

# Applying Impairment Criteria to Children's Psychiatric Diagnosis

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**Abstract.** This paper examines the effect of applying impairment criteria using the Children's Global Assessment Scale on rates, agreement between informants, and recall of diagnosis over 2 years in a sample of 220 offspring of depressed and nondepressed parents. The findings show that the offspring of depressed parents, compared with nondepressed parents, were more impaired overall. The rates of most psychiatric disorders in both groups of children were markedly reduced when impairment criteria were applied. The application of impairment criteria improved agreement between mother and child on many of the children's diagnoses and also improved stability of recall of child's diagnosis at 2-year follow-up. Long-term follow-up studies are needed to determine the clinical consequences for children who meet diagnostic criteria for psychiatric disorder but who have minimal functional impairment. *J. Am. Acad. Child Adolesc. Psychiatry*, 1990, 29, 5:789-795. **Key Words:** impairment criteria, Global Assessment Scale, psychiatric diagnosis.

There is a long history in psychiatry of interest in patients' functioning or impairment, as distinct from symptoms or diagnosis (Weissman et al., 1983). Impairment criteria have been shown to be sensitive predictors of treatment outcomes in clinical trials (Weissman et al., 1974) and to differentiate familial from non-familial depression in family-genetic studies (Gershon et al., 1986). The concept of impairment or adaptive functioning has been incorporated into *DSM-III* as Axis V rated on a 7-point scale (Williams, 1985; Skodal et al., 1988a). It has been additionally amplified in the *DSM-III-R* on a 90-point scale, the Global Assessment of Functioning (GAF) (Skodal et al., 1988b). The GAF is a hybrid of two scales: the Global Assessment Scale (GAS) (Endicott et al., 1976) for adults; and the Children's Global Assessment Scale (CGAS), a version developed for children (Shaffer et al., 1983). Systematic impairment criteria have been used only recently in the psychiatric assessment of nonreferred children and adolescents (Shaffer et al., 1983; Beardslee et al., 1985; Anderson et al., 1987; Bird et al., 1987, 1988; Cohen et al., 1987; Offord et al., 1987; Costello et al., 1988). Impairment criteria may be of importance in clarifying at least two puzzling but consistent findings in recent diagnostic studies of children. Children and adolescents in nonreferred samples, when assessed with structured diagnostic interviews, report

high rates of symptoms and thus meet criteria for many psychiatric disorders (Beardslee et al., 1983; Orvaschel, 1983; Weissman et al., 1987a). There is considerable disagreement between parents and children in both epidemiological and clinical samples on the presence of psychiatric symptoms in children (Weissman et al., 1987b).

Following the development of scales that assess overall functioning in adults (Lubersky, 1962; Endicott et al., 1978), the CGAS was developed by Shaffer et al. (1983) to allow a rater to synthesize information about the functioning of children into a single index of severity of disturbance. This paper examines use of the CGAS in a sample of 220 offspring of depressed (cases) and nondepressed parents (controls). In this study (as in several others of similar design by other investigators), high rates of *DSM-III* psychiatric disorder were found in the children. While the relative differences in rates between children of cases and controls suggested that parental depression was a risk factor for children's psychopathology, the absolute rates of disorder found in children were troublesome. The rates were highest when children's reports were used, and there was discrepancy between mother's and child's reports of child's psychopathology (Weissman et al., 1987b).

This paper has two purposes: first, to examine the properties (relationship to demographic characteristics, agreement between informants, discrimination between groups) of the CGAS, separately from the child's diagnosis; second, to examine the effects of applying CGAS criteria to child's diagnosis on the rates, agreement between informants, and stability of child's diagnosis.

## Method

### Sample

For a complete description of study design and assessments, see Weissman et al. (1987a). This study is based on 220 children at high and low risk for major depression by virtue of the presence or absence of major depression in their parents (probands). Parents were participants in a family study of major depression. When the initial family-genetic study of parents began, these children were infants to 17 years of age. The children were interviewed for the new study 6

Accepted January 30, 1990.

