

Prediction of Positive Outcomes for Adolescent Psychiatric Inpatients

CHERYL A. KING, PH.D., JOSEPH D. HOVEY, M.A., ELENA BRAND, PH.D., AND NEERA GHAZIUDDIN, M.D.

ABSTRACT

Objective: To identify individual, parent/family, and treatment follow-through predictors of outcome for adolescent psychiatric inpatients 6 months after hospital discharge. **Method:** Eighty-nine adolescents participated in a comprehensive baseline evaluation during psychiatric hospitalization. Baseline measures included the Diagnostic Interview Schedule for Children, Social Adjustment Inventory for Children and Adolescents, Reynolds Adolescent Depression Scale (RADS), and Suicidal Ideation Questionnaire-Junior (SIQ-Jr). Structured telephone follow-up interviews assessed treatment follow-through, suicidal behaviors, rehospitalizations, living changes, and social adaptive functioning. The RADS and SIQ-Jr were also readministered. **Results:** Baseline indices of adolescent functioning emerged as the strongest predictors of outcomes. Hierarchical multiple regression analyses indicated that baseline depression severity, a cluster of parent/family indices, and medication follow-through were significant predictors of outcome depression severity. Baseline social adaptive functioning, presence/absence of conduct disorder, and medication follow-through were significant predictors of outcome social adaptive functioning. **Conclusions:** The nature and course of adolescent psychopathology was difficult to disrupt, with baseline characteristics as the strongest predictors of outcome. Nevertheless, the significance of medication follow-through as a predictor suggests that treatment-related gains are possible. *J. Am. Acad. Child Adolesc. Psychiatry*, 1997, 36(10):1434–1442. **Key Words:** adolescents, outcome, depression, psychiatric hospitalization.

Despite the increased stringency of criteria for reimbursable psychiatric inpatient services, resulting in shorter lengths of stay in most facilities (Schlesinger et al., 1996), many adolescents continue to require hospitalization. These adolescents often have chronic and severe forms of psychopathology in addition to an acute exacerbation which places them or someone else in danger. Given the risk of serious harm or morbidity, the limited resources available to many families for mental health treatment, and the high cost of rehospi-

talization, identification of factors associated with favorable posthospitalization adjustment is critical.

In stark contrast to the significant ramifications of favorable versus unfavorable posthospitalization adjustment, however, there is a paucity of informative research in this area. Many studies were conducted 10 to 20 years ago and addressed adolescent outcome after long-term hospital stays. Gossett et al. (1983) reviewed 22 follow-up studies of adolescents treated in inpatient settings. Although the majority of these studies were retrospective and relied heavily on record reviews and nonstandard measures, three broad groups of variables seemed to demonstrate a relationship to outcome. These were severity and chronicity of presenting psychopathology, family dysfunction, and participation in recommended treatment programs. In addition to concerns about the extent of their applicability in the current era, there are several limitations to these all-encompassing reviews of previous follow-up studies. The majority of studies reviewed failed to operationally define and reliably measure variables of interest. In addition, they did not make use of multivariate designs

Accepted March 7, 1997.

Drs. King and Ghaziuddin are Assistant Professors, Department of Psychiatry, University of Michigan, Ann Arbor. Mr. Hovey is a doctoral student in the Department of Psychology, University of Michigan. Dr. Brand was a Postdoctoral Fellow with the Department of Psychiatry at the time of data collection and is currently at Wyandotte Hospital and Medical Center, Wyandotte, MI.

The authors thank the multidisciplinary evaluation team of the Adolescent Psychiatry Inpatient Program for their assistance. Funding for this project was provided by the American Suicide Foundation.

Reprint requests to Dr. King, Division of Child and Adolescent Psychiatry, 1500 E. Medical Center Drive, Ann Arbor, MI 48109-0390.

0890-8567/97/3610-1434/\$0.300/0©1997 by the American Academy of Child and Adolescent Psychiatry.

such that it is difficult to understand relationships among predictor variables.

