Diagnosis and Assessment of Depression and Suicidality Using the NIMH Diagnostic Interview Schedule for Children (DISC-2.3)

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The Diagnostic Interview Schedule for Children (DISC-2.3) was studied in a sample of 265 adolescent inpatients to determine type and concurrent validity of depressive symptoms and depressive disorder diagnoses for different DISC-2.3 informants (parent, adolescent, both). The Children's Depression Rating Scale — Revised, Reynolds Adolescent Depression Scale (RADS), Suicide Ideation Questionnaire — Junior, Spectrum of Suicide Behavior Scale, and clinical consensus diagnoses were used to assess concurrent validity. Results indicated that (1) parents, compared to adolescents, reported a higher prevalence of all depressive symptoms with the exception of weight change; (2) DISC-2.3 depressive and suicidality symptoms were related positively to independent validating criteria for all informant conditions, suggesting good concurrent validity; (3) the DISC-2.3 both informant condition correctly identified the most depressive disorders; and (4) the parent, but not the adolescent, DISC-2.3 Informant condition contributed to the prediction of clinical consensus diagnoses of depression after taking into account RADS scores.

KEY WORDS: Diagnosis; assessment; depression; suicidality; adolescence.

The Diagnostic Interview Schedule for Children (DISC) has been under development and revision for more than 15 years. It has its beginnings in a National Institute of Mental Health (NIMH) request for contracts to develop a highly structured and standardized instrument that would enable lay interviews to assess child psychiatric diagnoses in a valid and reliable manner (Shaffer et al., 1993). Systematic development of the instrument has progressed through numerous versions, including the DISC-1 (Costello, Edelbrock, & Costello, 1985; Costello, Edelbrock, Kalas, Kessler, & Klaric, 1982), DISC-R (Shaffer et al., 1988), and DISC-2.1 (Fisher et al., 1993).

Only limited information is available concerning use of the DISC for assessing and diagnosing depressive disorders. Piacentini et al. (1993) reported that neither the parent nor child version of the DISC-R was successful in detecting cases of major depressive episode (MDE) in a heterogeneous clinical sample of 74 children and adolescents. When these investigators combined DISC information from parent and child informants, the DISC still failed to detect over 40% of clinician-designated MDE cases. It was noted, however, that agreement may have been limited partially by the less than optimal reliability of the "clinical standard."

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In an investigation of the sensitivity of the DISC-2.1 in correctly identifying "true cases" of child psychiatric disorders, Fisher et al. (1993) studied 11 patients, aged 9 to 17 years, from a specialized depression clinic. These patients met full criteria for MDE, determined by the Schedule for Affective Disorders and Schizophrenia for School-Age Children (Puig-Antich & Ryan, 1986). When used alone, neither parent nor child version of the DISC-2.1 showed adequate sensitivity in identifying MDE cases. Five of the 11 patients were identified by the parent informants and one by the child informant. Incorporating information from parent and child interviews, however, resulted in reasonably good sensitivity (.73). To our knowledge, current information on the usefulness of the DISC to correctly identify true cases of major depression is based on these two studies involving relatively small clinical samples of children and adolescents. In addition, little is known about the specific type and concurrent validity of information obtained from parent versus adolescent informants.

Because depression becomes increasingly common across the adolescent years and is associated with significant comorbidity and psychosocial impairment (e.g., Ryan, Puig-Antich, Ambrosini, Rabinovich, & Robinson, 1987), the accurate identification and treatment of depressive disorders are critical. Structured diagnostic interviews offer a cost-effective means of gathering comprehensive diagnostic information. Surely, the ongoing effort of several investigators to revise the DISC represents a sizable investment of resources directed toward this end. To the extent that structured diagnostic interview information is diagnostically valid, can be gathered reliably, and provides incremental information above that obtainable from briefer self-report instruments, the benefits of such an approach are overwhelmingly evident. This is especially true in our current mental health system, where scarce resources are coupled with high costs for professionally delivered services.