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This research was supported in part by the National Institute of Mental Health Grants #MH36197 and #MH28274 and by Grant #86-213, Child and Adult Depressive Disorders: A Test of Continuities Using Family-Genetic Data, from the John D. and Catherine T. MacArthur Foundation. Appreciation is expressed to Ewald Horwath, M.D., Gerald L. Klerman, M.D., Laura Mufson, Ph.D., Donna Moreau, M.D., Carl Anderson, M.D., Hector Bird, M.D., and Jennifer Lish, Ph.D., for their helpful comments, and James Leckman, M.D., and G. Davis Gammon, M.D., for their best estimate diagnoses.

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years later, when they were 6 to 23 years of age. The parents' clinical status was reassessed when the children were interviewed.

Previous reports from this study have compared 125 Children of 56 depressed proband parents with 95 children of 35 normal proband parents. In psychiatric assessments of probands and their spouses taken at the time of the study of children, three normal probands and six spouses of normal probands reported a lifetime history of major depression; the depressed parents from these nine families had 28 children. The present report compares 153 children from 65 families with one or more depressed parents with 67 children from 26 families with neither parent depressed. Of the 220 children, 105 were boys and 115 were girls. Thirty-five children were prepubertal (6 to 11 years of age); 92 children, from 12 to 18 years; and 93 children, from 19 to 23 years. The mean age for the children was about 17 years. There were no significant differences in the age and sex distribution of children by parents' diagnostic status. All subjects in the study were white in order to reduce one source of genetic heterogeneity.

Major depression in parents was defined according to the Research Diagnostic Criteria (modified to require 4 weeks duration of symptoms and impairment in a major social role) and was assessed using the Schedule for Affective Disorders-Lifetime Version (SADS-L) (Endicott and Spitzer, 1978). The parents comprising the nondepressed group, originally identified in a community survey, reported no history of psychiatric illness in at least four direct interviews (the last two using SADS-L) given over an 8-year period.

#### *Assessment of Children*

The Schedule for Affective Disorders and Schizophrenia for School-Aged Children, Epidemiologic Version (K-SADS-E) (Orvaschel et al., 1982), slightly modified to make *DSM-III* diagnosis, formed the core of a comprehensive interview administered to the parents about the child and to the child about him/herself. Interviewers, who were blind to the parents' diagnoses, interviewed a parent (usually the mother) about the child, and at a later time, interviewed the child alone. The battery of measures included an assessment of each child's IQ (Wechsler, 1974; Dunn and Dunn, 1981), school performance (John et al., 1987), and treatment history.

Diagnoses in children were made according to a "best estimate" procedure in which a child psychiatrist and psychologist, who were not involved in the interviewing, reviewed all sources of information and independently assigned a lifetime *DSM-III* diagnosis (Leckman et al., 1982). Discrepancies in diagnoses by the independent evaluators were resolved by a third source, who also independently and blindly reviewed all available information. In an attempt to assess the reliability of the best estimate procedure, a second child psychiatrist independently and blindly reviewed all available information on 38 randomly selected children and made best estimate diagnoses. Agreement between psychiatrists on children's diagnoses (as measured by the kappa coefficient) was excellent. The following kappa coefficients were generated from the reliability study: major depression, 0.89; anxiety disorder, 0.69; conduct disorder, 0.93; and any diagnosis, 1.00. Intraclass correlations between psychiatrists

on the child's CGAS scores assessing average functioning over a lifetime was 0.93.

#### *Global Assessment Scale (for Children)*

The CGAS adapted from the adult version was designed to measure overall severity of child's functioning. Scores range in a value from 1 for the most impaired child to 100 for the highest functioning. Behaviorally oriented clinical descriptions are available for each decile, but a single numeric score of severity of functioning can be made at any point along the scale. The scale was designed for children 4 to 16 years of age. Usually, the lowest level of functioning in a specified time period is rated. The interrater and test-retest reliability, and discriminant and concurrent validity in patient and in epidemiological samples have been described elsewhere by Shaffer et al. (1983) and Bird et al. (1988).

