An attempt was made to contact and interview all living subjects using the Diagnostic Interview Schedule[17] and the Family History-Research Diagnostic Criteria,[18] as well as a semistructured interview developed by the authors and based on one used by Robins.[9] Informed consent was obtained from all subjects who agreed to an interview. Follow-up data were also collected from other sources including medical records (when available), informant interviews, criminal and motor vehicle records, and death certificates. The success of the follow-up is described elsewhere.[14]

Outcome Assessments Outcome assessments were based on all available information, regardless of whether the patient was living or deceased, contacted or not contacted. Subjects were rated for marital, residential, occupational, and psychiatric adjustment. Subjects were assigned a cross-sectional rating of poor, fair, or good in each of these four categories according to their status at the time of interview or at the time of the most recent information available. This rating scale was developed for use in the Iowa 500 study and consists of definable operational criteria for each variable (see Table 1 for the definitions). Because five subjects were incarcerated at follow-up, we equated incarceration with both mental hospital placement and incapacity due to mental illness (i.e., poor outcome). One subject was living in a halfway house at follow-up and this was equated with nursing or county home placement (i.e., fair outcome). All ratings were done by the senior author after reviewing the raw follow-up material and a narrative prepared by the interviewer.

An illustration of how the ratings worked is as follows: G.C., age 48, was located and interviewed in 1988, 30 years following index hospitalization. He had

Table 1
Definition of Ratings for Outcome at Follow-up*

	Rating		
Status	Good	Fair	Poor
Marital	Married or Widowed	Divorced or Separated	Single, never married
Residential	Own home or relative's residence	Nursing or county home	Mental hospitalization
Occupational	Employed, retired, housewife, or student	Incapacitated due to physical illness	Incapacitated due to mental illness
Psychiatric	None	Some	Incapacitating

*Ratings were cross-sectional and were based on the subject's condition at the time of the follow-up interview, or the date of the last information available from records or informants.

been divorced, but was currently living with a common-law wife in a rented home. He had a poor work history attributable primarily to impersistence at work and chronic drug and alcohol use. He had a long history of arrests and convictions for various offenses, including a recent charge for public intoxication and assault. He was using an alias and was supported by his wife (she received public assistance). He reported that he had not "settled down," was still reckless, and got into frequent fights and arguments. The subject received the following Iowa 500 ratings: marital status, "good," because he had a common-law marriage; residential status, "good," because he lived in his own (albeit rental) home; occupational status, "poor," because he was incapacitated for psychiatric reasons; and psychiatric status, "poor," because his symptoms were incapacitating. He was assigned a GAS score of 32 at intake and 41 on follow-up.

Comparison Subjects The comparison groups were selected and followed up in the Iowa 500 study, and all the follow-up data has been previously published.[11–13] The schizophrenic and depressed groups were diagnosed using the St. Louis criteria[19] and were hospitalized between 1934 and 1944. The group with surgical conditions (the "control" group) consisted of 160 appendectomy and herniorrhaphy patients admitted to the surgical department at the University of Iowa Hospital between 1938 and 1948. The group with surgical conditions was selected because it was believed to represent a relatively nonbiased sample similar in socioeconomic status to the groups with depression and schizophrenia. They were reportedly psychiatrically symptom-free at intake.[12] The methods used for patient selection, follow-up, and cross-sectional ratings in the Iowa 500 studies are reported elsewhere.[11–13]

Results

The success of the follow-up is summarized in Table 2, and the outcome of subjects with APD is contrasted to subjects with depression, schizophrenia, or surgical conditions. We successfully traced almost 96 percent of the antisocial men, a figure comparable to the other groups. We

Table 2
Description of Study Subjects for Rating Follow-up Information

Variable	Diagnostic Groups			
	APD	Depression	Schizophrenia	Control
Number of patients	71	225	200	160
Mean age ± SD at admission, years	25 ± 6	44 ± 12	29 ± 8	32 ± 14
Number (%) traced	68 (96)	223 (99)	195 (98)	153 (96)
Number (%) rated of those traced	52 (76)	212 (95)	186 (95)	144 (94)
Number (%) deceased of those traced	17 (25)	162 (73)	77 (39)	54 (35)
Mean age ± SD at death, years	52 ± 12	66 ± 13	52 ± 16	62 ± 15
Mean age ± SD of living, at follow-up, years	54 ± 9	72 ± 10	64 ± 7	61 ± 11

obtained adequate information to rate 52 (76%) antisocial subjects, although the information was sufficient to rate only 5 subjects on the first three variables (i.e., marital, residential, and occupational adjustment). Table 2 also shows the number and percentage of the deceased and living subjects. The mean age ± SD at death for antisocial subjects was 52 ± 12 years with a range from 33 to 79 years; the mean age ± SD at follow-up for the living was 54 ± 9 years with a range of 41 to 79 years. Subjects were followed up a mean ± SD of 28.7 ± 7.4 years after hospital discharge.