The present study was designed to learn more about the DISC, Version 2.3 (DISC-2.3) as a tool for assessing severity of depression and suicidality from a dimensional perspective, and for diagnosing depressive disorders. More specifically, we examined (1) the types of information provided by parents versus adolescents in response to DISC-2.3 questions regarding depressive symptoms; (2) the concurrent validity of this information, as indicated by compari-

sons between endorsed DISC-2.3 symptoms and scores on well-established rating scales; (3) relationships among DISC-2.3 diagnoses, determined by different DISC-2.3 informants, and clinical consensus diagnoses; and (4) the contribution of DISC-2.3 diagnoses, over and above that of self-report depression scale scores, in predicting clinical consensus diagnoses of depression.

METHOD

Subjects

Subjects were 265 of 278 consecutive, eligible admissions over a 2-year period to the adolescent inpatient program of a major teaching hospital. Exclusion criteria were no parental consent ($n = 9$), less than a 5-day length of stay ($n = 28$), moderate to severe mental retardation ($n = 13$), a pervasive developmental disorder ($n = 4$), or other organic mental disorder ($n = 7$). In addition, 13 eligible patients were not included due to a staffing shortage that prevented administration of the computerized diagnostic interview. Informed consent was obtained from adolescents and their parents or legal guardians.

Subjects ranged in age from 12 to 18 years (mean age = 14.9 years, standard deviation = 1.4) and included 149 females and 117 males (56% and 44%, respectively). The subjects were primarily Caucasian (83%) or African-American (11%), and most (85%), lived with parents or guardians. Family social status was distributed across Hollingshead and Redlich's (1958) levels (I, 13%; II, 17%; III, 25%; IV, 32%; and V, 14%).

Measures

Diagnostic. The computerized version of the NIMH Diagnostic Interview Schedule for Children, Version 2.3 DISC-2.3; (Costello et al., 1985; Fisher et al., 1993) was administered independently to adolescents and their parents. Adolescent interviews were completed with 235 subjects; parent interviews were completed for 219 subjects. Both adolescent and parent interviews were conducted for 187 subjects. Adolescent DISC interviews previously have shown excellent test-retest reliability for major depressive episode (Schwab-Stone et al., 1993).

The DISC-2.3 has optional scoring algorithms for computing diagnoses on the basis of each informant's responses or both informants' responses. The latter algorithm rates the symptom as positive if either informant endorses it. Another scoring option is available that requires functional impairment due to specific symptoms before assigning a diagnosis. Shaffer et al. (1996) reported that reliability of impairment items for major depression/dysthymia was κ = .46 for parents and κ = .35 for youths.

Consensus diagnoses were made for current diagnoses according to the *Diagnostic and Statistical Manual of Mental Disorders* (3rd ed. rev.) (DSM-III-R; American Psychiatric Association, 1987) by the attending psychiatrist and team psychologist. These were made using information from DISC-2.3 interviews, clinical admission interviews, and observations by unit staff. Each diagnostician reviewed information and consensus diagnoses were established during weekly meetings.

Depression Scales. Depression measures were the Reynolds Adolescent Depression Scale (RADS; Reynolds, 1987) and the Children's Depression Rating Scale — Revised (CDRS-R; Poznanski et al., 1984). The RADS is a 38-item questionnaire used to assess presence and severity of depressive symptoms. It has shown high internal consistency in diverse samples (coefficient alphas ranged from .90 to .96), high test-retest reliability (reliability coefficient for six weeks: .80), well-documented concurrent validity, and a validated clinical cutpoint of 77 (Reynolds, 1987). The CDRS-R is a 17-item, semistructured interview conducted with adolescents. It was completed by psychiatric nurses trained in its use. Reliability among nurses has been high (Intraclass Correlation Coefficient = .98) for CDRS-R total scores on this unit.

Suicidality Scales. Suicidality measures included the Spectrum of Suicide Behavior Scale (SSB; Pfeffer, 1986) and the Suicidal Ideation Questionnaire — Junior (SIQ-Jr.; Reynolds, 1988). The SSB is a 5-point clinician rating scale that was used to assess severity of suicidal behavior (none, ideation only, intent, gesture, attempt) during the 6 months preceding hospitalization. The SIQ-Jr. is a 15-item self-report questionnaire assessing type, severity, and frequency of suicidal thoughts. It has excellent, well-documented psychometric properties and an established clinical cutpoint of 31 (Reynolds, 1988, 1992). A total score is calculated based on response choices ranging from "I never had this thought" to "This thought was in my mind almost every day."