In the original clinical studies, the mean GAS score was 65.4 for outpatients and 46 for inpatients. A cutoff score of 70 was recommended to define a case. In the Bird et al. (1987) study, children drawn from the community with a diagnosis had a mean CGAS of 71.4 and those with no diagnosis a mean of 81.7. A discriminant function analysis showed that a cutoff score of 65 increased the predictive capacity of child diagnosis to 90.4%. Based on the discriminant functions generated at other cutoffs, a lower cutoff of 61 was recommended (Bird et al., 1990). A CGAS of 60–51 is defined as variable functioning with sporadic difficulties in several, but not all social areas; a CGAS of 50–41, which is used in some of the analyses in the paper, is defined as moderate degree of interference in functioning in most social areas or severe impairment of functioning in one area.

In this study, the time frame for CGAS rating is average functioning over a lifetime, taking into account severity and chronicity of episodes. The GAS was rated by the interviewer at the end of an interview after the full diagnostic and clinical assessment of the child was completed with the mother, and separately with the child. CGAS scores are available based on 214 interviews with the mother about the child. Separate CGAS scores are also available based on 181 interviews with the child. A third CGAS rating was made on all 220 children by a child psychiatrist based on all available information. All raters were blind to the parental diagnosis. Unless otherwise indicated, the CGAS scores presented here are based on a child psychiatrist's best estimate diagnoses.

#### *Two-Year Follow-up*

Two years after the initial interviewing, all 91 families in the original sample were recontacted. Eighty-five (93%) of the 91 families with a total of 203 children from the original sample consented to participate. Children 6 to 18 years of age ( $N = 127$ ) at initial interview were followed up using an identical assessment battery as at the initial interview, including interviews with the mother about the child and direct interviews with the child. In order to reduce interviewer burden, parents were not asked to provide information about children who were older than 18 years ( $N = 93$ ) at the initial interview.

Of the children 6 to 23 years of age, 72.7% (160/220) were directly interviewed. Reasons for attrition included: proband

TABLE 1. Demographic Characteristics by Child's CGAS Score

	CGAS Score	
	Less than 61 (N = 74)	61 + (N = 146)
Sex of child male, N (%)	39 (52.7)	66 (45.2)
Age of child, $\bar{X}$ (SD)	18.3 (4.0)	15.9 (4.8)***
Social class, N (%)		
I or II	11 (15.1)	44 (30.3)
III	16 (21.9)	31 (21.4)
IV	35 (47.9)	61 (42.1)
V	11 (15.1)	9 (6.2)*
Catholic, N (%)	52 (70.3)	101 (69.2)
Protestant	8 (10.8)	26 (17.8)
Jewish	2 (2.7)	4 (2.7)
Other	12 (16.2)	15 (10.2)
IQ Score		
PPVT, $\bar{X}$ (SD)	95.0 (13.8)	102.6 (14.1)**
Special classes, N (%)	20 (28.6)	14 (11.2)**
Treatment for emotional problems, N (%)	45 (60.8)	27 (18.5)***
Suicide attempts/gestures, N (%)	14 (18.9)	0 (0.0) <sup>a</sup> ***

Note: Missing data accounts for figures not adding up to number of children in sample.

<sup>a</sup> Fisher's exact test.

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

refused contact with the entire family or the younger children in the family; direct refusal by child or by the mother to be interviewed; and inability to contact the child (e.g., child was in the military). The 160 children who were directly interviewed did not differ from the 60 children not directly interviewed by sex, age, parental status, social class, diagnosis, or best estimate CGAS score at initial interview. Of the children 6 to 18 years of age, 54% (89/127) had interviews with the mothers about the children. The children whose mothers agreed to the interview ( $N = 69$ ), compared to children whose mothers refused ( $N = 58$ ), did not differ by sex, social class, parental diagnoses, or rates of other diagnoses in children at initial interview. The children of the refusers, however, were more likely to have a diagnosis of conduct disorder and to be more impaired (CGAS score  $< 61$ ) at initial interview.