Other studies have more carefully assessed particular types of outcome. Because the majority of adolescents treated on our inpatient unit are hospitalized because of suicide risk, we were particularly interested in outcomes related to depression severity, suicidal ideation, and repeated suicide attempts. It is not uncommon for repeated suicide attempts (e.g., Brent et al., 1993; King et al., 1995) or costly rehospitalizations to occur within short periods of time after hospitalization. Recent 6-month follow-up studies have reported that between 10% and 18% of adolescent psychiatric inpatients made at least one suicide attempt during the follow-up period after hospitalization (Brent et al., 1993; King et al., 1995). Factors associated with these repeated attempts have included a previous history of suicidality, suicidal thoughts, continuing and recurring affective disturbance, presence of comorbid disorder, and family difficulties.

In addition to adolescent diagnostic and behavioral characteristics, social functioning and family context have emerged as important outcome predictors among previously hospitalized adolescents. For instance, Barter et al. (1968) found that adolescents who made repeated suicide attempts after hospitalization were more likely than other previously hospitalized adolescents to have a history of parental loss and be living outside of their parents' home. In a study with an average length of follow-up of 22 months, Stanley and Barter (1970) found that adolescents who had attempted suicide before and after hospitalization differed from the group of adolescents who made suicide attempts before but not after hospitalization and the nonsuicidal psychiatric control group. These repetitive suicide attempters had more deficits in social and academic functioning and were less likely to be living with a parent. The outcome research of Cohen-Sandler et al. (1982) also highlights the importance of family context. Among a sample of adolescent psychiatric inpatients, they found that repetitively suicidal youths were less likely to live with a parent at follow-up.

The prospective study reported here involves a short-term follow-up of adolescent psychiatric inpatients. It makes use of a within-group design, ascertaining univariate and multivariate relationships between baseline predictors and differing outcomes of interest (e.g., decreased suicidal ideation, absence of repeated suicide attempts, decreased depression severity, increased social

adaptive functioning). The focus is on determining characteristics of patients, families, and treatment follow-through associated with more favorable outcomes 6 months posthospitalization. This is the second report from this follow-up study. The previous report (King et al., 1997) addressed predictors of treatment follow-through.

METHOD

Subjects

Subjects were 89 adolescents (37 males, 52 females) with a mean age of 15.3 years ($SD = 1.4$) who were hospitalized on a general adolescent psychiatric unit. The racial/ethnic identification of the sample was primarily Caucasian (88.8%). It also included African-Americans (7.9%) and a small number of adolescents who reported a mixed racial background (3.4%). Socioeconomic status (SES), determined by the educational level and employment status of parent or guardian contributing most to household finances (adaptation of Hollingshead and Redlich, 1958), was distributed across levels as follows: upper (15.7%), upper-middle (16.9%), middle (19.3%), lower-middle (32.5%), and lower (15.7%). Parent or guardian informed consent and adolescent assent were obtained.

Baseline data were available for 103 (91.2%) of 113 consecutively hospitalized adolescents (first admissions to the study unit for the purpose of establishing point of baseline data collection). Follow-up data were available for 86.4% of this sample (89/103). Four subjects refused to participate in the follow-up interviews and 10 could not be located. Subjects and their parents were each paid \$25. Follow-up participants did not differ from nonparticipants in age, gender, SES, or racial/ethnic group. The distribution of caregiving situations did, however, differ for participants and nonparticipants ($\chi^2[3] = 13.16, p < .01$). Whereas 92.8% of nonparticipants were living in single-parent homes or in homes without a parent, only 30.9% of participants were in these living situations.

Diagnoses were established according to the *DSM-III-R* (American Psychiatric Association, 1987) by clinical consensus of the attending psychiatrist and psychologist. Available information included admission interviews and independent parent and adolescent responses to the computerized version of the Diagnostic Interview Schedule for Children Version 2.3 (Costello et al., 1985; Fisher et al., 1993). Diagnoses assigned to five or more subjects were distributed as follows (additional details on infrequent diagnoses available from the author): major depressive disorder ($n = 57$; 64.0%), bipolar disorder ($n = 5$; 5.6%), dysthymia ($n = 18$; 20.2%), alcohol use disorder ($n = 17$; 19.1%), other substance use disorder ($n = 14$; 15.7%), conduct disorder ($n = 23$; 25.8%), attention-deficit hyperactivity disorder ($n = 15$; 16.9%), oppositional defiant disorder ($n = 15$; 16.9%), social phobia ($n = 13$; 14.6%), generalized anxiety disorder ($n = 11$; 12.4%), any eating disorder ($n = 10$; 11.2%), separation anxiety disorder ($n = 6$; 6.7%), and post-traumatic stress disorder ($n = 7$; 7.9%). Comorbid diagnoses were extremely common. As examples, 29.3% of adolescents had comorbid affective and behavioral or substance use disorders.