As shown in Figure 1, antisocial subjects were significantly more likely than schizophrenic subjects to have experienced a "good" outcome for marital and residential adjustment, but were not significantly different for occupational and psychiatric status. Antisocial subjects were less likely to have had "good" outcomes, in all categories except residential status, than were subjects with depression or surgical conditions. The antisocial subjects had "good" marital, residential, occupational, and mental outcome in 42.3 percent, 80.8 percent, 46.2 percent, and 21.3 percent of cases, respectively.

An inverse pattern of "poorer" outcomes emerged across the four diagnostic groups (Fig. 2). Here the differences in marital, residential, occupational, and psychiatric status between the antisocial subjects, depressed subjects, and surgical control subjects were less striking. Antisocial subjects continued to have significantly better functioning for marital and occupational adjustment than schizophrenic subjects. Antisocial subjects had a poorer outcome for occupational and

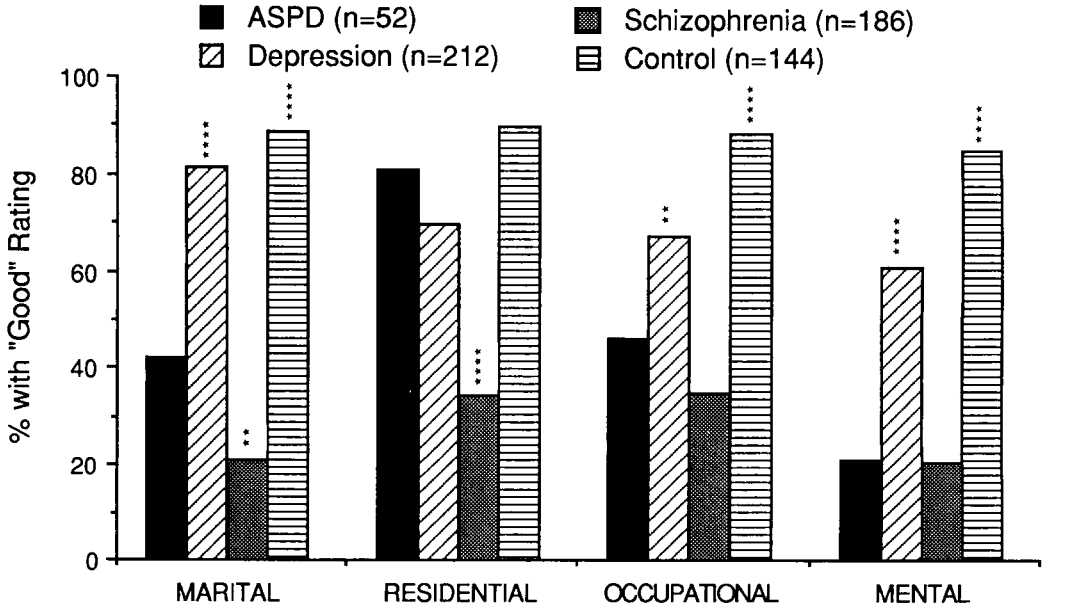

Figure 1. Comparison of "good" outcomes in four categories across four patient groups. Significance levels refer to comparisons with the antisocial group: $^{**}p < .01$; $^{****}p < .0001$. Information was available to rate 47 antisocial patients in the *mental* category. ASPD indicates antisocial personality disorder.