*Statistical Analysis*

The association between impaired CGAS ratings (scores below 61) and demographic variables, treatment status, behavior, and rates of positive diagnoses were tested using chi-squared analysis. *T*-tests were used to compare mean IQ scores, Peabody Picture Vocabulary Test, of offspring with impaired CGAS scores and unimpaired CGAS scores. Demographic characteristics, IQ score, treatment, suicidal behavior, and parental clinical status were examined as predictors of CGAS scores in a maximum likelihood multiple logistic regression using the SAS LOGIST procedure (SAS Institute, 1986). Kappa coefficients, indices of chance corrected agreement (Fleiss, 1981), were calculated to assess agreement between informants on diagnoses. Standards used

TABLE 2. Child's CGAS Scores by Source of Information and Parent Proband Group

	One or More Parent Depressed	Neither Parent Depressed	Significance of Difference
Mother's report CGAS score	(N = 147)	(N = 67)	
Mean (SD)	73.9(15.3)	82.0(12.9)	***
Median	75	85	
% < 61	38.1	22.4	*
Child's report CGAS score	(N = 118)	(N = 63)	
Mean (SD)	67.0(14.2)	77.9(13.9)	***
Median	66.5	80.0	
% < 61	41.5	22.2	**
Psychiatrist best estimate CGAS score	(N = 153)	(N = 67)	
Mean (SD)	64.9(14.8)	74.3(14.1)	***
Median	65	75	
% < 61	38.6	22.4	*

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

for evaluating agreement between informants were as follows: coefficients below 0.40 were considered poor agreement; 0.40 to 0.59, fair agreement; 0.60 to 0.74, good agreement; and coefficients of 0.75 and above, excellent agreement. Intraclass correlation coefficients (ICC) (Shrout and Fleiss, 1979) were calculated to evaluate the correspondence between CGAS ratings based on different informants. Intraclass correlation coefficients and paired *t*-tests were used to evaluate the 2-year stability of CGAS ratings.

**Results**

*Characteristics of Family and Children by CGAS Scores*

Table 1 compares children by CGAS scores using 61 as the cutoff score. CGAS scores were not related to child's sex or religion. However, older children and those from lower social class families were rated as significantly more impaired. CGAS scores below 61 were also associated with lower IQ scores, assignment to special classes (e.g., for math, attention, or discipline problems), treatment for emotional problems, and suicide attempts or gestures. When these variables are put into a logistic regression model, only treatment, age of the offspring, and low IQ were predictors of a CGAS score below 61. Treatment was the strongest predictor and remained significant after controlling for parental clinical status.

*CGAS Scores by Informants*

As reported previously, all CGAS ratings were made blind to the clinical status of the parents. Table 2 shows that the children with one or more parents depressed, compared with no parent depressed, have lower CGAS scores (more impairment), whether derived from mother or child's report, or from a child psychiatrist's best estimate judgment. Between 38.1% and 41.5% of the children of depressed parents and 22.2% to 22.4% of the children, where neither parent was

TABLE 3. Lifetime Rates/100 of Diagnosis in Children with and without CGAS Impairment Criteria, by Parent Proband Group

Child's Diagnosis	No CGAS Criteria <sup>a</sup>			<61 CGAS Criteria <sup>b</sup>		
	Parent 1 +	Depressed Neither	Relative Risk	Parent 1 +	Depressed Neither	Relative Risk
	Rate/100	Rate/100		Rate/100	Rate/100	
Major depression	35.3	22.4*	1.57	25.5	11.9**	2.14
Strict criteria depression <sup>c</sup>	28.1	13.4**	2.09	20.9	9.0**	2.32
Any anxiety	39.9	17.9***	2.23	22.9	7.5***	3.05
Attention deficit	6.5	4.5	1.44	5.2	4.5	1.15
Conduct disorder	22.9	13.4	1.70	18.3	10.4	1.76
Substance abuse	14.4	9.0	1.60	9.8	7.5	1.40
Any diagnosis	75.8	56.7***	1.33	38.6	22.4**	1.72
(Nchildren)	(153)	(67)		(153)	(67)	

Note: Significance is between one or more parents depressed and neither parent depressed.

\* $p < 0.059$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

<sup>a</sup>Child must meet *DSM-III* criteria for the diagnosis.

<sup>b</sup>Child must meet *DSM-III* criteria for the diagnosis and have a CGAS score under 61 to be considered a case.

<sup>c</sup>Requires 4 weeks duration and impairment in major social role.

depressed (depending on source of information or informant), scored below the cutoff score of 61.