Procedures

Baseline evaluations were completed during the first week of hospitalization (mean length of hospitalization = 22.7 days, $SD =$

12.2; median = 18.0). Structured telephone interviews were conducted 6 to 8 months after hospital discharge (mean = 30.6 weeks, SD = 6.8). Parent or guardian and adolescent follow-up interviews were conducted for 80.0% of the subjects. Other informants were as follows: parent or guardian only, 14.1%; adolescent only, 3.5%; another informed adult only, 2.4%.

Measures

Baseline Adolescent Measures. In addition to psychiatric diagnoses, baseline measures of adolescent functioning included the Reynolds Adolescent Depression Scale (RADS) (Reynolds, 1987), Suicidal Ideation Questionnaire-Junior (SIQ-Jr) (Reynolds, 1988), Spectrum of Suicidal Behavior Scale (SSB) (Pfeffer, 1986), and Social Adjustment Inventory for Children and Adolescents (SAICA) (John et al., 1987). Because the majority of adolescents had histories of significant suicidal thoughts or attempts (74%) and were hospitalized because of acute suicide risk, an emphasis was placed on the assessment of depressive symptoms and suicidality.

The RADS is a 30-item self-report questionnaire assessing presence and severity of depressive symptoms. It was completed by 87 adolescents. The SIQ-Jr is a 15-item self-report questionnaire assessing the frequency of a broad continuum of suicidal thoughts. It was completed by 84 adolescents. RADS and SIQ-Jr Total scores both have excellent, well-documented psychometric properties (Reynolds, 1987, 1988, 1992). The SSB is a 5-point clinician rating scale assessing severity of suicidality (none, ideation, intent, gesture, attempt). It was completed for all 89 adolescents.

The SAICA is a semistructured interview that assesses parent perceptions of adolescents' functioning in school, peer, family, and spare-time domains during the previous 6 months. It was conducted with a parent or guardian of 68 adolescents. Subscale scores are the mean scores of individual subscale items. High interrater agreement for subscale items has been found (King et al., 1993). Peer Problems and Spare-Time Problems subscale scores were added to create a Peer/Spare-Time Problems composite score.

Baseline Parent/Family Measures. Family structure variables included SES and caregiving situation (two biological/adoptive parents = 42.0%; one biological/adoptive and one stepparent = 17.0%; single biological/adoptive parent = 26.1%; other relative/adult or out-of-home placement = 14.8%). Adolescents' perceptions of family functioning were assessed with the General Functioning subscale of the Family Assessment Device (FAD) (Epstein et al., 1983). This consists of 12 items that subjects endorse in terms of how well each describes the family. Items are scored on a 4-point scale from "strongly agree" to "strongly disagree." The FAD has demonstrated adequate psychometric properties (e.g., Halvorsen, 1991). Scores were available for 70 adolescents.

Parental functioning was assessed with the Symptom Checklist-90-Revised (SCL-90-R) (Derogatis, 1977) and Social Adjustment Scale-Self Report form (SAS-SR) (Weissman and Bothwell, 1976). The SCL-90-R includes 90 psychiatric symptoms that parents rate on a 5-point severity scale. Fifty-nine mothers and 40 fathers completed this scale. The 42-item SAS-SR includes items describing adjustment in work, social/leisure, extended family, marriage, parent, family unit, and economic domains. For each item, parents choose one of five statements that best describe their adjustment. Sixty-one mothers and 42 fathers completed the SAS-SR.