Data Analyses

The Wilcoxon Test for matched samples was used to determine whether parents and adolescents differentially reported depressive symptoms (Hays, 1973). McNemar chi-square tests were used to ascertain informant differences for individual depressive symptoms (Hays, 1973). A series of analyses addressing concurrent validity of the DISC were then conducted for the total sample and subsamples defined by gender and race (Caucasian, African-American). (Within the African-American subsample, these were conducted only for adolescent DISC responses due to the small number of parent-completed DISCs). Pearson correlation coefficients were used to quantify the extent of association between DISC-2.3 depressive symptom counts and depression scale scores. Pearson chi-square analyses were used to determine whether subjects obtaining DISC-2.3 depressive disorder diagnoses were distributed differentially across groups defined by depression scale cutpoints. Chi-square analyses also were conducted to determine whether subjects who met DISC-2.3 suicidality criteria were distributed differentially across groups defined by SSB categories and SIQ-Jr. cutpoints. Sensitivity and specificity coefficients were computed to determine relationships between DISC-2.3 depressive disorder diagnoses and clinical consensus diagnoses. Logistic regression analyses, with a preset depressive disorder probability value equaling the sample base rate, examined the contribution that DISC-2.3 depressive disorder diagnoses made to predicting clinical consensus diagnoses of depression, after taking into account the contribution made by the RADS. Likelihood values from different predictive models were compared.

RESULTS

DISC-2.3 Depressive Symptoms: Parent and Adolescent Informants

Table I displays percentages of adolescents and parents in the total sample who reported each of the depressive symptoms. Across all DISC-2.3 depressive symptoms, parent and adolescent informants differed significantly in the likelihood with which they reported adolescent depressive symptoms, $z = 11.52, p < .0001$. Parents endorsed adolescent depressive symptoms more frequently than did adolescents themselves. Analyses of endorsement pattern differences for individual

Table I. Adolescent Depressive Symptoms: DISC-2.3 Responses of Adolescents and Their Parents[a]

Depressive symptom	% Youth	% Parents	% Youths and parents	Interinformant difference	
				McNemar chi-square	(p-Value)
Depressed or irritable mood	35	48	24	4.78	.029
Anhedonia	24	31	11	33.68	.001
Weight change	48	38	22	4.42	.036
Sleep disturbance	52	58	32	1.81	n.s.
Psychomotor abnormality	22	30	9	39.41	.001
Fatigue	37	40	17	9.58	.002
Worthlessness	26	34	10	27.38	.001
Concentration problem	38	52	23	1.71	n.s.
Suicidality	52	55	40	0.75	n.s.
Low self-esteem	60	68	45	13.97	.001
Hopelessness	56	66	38	8.48	.004
Specific suicide items					
Thoughts of death	50	46	36	1.56	n.s.
Thoughts of suicide	56	40	38	0.07	n.s.
Suicide attempt (lifetime)	40	65	27	3.10	n.s.

[a]Number of subjects for these analyses ranged from 177 to 188 (both parent and adolescent responses were required). DISC-2.3 = Diagnostic Interview Schedule for Children, Version 2.3.

symptoms indicated that parents reported more depressed or irritable mood, anhedonia, psychomotor abnormality, fatigue, worthlessness, low self-esteem, and hopelessness. The adolescents reported changes in weight more often than their parents. Across the three suicidality items, there was no informant difference in frequency of endorsement, $z = 0.53$. Within the subsample of subjects with consensus diagnoses of MDE, the pattern of findings was similar. Across all depressive symptoms, parents were more likely to endorse symptoms, $z = 10.11$, $p < .0001$. Across suicidality items, there was no informant difference, $z = 0.80$.

Depressive Disorder Diagnoses: DISC-2.3 and Clinical Consensus

DISC-2.3. The percentages of adolescents meeting DSM-III-R criteria for major depressive episode varied by informant (parent, adolescent, both) and whether DISC-2.3 impairment criteria were used. When diagnoses were made without considering supplemental impairment questions, 36.0% of adolescents, 46.8% of parents, and 66.1% of combined parent and adolescent responses indicated adolescent symptoms consistent with a diagnosis of MDE. These percentages for adolescent and parent responses changed minimally to 32.8%, 45.6%, and 64.2%, respectively, when impairment criteria were used.