#### Agreements between Informants

Agreement on CGAS score was highest between ratings made following the child's interview and the child psychiatrist's best estimate diagnosis (ICC = 0.89). Agreement on ratings made following interviews with mothers and children and between mother's and the psychiatrist's best estimate diagnoses were good but lower (ICC = 0.58 and ICC = 0.64, respectively).

#### Sensitivity to Change

Eleven children who had no psychiatric disorder, current or lifetime at initial interview, developed a first onset over the 2-year period. Nine of the 11 children were from families with depressed parents. The mean CGAS change between Time 1 and 2 for these children was 12.9 (standard error = 3.5), compared with 3.8 (standard error = 0.38) in the 217 children who did not have first onsets. The range for the 11 with new onsets was 0 to 38 and for the group without onsets, -10 to 25. These results suggest that the CGAS was sensitive to changes in the child's clinical status and indicates that the children with new onsets were more impaired.

#### Child's Diagnosis by CGAS Scores

Table 3 shows the rates of a child's psychiatric disorders by parent proband group when no CGAS impairment criteria and when CGAS criteria <61 were applied. Applying impairment criteria markedly reduced the rates of most disorders in children. The reduction in rates with impairment criteria were considerable for major depression, and anxiety disorder, and any psychiatric disorder; it was slightly less for conduct disorder and substance abuse. While the absolute rates for disorder in children declined with the use of impairment criteria, the differences in rates of disorders between children of depressed and nondepressed parents remained, regardless

of impairment criteria. However, differences in rates of major depression in a child by parent proband group were more pronounced when impairment criteria were used: relative risk of 1.57 with no impairment criteria and 2.14 with a CGAS score <61. When the relative risks were adjusted, controlling for age and sex of child, the results did not change (not shown here).

#### Agreement on Diagnosis by CGAS Score

Table 4 shows that the agreement on child's diagnosis of major depression, when assessment materials from child and mother are compared, was improved when impairment criteria <61 and <51 were applied. This produced a Kappa of 0.30 when no CGAS criteria were used and Kappas of 0.49 and 0.65 when CGAS criteria of <61 and <51, respectively, were used. While the *N*'s are low in the <51, CGAS group and caution must be exerted in interpreting results, the direction of the findings is of interest. The agreement on child's diagnosis improves for the other disorders upon the application of impairment criteria of <51 and not for <61, particularly for attention deficit, conduct disorder, and substance abuse, and less so for anxiety or any disorder.

#### Stability of Diagnosis by CGAS Criteria

Table 5 shows the stability of recall of child's lifetime diagnosis at 2-year follow-up. Stability is defined as percent of children who report the same diagnosis at both initial and at 2-year follow-up interview. Only children who had the particular diagnosis at initial interview are included in the analysis. Impairment criteria (<61) resulted in significantly more stable recall of diagnosis for major depression, anxiety disorder, and any disorder and had little effect on the recall of substance abuse and conduct disorder. The stability of attention deficit disorder based on child's report and any diagnosis based on CGAS from mother's reports could not be tested because of low numbers. As noted previously, mothers

TABLE 4. Agreement between Mother and Child on Child's Diagnoses at Initial Interview by CGAS Scores (N = 175)

	No CGAS Criteria	CGAS Score	
		<61	<51
Child's disorder	Kappa	Kappa	Kappa
Major depression	0.30	0.49	0.65
Anxiety disorder	0.25	0.27	0.38
Attention deficit	0.34	0.21	0.80
Conduct disorder	0.36	0.27	0.55
Substance abuse	0.07	-0.02	0.56
Any diagnosis	0.27	0.35	0.42

of children over 18 years of age were not reinterviewed at the 2-year follow-up by design.