Follow-up Evaluation. The follow-up evaluation included a structured interview assessing changes in living situation, rehospitalizations, suicide attempts, peer and spare-time functioning, and treatment follow-through. It also included the

RADS and SIQ-Jr self-report scales and the SAICA Peer Problems and Spare-Time Problems subscales. These scales assessed functioning during the past 1 month.

As previously discussed in detail (King et al., 1997), treatment follow-through was coded for recommended psychotropic medication follow-up, individual therapy, and parent guidance/family therapy services as follows: none/minimal (zero or one contact), some (more than one contact, but discontinued without professional recommendation), and complete. Type of medication and psychosocial treatment were uncontrolled in this naturalistic outcome study; however, for most subjects psychotropic medication (84%), individual therapy (98%), and parent guidance/family therapy (94%) were recommended.

Data Analyses

After computation of descriptive statistics, univariate associations were assessed between predictor and outcome variables. Chi-square analyses were used to assess relationships between categorical baseline (SES, caregiving situation, diagnoses, SSB scores) and outcome variables (change in living situation, rehospitalization, suicide attempt). Correlation coefficients were used to assess associations between continuous baseline (RADS, SIQ-Jr, FAD, SCL-90-R, SAS-SR) and outcome variables (RADS, SIQ-Jr, SAICA subscale scores). Analyses of variance were used to assess effects of SES, caregiving situation, diagnoses, and history of suicidality (SSB score) on continuous outcome variables. Analyses of covariance (ANCOVAs), with baseline functioning variables as covariates, were used to assess relationships between treatment follow-through and outcome functioning. Based on the strength of univariate relationships, baseline variables were selected for entry into hierarchical multiple regression or logistic regression equations designed to ascertain outcome predictors.

RESULTS

Baseline Depression/Suicidality and Outcome

Adolescents' mean total scores on the RADS and SIQ-Jr at the time of psychiatric hospitalization were 70.4 (SD = 17.5) and 26.1 (SD = 24.4), respectively. These scores were intercorrelated ($r[83] = .65, p < .001$) and are equivalent to the 76th and 86th percentiles, respectively, based on data from large standardization samples (Reynolds, 1987, 1988). SSB scores indicated the following breakdown for history of suicidality at the time of psychiatric hospitalization: serious suicide attempt ($n = 19; 21.3%$), mild suicide attempt ($n = 12; 13.5%$), suicidal intent ($n = 22; 24.7%$), suicidal ideation ($n = 13; 14.6%$), none ($n = 23; 25.8%$).

Baseline RADS scores were positively correlated with posthospitalization RADS scores ($r[71] = .41, p < .001$). They were also related to reported suicide attempts after hospitalization ($F[1,81] = 10.13, p < .01$) and rehospitalization (yes/no) ($F[1,81] = 5.32, p$

< .03). Mean RADS scores for groups defined by the reported presence or absence of these suicide attempts were 85.90 (SD = 14.24) and 67.93 (SD = 17.03), respectively. RADS scores were unrelated to number of living changes after hospitalization, out-of-home placements, and peer/spare-time problems.

Baseline SIQ-Jr scores, reflecting presence and severity of suicidal thoughts, were associated with suicidal thoughts and attempts 6 months after hospital discharge. Baseline SIQ-Jr scores were positively correlated with SIQ-Jr scores ($r[69] = .38, p < .01$) and suicide attempts after hospitalization ($F[1,78] = 9.99, p < .01$). Mean SIQ-Jr scores for adolescents who did and did not make suicide attempts were 50.38 (SD = 24.11) and 22.75 (SD = 23.38), respectively. Baseline SIQ-Jr scores were unrelated to number of living changes after hospitalization, out-of-home placement, rehospitalization, and the SAICA composite of peer and spare-time problems.