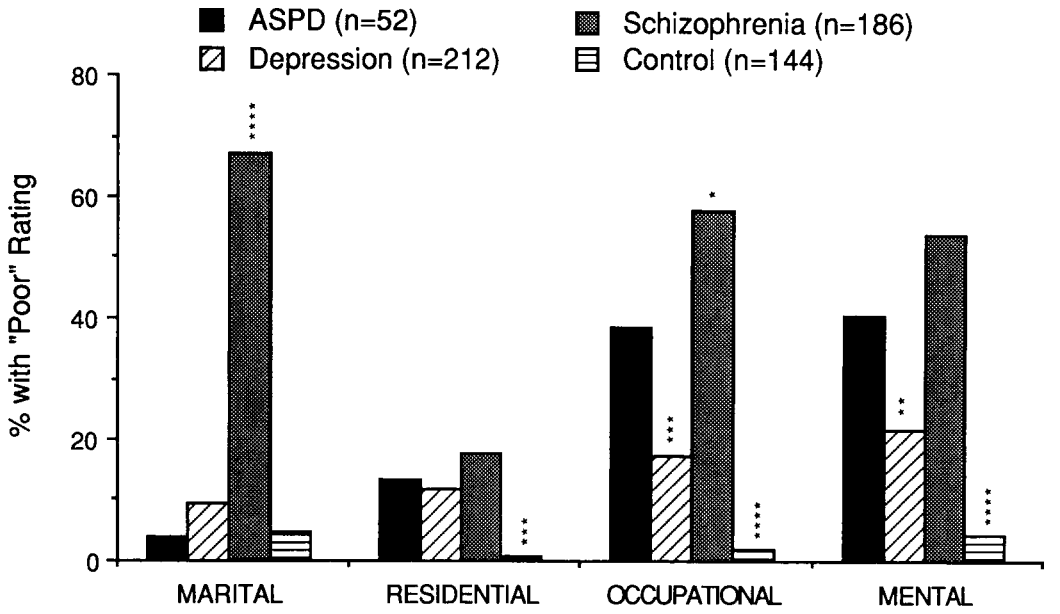

Figure 2. Comparison of "poor" outcomes in four categories across four patient groups. Significance levels refer to comparisons with the antisocial group: $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$; $^{****}p < .0001$. Information was available to rate 47 antisocial patients in the *mental* category. ASPD indicates antisocial personality disorder.

mental status than depressed subjects. Antisocial subjects had poorer outcome than surgical control subjects in all areas except marital status. The ratings were "poor" for marital, residential, occupational, and mental outcome in 3.8 percent, 13.5 percent, 38.5 percent, and 40.4 percent of cases, respectively.

In subjects with APD, the GAS score at index admission had a positive relationship with the likelihood of "good" outcome at follow-up, although the only significant difference was for occupational functioning among persons with a score under 30 and those with scores of 50 or higher. (Fig. 3).

Discussion

The study suggests that APD carries with it significant long-term risk of impairment in several domains of life. Following an average interval of 29 years, many of our subjects remained significantly impaired in terms of their marital, residential, occupational, and psychiatric adjustment. The proportion of antisocial subjects with a "good" outcome was significantly worse than for surgical control subjects in all categories except residential status, but significantly better than for schizophrenic subjects for marital adjustment and housing. They were almost as impaired as schizophrenic subjects in terms of occupational adjustment and psychiatric symptoms. They scored worse than depressed subjects for marital and occupational adjustment and psychiatric symptoms. These comparisons are important in that they show that APD creates significant life-long disability, moreso

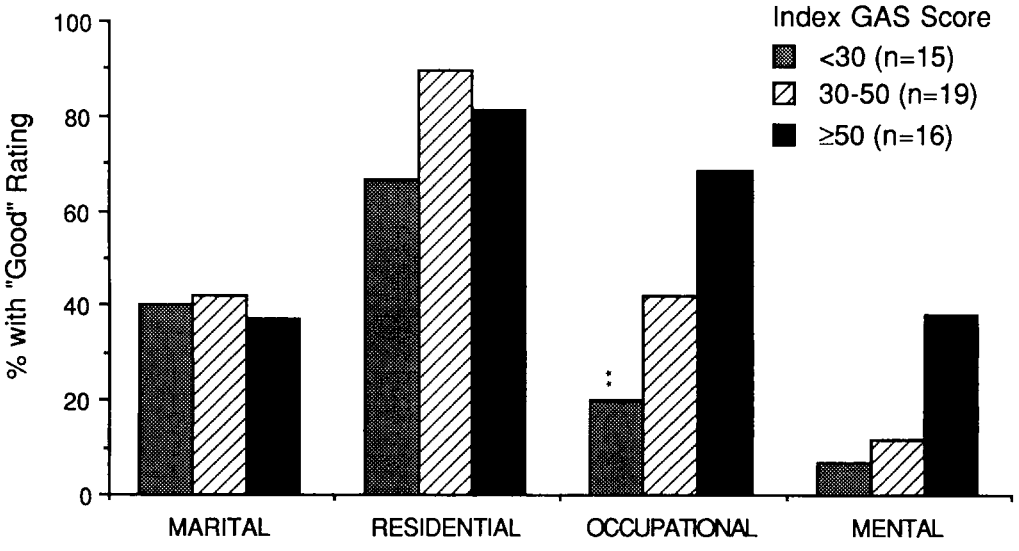

Figure 3. Comparison of "good" outcomes in four categories among antisocial patients by GAS score at index admission. Significance levels refer to comparisons with the 50 or higher group: $^{**}p < .01$. In the *mental* category, n = 17, index GAS score of 30 to 50; n = 13, index GAS score of 50 or higher.

than depression and nearly equaling the disability found in schizophrenia in some domains of life.