When DISC-2.3 diagnoses were made without considering supplemental questions regarding degree of impairment, 21.7% of adolescents, 28.3% of parents, and 63.2% of combined parent and adolescent responses indicated adolescent symptoms consistent with a diagnosis of dysthymic disorder (DYS). These percentages for adolescent and parent responses changed minimally to 20.3%, 27.4%, and 59.9%, respectively, when impairment criteria were used.

Clinical Consensus. According to clinical consensus diagnoses, 58.9% of adolescents met criteria for MDE, 34.0% met criteria for DYS, and 71.7% met criteria for either MDE or DYS.

Depression and Suicidality Rating Scale Scores

The overall sample mean score for the RADS was 71.7 ($SD = 18.3$). Fifty-seven percent of the sample endorsed depressive items at or above the clinical cutpoint of 77. The sample mean score for the CDRS-R was 50.8 ($SD = 15.0$). Seventy-five percent of the sample endorsed depressive items at or above the clinical cutpoint of 40. SSB scores, reflecting highest severity of suicidality during the previous 6 months, indicated that 23.9% were nonsuicidal, 17.1% expressed significant suicidal ideation, 23.2% expressed serious suicidal intent, 21.7% had made suicidal gestures, and 14.1% had made serious suicide attempts.

DISC-2.3 Depressive Symptoms and Depression Rating Scale Scores

There were moderately high positive correlations between counts of DISC-2.3 depressive symptoms and depression rating scale scores, regardless of DISC informant. Pearson correlations betwen total number of adolescent-reported depressive symptoms and RADS and CDRS-R scores were $r(216) = .59, p < .001$, and $r(179) = 0.51, p < .001$, respectively. There were no significant differences in the strength of these associations between Caucasian and African-American subgroups for the RADS [Caucasian: $r(182) = .57$ vs. African-American: $r(22) = .63$] or the CDRS-R [Caucasian: $r(153) = .50$ vs. African-American: $r(17) = .44$]. There also were no significant differences in the strength of these associations for males, $r(89) = .54$, or females $r(127) = .57$.

Pearson correlations between total number of parent-reported depressive symptoms and RADS and CDRS-R scores were $r(189) = .32, p < .001$ and $r(159) = .30, p < .001$, respectively. Gender subgroup analyses indicated that these positive correlations were significant for females [RADS: $r(108) = .43, p < .001$; CDRS-R: $r(95) = .36, p < .001$], but not males [RADS: $r(81) = .12$; CDRS-R: $r(64) = .22$]. Pearson correlations between total number of parent- and adolescent-reported symptoms (either/or algorithm) and RADS and CDRS-R scores were $r(233) = .52, p < .001$ and $r(195) = .42, p < .001$, respectively.

DISC-2.3 Depressive Disorders and Depression Rating Scale Clinical Cutpoints

Subjects with DISC-2.3 depressive disorder diagnoses, compared to subjects without depressive disorder diagnoses, were more likely to have depression rating scale scores above clinical cutpoints. This was evident for DISC-2.3 diagnoses based on adolescent responses (RADS: $\chi^2_{(1)} = 43.45, p < .001$; CDRS: $\chi^2_{(1)} = 10.84, p < .001$) and parent responses (RADS: $\chi^2_{(1)} = 21.88, p < .001$; CDRS-R: $\chi^2_{(1)} = 10.68, p < .001$). For the RADS, these analyses also were significant within subsamples of males, females, Caucasians, and African-Americans. For the CDRS-R and adolescent informant DISC-2.3 diagnoses, these associations were significant for females ($\chi^2_{(1)} = 4.03, p < .05$) but not males ($\chi^2_{(1)} = 1.73$).