Baseline SSB scores (recoded as 1 = none; 2 = ideation/intent; 3 = gesture/attempt) were related to SIQ-Jr scores at follow-up ($F[2,70] = 3.26, p < .05$). The baseline ideation/intent and gesture/attempt groups both had higher SIQ-Jr scores at follow-up than the no previous suicidality group ($t[43] = 2.10, p < .05$, and $t[42] = 2.46, p < .02$, respectively). Mean follow-up SIQ-Jr scores for these groups were as follows: none (mean = 10.38, SD = 12.39); ideation/intent (mean = 20.62, SD = 17.22); gesture/attempt (mean = 24.86, SD = 21.56). SSB scores were not related to suicidal behavior after hospitalization. A trend is apparent, however, as only one adolescent with no history of suicidality (4.3%)

engaged in suicidal behavior after hospitalization in comparison with six (20.0%) among the group of adolescents with histories of suicidal gestures or attempts. There were no deaths recorded at outcome.

Baseline Diagnoses and Outcome

Axis I diagnoses were related to living changes and social adjustment problems after hospitalization (Table 1). In comparison with other adolescents, those with a conduct and/or substance use disorder had more living changes (53.3% versus 23.6%) ($\chi^2[1] = 6.35, p < 0.01$). They also had more peer/spare-time problems (SAICA composite) ($F[1,83] = 8.20, p < .01$). The subset of adolescents with comorbid affective and conduct/substance use disorders also had more living changes ($\chi^2[1] = 4.80, p < .03$) and peer/spare-time problems ($F[1,83] = 4.76, p < .04$) than did other adolescents. Other diagnoses studied were unrelated to outcomes.

Baseline Peer/Spare-Time Problems and Outcome

Baseline Peer/Spare-Time Problems scores were positively correlated with baseline Parent-Adolescent Conflict scores ($r[68] = .45, p < .001$), maternal SCL-90-R Total scores ($r[49] = .25, p < .05$), and maternal SCL-90-R Depression subscale scores ($r[49] = .34, p < .01$). They were also correlated with Peer/Spare-Time Problems scores 6 months after hospitalization ($r[67] = .42, p < .001$). Baseline Peer/Spare-Time Problems scores were not significantly related to depression severity, rehospitalization, suicidality, or living changes during the 6 months after hospitalization.

TABLE 1
Baseline Diagnoses in Relation to Suicide Attempts, Living Changes, and Social Problems Six Months After Hospitalization

Baseline Diagnoses	<i>n</i>	Suicide Attempt (%)	Living Change (%)	Peer/Spare-Time Problems SAICA Composite (Mean ± SD)
AFFEC (vs. any other disorder)	68/17	13.2/5.9	35.3/29.4	4.3±1.3/4.5±0.9
MDD (vs. any other disorder)	54/31	11.1/12.9	31.5/38.7	4.4±1.3/4.3±1.2
CD/SUD (vs. any other disorder)	30/55	10.0/12.7	53.3/23.6	4.8±1.2/4.1±1.1**
AFFEC + CD/SUD (vs. either or other disorder)	24/61	8.3/13.1	54.2/26.2	4.8±1.3/4.2±1.1*
AFFEC without CD/SUD (vs. any other disorder)	44/17	15.9/5.9	25.0/29.4	4.0±1.2/4.5±0.9
AFFEC + CD/SUD (vs. AFFEC but no CD/SUD)	24/44	8.3/15.9	54.2/25.0	4.8±1.3/4.0±1.2*

Note: SAICA = Social Adjustment Inventory for Children and Adolescents; AFFEC = affective disorder; MDD = major depressive disorder, CD/SUD = conduct disorder and/or substance use disorder.

* $p \leq .05$; ** $p \leq .01$.

TABLE 2
Parent/Family Baseline Functioning and Adolescent Outcome
Six Months After Hospitalization^a

Baseline Measure	RADS	Peer/Spare-Time Problems ^b
Mother		
SCL-90-R Total	.31**	.36***
SCL-90-R Depression	.23*	.30**
SAS-SR Total	.18	.14
Father		
SCL-90-R Total	.13	.04
SCL-90-R Depression	.01	.07
SAS-SR Total	.03	.16
Family		
Relationship With Mother (SAICA)	-.08	.06
Relationship With Father (SAICA)	.31**	.15
Parent-Adolescent Conflict (SAICA)	-.01	.26*
Family Assessment Device	.29**	.17

Note. RADS = Reynolds Adolescent Depression Scale; SCL-90-R = Symptom Checklist-90-Revised; SAS-SR = Social Adjustment Scale-Self Report; SAICA = Social Adjustment Inventory for Children and Adolescents.