Although APD is frequently thought of as having a poor outcome, other than Robins'[9] work, the outcome in different life domains has not been described. Among the 52 antisocial subjects rated, 42 percent received a rating of "good" for marital status, 81 percent for housing, 46 percent for occupational and 21 percent (of 47 rated) for psychiatric status. The results are compatible with the general picture of persons with APD; the poor marital status reflects their failure to develop stable interpersonal relationships, although they do better than schizophrenic patients who have little or no interest in social relationships. They do well in residential status, since they generally are able to care for themselves and have no need for institutional care (other than from incarceration), unlike schizophrenic patients. Their poor outcome in occupational status reflects their failure to sustain consistent employment. Their outcome in this category is little better than that for schizophrenic patients. Antisocial subjects had a very poor outcome in psychiatric status, which suggests that even when legal problems subside, substantial antisocial behaviors remain, or that equally disabling symptoms such as alcoholism or drug abuse develop. Only a minority of the antisocial subjects in our study seemed to be free of psychiatric symptoms at follow-up.

An interesting finding from the study was the positive relationship between initial symptoms assessed with the GAS during index hospitalization and functioning 30 years later, at least for occupational adjustment. This finding suggests that the more severe the illness initially, the

greater its impact on occupational success, probably because the illness disrupts educational achievement and persistence at work and causes interpersonal problems. All of these factors combine to disrupt occupational achievement.

We believe our study is strengthened by comparisons with the Iowa 500 results. First, the Iowa 500 study and the current antisocial follow-up involve Iowans admitted to the same hospital; it is highly likely that subjects in each study are similar in social status and educational background. Since our hospital opened in 1920, it has primarily provided care for the indigent and noninsured; therefore, our patients have always represented a certain segment of the Iowa community. Although there was little direct overlap of the study years (the Iowa 500 schizophrenic and depressed subjects were admitted between 1934 and 1944, the surgical control subjects between 1938 and 1948, and the antisocial subjects between 1945 and 1970), the follow-up periods substantially overlap (i.e., 1934 to 1976 for the Iowa 500 subjects, and 1945 to 1990 for subjects with APD), and the length of follow-up itself is comparable (i.e., between 28 and 34 years for Iowa 500 subjects and 29 years for subjects with APD). Furthermore, the outcome variables are objectively defined in terms that are probably not greatly affected by secular trends. We purposely chose to follow a later cohort than that studied in the Iowa 500 for the practical reason that it would facilitate follow-up. We hypothesized that antisocial subjects would be difficult to trace; to look for an earlier cohort of subjects would have made our task much more difficult. Also, had we selected an earlier cohort, more subjects would have died, meaning that fewer would be available for follow-up.

Several problems complicate our analysis. The antisocial men in this study may not be representative of persons with APD as a whole, because they may have been more severely affected than nonhospitalized antisocial subjects and may have suffered more comorbidity (e.g., depression, alcoholism). Only antisocial individuals in a prison setting are probably more seriously afflicted. Because criteria for APD have been widely used only since 1980, we may have missed antisocial subjects and excluded them from follow-up when we initially screened the charts. Nevertheless, the study subjects were clearly ill, were undeniably antisocial, and are probably representative of persons with APD who are psychiatrically hospitalized. Our description of these subjects at baseline[15] is compatible with other accounts of APD.[9, 10] We acknowledge that it would have been better to select contemporaneous comparison groups, better matched in terms of gender, age, years of admission and pay status (public versus private), which would also have allowed a blind evaluation, but budgetary constraints precluded this option.

Some may argue with our decision to equate imprisonment with poor residential and occupational adjustment, because these categories may not fully describe the subject's outcome. We believe the comparison is apt, because in fact imprisoned subjects are institutionalized and are unable to work due to the incapacitating

antisocial symptoms that resulted in imprisonment. In any event, were we to exclude these imprisoned men from our analysis, the results would not change in any substantial way.