**Discussion**

*Summary of Findings*

The major findings on the application of impairment criteria in the sample of 220 children 6 to 23 years of age of depressed and nondepressed parents are:

1. CGAS scores <61 differentiated a group of children who were more impaired as reflected in lower IQ, more special classes, more psychiatric treatment, and suicide attempts.
2. The children of depressed parents, compared with the children of nondepressed parents, were significantly more impaired, whether CGAS was based on interviews with the mother, with the child, or on the child psychiatrist's best estimate judgment. The mean CGAS scores, 64.9 for children of depressed parents, were similar to those reported by Shaffer et al. (1983) in a sample of children in outpatient treatment for psychiatric disorder. The mean CGAS score for children where neither parent was depressed was 74.3, which is in the normal range suggested by studies done by Shaffer et al. (1983) and Bird et al. (1987).
3. Agreement between sources of information (mother, child, psychiatrist) was good. The child psychiatrist's judgments had the highest agreement with ratings based on information derived from the child's interview.
4. The number of first onsets of psychiatric disorders in the children was low over a 2-year period; thus, caution must be exerted in drawing conclusions. However, the 11 new onsets which occurred had a marked increase in impairment—i.e., lower CGAS scores, which suggested that the CGAS was sensitive to change.
5. The rates of most psychiatric disorders in both the children of depressed and nondepressed parents were reduced when impairment criteria were applied. The differentiation in rates of child's major depression between children of depressed versus nondepressed parents was strengthened with the use of impairment criteria.
6. Application of impairment criteria of <51 was necessary to improve agreement between mother and child for major depression, attention deficit, conduct disorder, and substance

TABLE 5. Stability of Child's Lifetime Diagnosis between Initial Interview and 2 Years Later by CGAS at Initial Interview

Child's Diagnosis <sup>a</sup>	CGAS Score	Stable Diagnosis	
		N	%
Major depression	<61	18	(69.2)
	61+	6	(37.5)*
Any anxiety disorder	<61	10	(41.7)
	61+	3	(12.0)*
Substance abuse	<61	7	(63.6)
	61+	2	(40.0)
Conduct disorder	<61	19	(95.0)
	61+	7	(87.5)
Any diagnosis	<61	40	(93.0)
	61+	31	(60.8)**

<sup>a</sup>Diagnoses are derived from direct interview with child.  
\* p < 0.05, \*\* p < 0.001.

abuse. Impairment criteria had little impact on the agreement for anxiety disorder or any disorder. There was little change in agreement with the application of impairment criteria <61, compared to no impairment criteria.

7. Impairment criteria improved the stability of recall of most of the children's disorders 2 years later, particularly for major depression, anxiety disorder, and any diagnosis.

*Limitations and Questions*

These results must be considered both within the context of the limitations of the study and the measures. The CGAS is an overall assessment and does not relate specific disorder to impairment. Because the same person interviewed both the parent about the child and the child at a separate time, the mother and child agreement on the CGAS could have been biased towards greater agreement. However, the lowest agreement was between reports from mother and from child. The present sample consists of only 220 children and the age range includes children up to 23 years of age; whereas, the CGAS was designed for children up to 16 years. The authors found no problem applying the CGAS to older children since it is derived from the adult scale and is similar in structure. The child psychiatrist's CGAS ratings were based on diagnostic interviews, medical records, medical and family psychiatric history, and social functioning assessment. Thus, a considerable amount of information was available on each child. With less information, agreement between raters may be reduced. Shaffer et al. (1983) have noted a trend for greater reliability with more detailed histories.

While the authors have shown previously that mothers report far fewer diagnoses in their children than the children report about themselves, it has been shown here that impairment criteria improves agreement between mother and child, suggesting that parents report illness when there is impairment. Of course, improvement in agreement with impairment criteria may also mean that parents know about or report a child disorder if it results in social disruption. For example, there was marked improvement in agreement for substance abuse when impairment criteria (CGAS score <51) were used. The children with little obvious impairment may still

be abusing drugs or alcohol, but it may be hidden from the parents. It is unclear why agreement between different informants about anxiety disorders was not affected by impairment criteria.