^aPearson correlation coefficients; actual *n*'s vary between 36 (RADS and father SAS-SR) and 66 (SAICA: Peer/Spare-Time Problems and Relationship With Mother).

^bSAICA composite score. Higher scores reflect more severe problems.

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .005$.

Baseline Family/Parental Functioning and Adolescent Outcome

SES and caregiver structure (two biological/adoptive parents, biological/adoptive parent and stepparent, single parent, other adult/out-of-home) at the time of hospitalization were unrelated to RADS, SIQ-Jr, and SAICA composite scores after hospitalization. They were also unrelated to suicide attempts and rehospitalizations.

Baseline maternal SCL-90-R Total and Depression subscale scores were positively correlated with adolescents' baseline RADS scores ($r[57] = .27$, $p < .03$, and $r[57] = .22$, $p < .05$, respectively). Baseline paternal SCL-90-R scores and parental SAS-SR scores were not significantly correlated with adolescents' baseline RADS scores. Table 2 presents correlations between parents' baseline SCL-90-R and SAS-SR scores and adolescent outcome variables. Maternal SCL-90-R Total and Depression subscale scores were positively correlated with adolescent depression severity (RADS) and peer/spare-time problems (SAICA).

FAD Global Functioning and SAICA Relationship With Father subscale scores were positively correlated with adolescent RADS scores at baseline ($r[69] = .36$, $p < .001$, and $r[58] = .34$, $p < .004$, respectively). They were also significantly correlated with RADS scores after hospitalization (Table 2). This indicates that perceived family dysfunction and, more specifically, a less active/involved father-adolescent relationship were linked with adolescents' self-reported depression.

Baseline Parent-Adolescent Conflict scores were also related to Peer/Spare-Time Problems scores after hospitalization (Table 2) and psychiatric rehospitalization ($F[1,66] = 5.35$, $p < .03$). Adolescents who were rehospitalized had higher mean scores on this subscale (mean = 2.49, SD = 0.96) than did other adolescents (mean = 1.95, SD = 0.86), indicating more severe psychosocial problems.

Treatment Follow-Through and Adolescent Outcome

Complete follow-through with medication management sessions was evident for 67.6% of adolescents for whom medication was a recommended treatment. Approximately 20% ($n = 14$) were in the none/minimal group and 13% ($n = 9$) were in the group that received some follow-through (more than one contact, discontinued without professional recommendation). Reported follow-through with individual therapy sessions was as follows: complete (48.2%), some (37.3%), and none/minimal (14.5%). Reported follow-through with family therapy was the lowest: complete (36.3%), some (32.5%), and none/minimal (31.3%).

Medication follow-through was associated with less severe peer/spare-time problems and self-reported depression 6 months after hospitalization (Table 3). An ANCOVA, using baseline RADS as the covariate, revealed a significant group difference in outcome RADS for follow-through groups. A similar ANCOVA, using baseline Peer/Spare-Time Problems scores as the covariate, revealed a significant difference in outcome Peer/Spare-Time Problems scores for follow-through groups. Additional ANCOVAs were conducted to determine the location of group differences. The complete medication follow-through group had lower Peer/Spare-Time Problems scores than the none/minimal ($F[1,46] = 4.13$, $p < .05$) and some follow-through groups ($F[1,39] = 4.42$, $p < .05$). Trends suggested that the complete group also had lower RADS scores than the none/minimal ($F[1,49] = 3.82$,

TABLE 3
Medication Follow-Through and Adolescent Functioning Six Months After Hospitalization

Measure of Adolescent Functioning	Medication Follow-Through					
	None/Minimal		Some		Complete	
	Mean	SD	Mean	SD	Mean	SD
RADS ^a						
Baseline	72.7	17.5	77.0	10.5	74.2	17.3
Outcome	72.4	17.7	77.0	12.4	63.8	16.8
SIQ-Jr						
Baseline	28.5	22.4	20.8	16.3	32.5	27.2
Outcome	20.5	16.9	23.8	16.6	20.9	20.3
SAICA (Peer/Spare-Time Problems) ^a						
Baseline	6.2	1.5	5.7	2.0	6.0	1.4
Outcome	4.9	1.5	4.8	0.8	4.1	0.9

Note: RADS = Reynolds Adolescent Depression Scale; SIQ-Jr = Suicidal Ideation Questionnaire-Junior; SAICA = Social Adjustment Inventory for Children and Adolescents.