DISC-2.3 Suicidality Items and Suicide Rating Scale Scores

Subjects who scored positive on the DISC-2.3 MDE symptom criteria for thoughts of death and suicidality were more likely than other subjects to score above the SIQ-Jr. clinical cutpoint. Within the total sample, this was evident for adolescent, $\chi^2_{(2)} = 56.81, p < .001$, and parent, $\chi^2_{(2)} = 17.73, p < .001$, DISC-2.3 informants. These associations also were significant within male, female, and Caucasian subsamples for adolescent and parent DISC-2.3 informants. Within the African-American subsample, the association was significant for adolescent DISC-2.3 informants (insufficient n for analysis based on parent DISC informants).

For the specific DISC-2.3 item "Thoughts of killing oneself," the 121 adolescents who responded positively had higher SIQ-Jr. scores than the other 95 adolescents [$M = 39.2$ ($SD = 23.3$) vs. $M = 11.4$ ($SD = 15.0$), $t(214) = 10.1, p < .001$]. This pattern of significance was evident within male, female, Caucasian, and African-American subsamples. The 108 adolescents for whom parents endorsed this item also had higher SIQ-Jr. scores than the other 85 adolescents [$M = 31.2$ ($SD = 25.2$) vs. $M = 22.1$ ($SD = 23.0$), $t(191) = 2.6, p < .01$]. This also was evident within male [$t(80) = 2.2, p = .03$] and Caucasian [$t(167) = 2.7, p < .01$] subsamples (inadequate n for analysis of African-American subsample). Parents' responses to the DISC suicidal ideation item did not, however, differentiate groups of female adolescents with higher versus lower SIQ-Jr. scores.

Strong associations were found between positive responses to the DISC-2.3 suicide attempt item (parent and youth informants) and SSB scores. These data are displayed in Table II.

DISC-2.3 and Clinical Consensus Diagnoses of Depressive Disorders

Sensitivity and specificity coefficients were computed to indicate the extent to which DISC-2.3 diagnoses matched consensus diagnoses (Table III). These were computed separately for each informant condition (adolescent, parent, both).

Table II. DISC-2.3 Suicidality Items and Spectrum of Suicidal Behavior Scale Scores[a]

DISC informant and item	SSB Score			χ^2	p
	Nonsuicidal	Ideation/intent	Gesture/attempt		
Adolescent					
Thoughts of suicide				88.3	< .001
Yes (n = 131)	1.5	42.7	55.7		
No (n = 103)	48.5	39.8	11.6		
Suicide attempt (lifetime)				81.8	< .001
Yes (n = 99)	5.0	26.3	68.7		
No (n = 135)	34.8	52.6	12.6		
Parent					
Thoughts of suicide				31.7	< .001
Yes (n = 121)	12.4	52.1	35.5		
No (n = 96)	42.7	21.9	35.4		
Suicide attempt (lifetime)				91.0	< .001
Yes (n = 73)	4.2	16.7	79.2		
No (n = 145)	36.6	49.7	13.8		

[a] Figures are percentages (rounded) of subjects with that response. DISC-2.3 = Diagnostic Interview Schedule for Children, Version 2.3; SSB = Spectrum of Suicide Behavior Scale.

Table III. DISC-2.3 Depressive Disorders: Sensitivity and Specificity by Informant[a]

Diagnosis informant condition	Sensitivity	Specificity	Positive predictive value	Negative predictive value
Major depressive episode or dysthymia				
Child informant				
Nonimpairment	45	83	89	33
Impairment	41	84	89	32
Parent informant				
Nonimpairment	62	73	85	44
Impairment	59	73	85	42
Both informant				
Nonimpairment	84	49	84	50
Impairment	81	53	84	48
Major depressive episode				
Child informant				
Nonimpairment	43	76	74	46
Impairment	39	78	75	45
Parent informant				
Nonimpairment	61	74	78	57
Impairment	59	74	77	56
Both informant				
Nonimpairment	78	55	75	60
Impairment	76	56	75	58

[a] Sample sizes for these coefficients varied between 218 and 235. DISC-2.3 = Diagnostic Interview Schedule for Children, Version 2.3.