#### *Implications for DSM-IV*

These findings have implications for planning the *DSM-IV*. Axis V of *DSM-III* and *III-R* is a global assessment of functioning. This Axis allows the clinician to make an overall judgment of the patients' psychological, social, and occupational functioning, using the Global Assessment of Functioning Scale (GAF). The GAF is a 90-point scale that has evolved from the GAS. The CGAS is an adaptation of the GAS for children. All of these scales are modifications of Luborsky's (1962) Health-Sickness scale. There is debate about the appropriate time period to rate in these measures. In the *DSM-III-R*, the GAF is rated for current highest level of functioning at time of evaluation and past year. Rutter and Shaffer (1980) and Kendell (1980) argue that the use of a 1-year time frame rather than a premorbid period could produce spurious findings because of differences in time periods of illnesses. Williams (1985), on the other hand, has argued that a recent time period applied similarly across patients would be more valid. In contrast, the current study rated the overall average level of functioning over a lifetime. Since the present study was a family and not a treatment study, the authors were interested in lifetime functioning. For clinical decisions, the time period of 1 year recommended in *DSM-III-R* may be more useful. However, the assessment of both worst and highest functioning may also provide more information for making clinical decisions in treatment studies and probably in assessing seriousness of disorder. Since children may have difficulty relating symptoms to a particular time period, assessment of worst and best functioning may alleviate the problem of putting symptoms in a time frame.

The authors' findings suggest that the CGAS provides a more sensitive assessment of functioning than merely a global instruction to include impairment on the diagnostic criteria. For example, the authors' concept of strict criteria for major depression included the criteria for impairment in major social roles. However, these stricter criteria for major depression still produced considerably higher rates of major depression than when the CGAS <61 was applied. Also, Fendrich et al. (1990), in a paper based on this data set, did not find that the application of strict criteria for major depression, as the authors defined it, improved recall over a 2-year period. By contrast, the application of CGAS criteria to major depression did result in improved recall.

The accuracy of impairment criteria is in part based on the availability of sufficient information to make a CGAS rating; therefore, it raises questions about the type of structured assessments of school, social, and other role performances which should be included in the diagnostic process. It should be noted that the GAF version of Axis V in *DSM-III-R* changes the nature of the assessment by explicitly including symptoms in the anchor points on the scale. The change may confound the relationship between symptom and function or may make the GAF less useful as a measure for research (Horwath, personal communication, 1989).

#### *Implications for an Epidemiological Survey of Children*

The findings in the present study, consistent with those of Bird et al. (submitted), suggest that along with assessment of diagnostic symptoms some measure of impairment such as CGAS should be included in epidemiological studies of children. Symptoms alone may overestimate rates of diagnosis in nonreferred children. Impairment criteria may be more important in epidemiological than in treated samples of children, since a parent usually will not bring a child into treatment unless the child has some manifest impairment in school, family, or with friends.

The authors' findings, that the introduction of impairment criteria markedly reduced rates of disorder in children, are also similar to those of Bird et al. (1988). They found that the overall 6-month prevalence rate/100 of *DSM-III* disorder without impairment criteria was 49.5, and when CGAS <61 was required was reduced to 17.9. The authors' lifetime prevalence rate/100 of any *DSM-III* disorder in the children of nondepressed parents was reduced from 56.7, with no impairment criteria, to 22.4 with CGAS <61 criteria. The slightly higher rates, which the authors found compared with Bird's, are probably due to the older age of the children in this study, and due to the fact that the Bird study used the Diagnostic Interview Schedule for children (DISC) and the authors interviewed the children with the K-SADS-E. Like the Puerto Rico study, a marked reduction of rates of separation anxiety and anxiety disorders was found. Unlike it, however, the authors found that the rates of major depression were also reduced by the application of impairment criteria. Interestingly, 18.4% of children in Bird's epidemiological sample had a CGAS <61. The percentage of children, where neither parent was depressed, with a CGAS score <61 was quite similar. Although several recent surveys of behavioral problems in children have included some criteria of impairment, only two studies actually used the CGAS: the Bird study in Puerto Rico and one by Costello et al. (1988) of children 7 to 11 years of age visiting primary care pediatricians.

Whether children meeting diagnostic criteria with only minimal impairment should be counted as cases requiring surveillance or treatment requires long-term follow-up of children with diagnoses and varying degrees of impairment. These data are not currently available. The assessment of impairment along with diagnoses in children will at least allow these questions to be joined. The data in the present study also suggest that the use of diagnostic criteria without separate attention to impairment criteria may explain the high rates of psychiatric disorders found in nonreferred children when structured interviews are used and may explain some of the discrepancies between informants reported in recent studies of psychiatric disorder in children.

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