^aAnalyses of covariance, with baseline scores as the covariates, indicated a significant difference among follow-through groups: RADS ($F[2,55] = 3.39, p < .05$), Peer/Spare-Time Problems ($F[2,51] = 3.22, p < 0.05$).

$p = .057$), and some follow-through groups ($F[1,44] = 3.94, p = .053$). Medication follow-through was unrelated to indices of suicidal ideation and behavior, rehospitalization, and family living changes after hospitalization.

Reported follow-through with individual and family therapy was unrelated to all adolescent outcome variables (Tables 4 and 5). When baseline scores were entered as covariates, there were no significant differences associated with individual or family therapy follow-through.

Multivariate Analyses of Outcome

Outcome Depression Severity. Baseline RADS was entered first in the hierarchical multiple regression and

accounted for 32.7% of the variance in outcome RADS ($F[1,26] = 12.66, p < .01$). Baseline parent/family variables that had significant univariate associations with outcome RADS (maternal SCL-90-R Total, Relationship With Father, FAD Global scores) were entered as the second block of predictor variables. The equation was significant and accounted for 41% of the variance ($F[4,23] = 4.05, p < .02$). Finally, medication follow-through was added as a predictor variable. The third equation was also significant and accounted for 49.5% of the variance in depression severity 6 months after hospitalization ($F[5,22] = 4.31, p < .01$). With the exception of baseline RADS, however, none of the additional variables were significant as independent predictors.

TABLE 4
Individual Therapy Follow-Through and Adolescent Functioning Six Months After Hospitalization

Measure of Adolescent Functioning	Individual Therapy Follow-Through					
	None/Minimal		Some		Complete	
	Mean	SD	Mean	SD	Mean	SD
RADS						
Baseline	70.2	23.8	71.1	15.7	74.3	16.3
Outcome	63.2	19.7	63.4	16.8	68.3	17.7
SIQ-Jr						
Baseline	26.6	22.7	21.6	20.9	36.5	27.1
Outcome	18.6	19.3	15.4	13.6	23.9	22.2
SAICA (Peer/Spare-Time Problems)						
Baseline	6.1	1.7	5.9	1.8	5.8	1.4
Outcome	4.2	1.5	4.3	1.2	4.3	1.1

Note: RADS = Reynolds Adolescent Depression Scale; SIQ-Jr = Suicidal Ideation Questionnaire-Junior; SAICA = Social Adjustment Inventory for Children and Adolescents.

TABLE 5
Family Therapy Follow-Through and Adolescent Functioning Six Months After Hospitalization

	Family Therapy Follow-Through					
	None/Minimal		Some		Complete	
	Mean	SD	Mean	SD	Mean	SD
RADS						
Baseline	73.6	17.3	70.2	16.5	74.2	18.1
Outcome	67.2	15.7	60.7	16.0	69.7	19.1
SIQ-Jr						
Baseline	26.2	22.7	25.3	21.0	38.1	29.1
Outcome	16.8	16.5	16.9	14.3	25.5	24.6
SAICA (Peer/Spare-Time Problems)						
Baseline	6.0	1.7	5.9	1.6	5.9	1.5
Outcome	4.3	1.4	4.2	1.2	4.4	1.2

Note: RADS = Reynolds Adolescent Depression Scale; SIQ-Jr = Suicidal Ideation Questionnaire-Junior; SAICA = Social Adjustment Inventory for Children and Adolescents.

Outcome Suicidal Ideation and Attempts. Baseline SIQ-Jr scores, RADS scores, and SSB scores together accounted for 26% of the variance in SIQ-Jr scores 6 months after hospitalization ($F[3,64] = 7.56, p < .001$). Baseline RADS and SSB scores were independent predictors of SIQ-Jr scores after hospitalization ($t = 2.2, p < .04$, and $t = 2.04, p < .05$, respectively).