When logistic regression models were compared, the combination of RADS and adolescent informant DISC diagnoses did not perform better than the RADS alone in predicting consensus diagnoses of either MDE or any depressive disorder (MDE or DYS). However, in comparison to RADS alone, the combination of RADS and parent informant DISC diagnoses did improve on the prediction of depressive disorder diagnoses ($\chi^2_{(1)}$ = 9.70, p < .005), and specifically MDE diagnoses ($\chi^2_{(1)}$ = 9.23, p < .005). The combination of RADS and both informant DISC diagnoses did not provide significant improvement over the combination of RADS and parent informant DISC diagnoses.

DISCUSSION

This study revealed substantial new information about the DISC-2.3 as a tool for assessing depressive symptoms and suicidality and for diagnosing depressive disorders. Incorporating a large sample of psychiatrically disturbed adolescents, it documented the differing types of information provided by parent versus adolescent informants, the reasonably good concurrent validity of both types of informant information, and how DISC-2.3 depressive disorder diagnoses compare to those determined by a comprehensive clinical consensus procedure.

Parent and Adolescent DISC-2.3 Reports
of Depressive Symptoms

Parents were more likely than were adolescents to report almost all depressive symptoms. Previous research suggests that parents more often endorse externalizing symptoms such as aggression and overactivity, while adolescents report more internalizing symptoms such as depression and anxiety (Edelbrock, Costello, Dulcan, Conover, & Kalas, 1986). Findings from a recent study may be helpful in understanding this discrepancy. Bidaut-Russell et al. (1995) studied parent and adolescent explanations for disagreements on selected adolescents' symptoms reported on the DISC (Version 3.0). Adolescents suggested that their parents would endorse more items when their parents viewed the adolescents in a generally more disturbed or negative light. This might be true of parents who had recently hospitalized their adolescents, as in the present study. Parents suggested that their children would under report symptoms due to minimizing their significance. This motivation might characterize many of the hospitalized adolescents who, while potentially relieved to have their distress acknowledged, are sometimes unable (or unwilling) to verbalize the extent of their distress. This response tendency may be related to an eagerness for hospital discharge. It is also possible, however, that adolescent reports of fewer depressive symptoms are due to stabilization following hospitalization, including the cathartic effects of hospitalization.

The only exception to the pattern of great parental endorsement of adolescent depressive symptoms was change in body weight. Adolescents' greater tendency to endorse this symptom's presence may well reflect developmental issues. Concerns about body image and physical attractiveness are common during adolescence and have been associated with depression (King, Naylor, Segal, Evans, & Shain, 1993; Lerner & Jovanovic, 1990).

Concurrent Validity of DISC-2.3 Depressive
Symptoms/Disorders

Self-report scales, based on a dimensional perspective, can be used as validating criteria for reported symptoms even though they cannot be used to make clinical diagnoses (Coyne, 1994). Moderately strong relationships were found between DISC-2.3 depressive symptom counts and scores on two well known depression scales, the RADS (Reynolds, 1987) and the CDRS-R (Poznanski et al., 1984). As would be expected, given the absence of informant method variance, relationships between adolescent DISC-2.3 symptom counts and adolescent depression scale scores were stronger than were those between parent DISC-2.3 symptom counts and adolescent depression scale scores. Nevertheless, all associations were sufficiently strong to indicate that, at the level of depressive symptoms, the DISC-2.3 has good concurrent validity. DISC-2.3 suicidality item scores also were found to have strong positive associations with SIQ-Jr. and SSB scores indicative of suicidal thoughts and behaviors.

The relatively large sample size in this study offered the opportunity to assess concurrent validity within subgroups defined by gender and race. There were no differences in the magnitude of positive correlations between adolescent informant DISC-2.3 depressive symptom counts and depression rating scale scores for male versus female and Caucasian versus African-American subgroups. Even though parent informant DISC-2.3 depressive symptom counts were not significantly associated with male adolescents' depression rating scale scores, parent informant DISC-2.3 depressive disorder diagnoses for males were associated with depression rating scale scores above clinical cutpoints. This suggests that parents are able to detect and report males' depressive symptoms when severity is within the clinical range. It is also notable that sensitivity and specificity coefficients for determining clinical consensus diagnoses from DISC-2.3 diagnoses are comparable for male, female, Caucasian, and African-American subgroups when based on either parent DISC-2.3 responses or both parent and adolescent responses. The sensitivity coefficients for two DISC-2.3 adolescent informant subgroups, males and African-Americans, are relatively low. This suggests that adolescents in these groups are not reporting depressive symptoms which others are determining by observation or interview.