The outcome study must also be viewed in light of our method for selecting study subjects. We used the DSM-III criteria for APD, which have been criticized for their polythetic approach to diagnosis. This approach focuses on overt symptoms rather than internal defining characteristics such as lack of remorse, inability to experience guilt, and difficulty in establishing relationships.[20, 21] Although not perfect, these criteria are associated with a course and outcome distinct from schizophrenia and depression and subjects with surgical conditions. Although some[22] have criticized the use of operational criteria for sacrificing validity at the altar of reliability, our data would suggest otherwise. The use of objective, reliable criteria allows us to identify a homogeneous group of patients who have a characteristic outcome on follow-up.

Acknowledgment

The authors wish to thank Patrick Monahan for his technical assistance.

References

1. Robins LN: Epidemiology of antisocial personality, in Psychiatry. Edited by Michels R, Cavenar J. Philadelphia, PA: JB Lippincott, 1987, pp 1–14
2. Woodruff RA, Clayton PJ, Guze SB: Suicide attempts and psychiatric diagnosis. Dis Nerv Syst 33:617–9, 1972
3. Woodruff RA, Guze SB, Clayton PJ: The medical and psychiatric implications of antisocial personality (sociopathy). Dis Nerv Syst 32:712–14, 1971
4. Garvey MJ, Spoden F: Suicide attempts in antisocial personality disorder. Compr Psychiatry 21:146–9, 1980
5. Woody GE, McLellan T, Laborsky L, O'Brien CP: Sociopathy and psychotherapy outcome. Arch Gen Psychiatry 42:1081–6, 1985
6. Mather DB: The role of antisocial personality in alcohol rehabilitation treatment effectiveness. Milit Med 152:516–18, 1987
7. Cleckley H: The Mask of Sanity: An Attempt to Clarify Some Issues About the So-called Sociopathic Personality (ed 5). St. Louis: CV Mosby, 1976
8. Maddocks PD: A five year follow-up of untreated psychopaths. Br J Psychiatry 116:511–15, 1970
9. Robins LN: Deviant Children Grown Up. Baltimore, MD: Williams and Wilkins, 1966
10. Goodwin D, Guze SB: Sociopathy (antisocial personality), in Psychiatric Diagnosis (ed 4). New York: Oxford University Press, 1989, pp 209–25
11. Clancy J, Tsuang MT, Norton B, Winokur G: The Iowa 500: a comprehensive study of mania, depression, and schizophrenia. J Iowa Med Soc 394–6, 398, Sept 1974
12. Tsuang MT, Woolson RF, Fleming JA: The long-term outcome of major psychoses, I: schizophrenia and affective disorders compared with psychiatrically symptom-free surgical conditions. Arch Gen Psychiatry 39: 1295–301, 1979
13. Coryell W, Tsuang MT: Outcome after 40 years in DSM-III schizophreniform disorder. Arch Gen Psychiatry 43:324–8, 1986
14. American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders (ed 3). Washington, DC: APA, 1980
15. Black DW, Baumgard CH, Bell SE: A 16 to 45 year follow-up of 71 males with antisocial personality disorder. Compr Psychiatry 1995, in press
16. Endicott J, Spitzer RG, Fleiss JL, Cohen J: The Global Assessment Scale: a procedure for measuring overall severity of psychiatric disturbance. Arch Gen Psychiatry 33:766–71, 1976
17. Robins LN, Helzer JE, Croughan J, Ratcliff KS: National Institute of Mental Health Diagnostic Interview Schedule. Arch Gen Psychiatry 38:381–9, 1981
18. Andreasen NC, Endicott J, Spitzer RL, Winokur G: The family history method using diagnostic criteria. Arch Gen Psychiatry 34: 1229–38, 1977

19. Feighner JP, Robins E, Guze SB, Woodruff RA, Jr, Winokur G, Munoz R: Diagnostic criteria for use in psychiatric research. Arch Gen Psychiatry 26:57–63, 1972
20. Hare RD: Diagnosis of antisocial personality disorder in two prison populations. Am J Psychiatry 140:887–90, 1983
21. Gerstly LJ, Alterman AI, McLellan AT, Woody GE: Antisocial personality disorders: a problematic diagnosis? Am J Psychiatry 147, 173–8, 1990
22. Widiger TA, Frances A: Axis II personality disorders: diagnostic and treatment issues. Hosp Community Psychiatry 36:619–27, 1985