Parent and adolescent informants each added unique information and increased the sensitivity of the diagnostic assessment procedure. Previous research yields little consensus on the optimal informant for obtaining pertinent information. Some researchers have recommended use of the parent- or teacher-completed measures; others have suggested that the youths themselves are the best informants (Edelbrock et al., 1986; Kazdin, 1990). Some studies have developed constructs which utilize a combination of these informants, despite well-documented low to moderate correlations between informants (Achenbach, McConaughy, & Howell, 1987; Kazdin, 1989). The present findings suggest that parent DISC-2.3 responses in combination with adolescent self-reports on a well-validated and brief depression rating scale, the RADS, functioned as well diagnostically as combining adolescent and parent DISC-2.3 responses.

To some extent, the less than optimal specificity coefficients reflect the presence of other affective disturbances such as bipolar disorder. As more depressive disorders were identified successfully, the DISC-2.3 also mistakenly diagnosed more patients with depressive disorders due to difficulties with differential diagnosis in the present study's acutely and severely disturbed inpatient sample. This suggests that DISC-2.3 reports should ideally be supplemented with clinical interviews or other available information when an accurate mood disorder diagnosis is required. This is critical information in the current health care delivery system with its emphasis on efficiency and cost effectiveness. Additional tiers of information require more staff resources, patient and parent/guardian time, and scheduling hurdles. The present findings suggest that the additional resources are warranted. Highly experienced diagnosticians were often uncomfortable with DISC-2.3 depressive disorder diagnoses outside the context of other diagnostic information.

DISC-2.3 Impairment Criteria

Relatively few adolescents responded in the negative to impairment questions. This may largely reflect the high level of functional impairment characteristic of adolescents in an acute inpatient setting. It may also partially reflect the wording of specific impairment items, which are lengthy and somewhat confusing when many symptoms have been endorsed. Further research on the reliability and validity of these items in more heterogeneous clinical samples is necessary before conclusions can be drawn about their usefulness.

Research Limitations

The generalizability of findings is limited to other clinically referred samples, and perhaps even to other adolescent inpatient samples. As recently discussed by Jensen, Salzberg, Richters, & Watanabe (1993), scale properties vary according to the nature of the population sampled and studied. Clinical samples are characterized by multiple levels of screening and referrals that likely result in subjects with more severe and perhaps different forms of psychopathology from those evident in community settings. DISC-2.3 diagnoses in this study were not compared to those obtained from an independent diagnostic interview that was designated as the "gold standard." The present sensitivity and specificity coefficients must be interpreted within this context. They represent the extent to which diagnoses from one or two DISC informants compared to those determined by a clinical consensus procedure, which utilized DISC in addition to other available information. The aim was to identify the incremental gain realized from the investment of additional resources.

Clinical Implications and Directions for Future Research

The findings suggest that the DISC-2.3 can be a useful clinical tool with applications extending beyond epidemiological investigation. Careful and complete diagnostic evaluations are critical to case formulation and treatment planning. This evaluation task, however, can be challenging, if not formidable, to the clinician who is faced with several options in terms of diagnostic procedures, time pressures, and an increasing emphasis on cost effectiveness, objective measurement, and documentation. The computerized DISC-2.3 provides validated depressive symptom and diagnostic information, particularly when both parent and adolescent informants are used. If one is only interested in diagnosing depressive disorders, the adolescent-completed DISC-2.3 may be replaced by a well-validated depression rating scale for a substantial time savings. Clinicians could combine structured diagnostic information from parents with brief face-to-face clinical interviews, self-report depression rating scales, and other available information (e.g., school reports, behavioral observation). This approach would enable clinicians to fine-tune diagnostic decisions while gathering comprehensive information from parents

with the objective attributes of a structured diagnostic interview. It is also possible that this comprehensive approach is more time consuming and costly than is necessary to diagnose depressive disorders in a valid and reliable manner. These issues are critical given current pressures to make rapid evaluations in both inpatient and outpatient settings, the long-term negative consequences of untreated depression, and the availability of proven treatments for adolescent depression.

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