A logistic regression analysis indicated that baseline SIQ-Jr and RADS scores combined to predict suicide attempts (yes/no) after hospitalization ($\chi^2[2] = 10.78, p < .01$). When baseline SSB scores were added to the equation, there was no incremental correct prediction and the equation was nonsignificant.

Outcome Peer/Spare-Time Problems. Baseline Peer/Spare-Time Problem scores and conduct/substance use disorder (yes or no) were entered first into the regression equation. These adolescent variables accounted for 15% of the variance ($F[2,52] = 4.56, p < .02$). The equation remained significant and accounted for 22% of the variance when medication follow-through was also included ($F[3,31] = 4.76, p < .01$). When these analyses were redone with parent/family variables entered as the second block of predictor variables, the equation was nonsignificant.

DISCUSSION

The present findings highlight the necessity of conceptualizing outcome as a multidimensional phenomenon. Outcome predictors varied across outcome measures reflecting depression severity, suicidality, and social adaptive functioning. As a general rule, the findings indicate that the nature and course of psycho-

pathology was difficult to disrupt, with baseline characteristics emerging as the strongest predictors of comparable outcomes. Nevertheless, some good news was also evident as reported attendance at medication management sessions was associated with decreased peer/spare-time problems and self-reported depression severity after hospitalization. Thus, findings suggest that it is possible to shift or move adolescents toward more positive developmental pathways.

The presence and severity of adolescents' depressive symptoms, including suicidal thoughts, at the time of initial hospitalization were the baseline characteristics most strongly related to depression severity, suicidality, and rehospitalization 6 months after hospital discharge. In a parallel manner, the presence of severe behavioral and social impairment at the time of hospitalization, as indicated by the presence of conduct/substance use disorders and peer/spare-time problems, was most strongly related to number of living changes and peer/spare-time problems after hospitalization. These findings reflect the difficulty inherent in attempting to alter the ongoing trajectory that characterizes the nature and course of severe psychopathology.

It is within this context that the decreases in depression severity and peer/spare-time problems associated with medication follow-through are best understood. Depressive symptoms and acute suicide risk are primary targets of hospital-based treatment and aftercare recommendations for adolescents. With increasingly brief hospital stays (e.g., Schlesinger et al., 1996), a strong emphasis is placed on stabilization, evaluation, and treatments aimed at target symptoms and factors critical

to the maintenance of safety. Because of the close link between depression and suicide attempts (e.g., Brent et al., 1993; Pfeffer et al., 1991) as well as completed suicide (e.g., Marttunen et al., 1991; Rao et al., 1993), depressive symptoms are a target of obvious importance. Furthermore, medication is a medical intervention and is thus consistent with the purpose of a "psychiatric" hospitalization. Efficacy of antidepressant treatment, especially selective serotonin reuptake inhibitors, is becoming clear (Emslie, 1995). In the absence of long-awaited objective data, medication has become central to the treatment of major depressive disorder in youths.

The association between treatment follow-through and fewer peer/spare-time problems is perhaps more remarkable given the difficulty inherent in altering patterns of interpersonal functioning with family members and peers. Conduct and substance use disorders among hospitalized adolescents often reflect long-standing problems (e.g., Windle, 1990) that are part of a complex web of transactional influences. Brief hospitalization and relatively infrequent outpatient sessions aimed at the individual adolescent often seem to be of insufficient impact and intensity to counter these influences. As an example, Pyne et al. (1985) reported findings from an outcome study, conducted 12 to 45 months posthospitalization, of 70 adolescents who had been consecutively hospitalized on a general psychiatric unit for periods ranging from 2 days to 73 weeks. The majority of adolescents in their study showed evidence of symptomatic improvement; however, marked parent-adolescent conflicts and difficulties in peer social relationships usually remained.

Clinical Implications

Findings from this naturalistic outcome study indicate that adolescent follow-through with medication management appointments is linked with more positive outcomes 6 months after psychiatric hospitalization. Given the paucity of outcome data attesting to the efficacy of psychiatric interventions with adolescents, this is of substantial importance. A previous report of a study of predictors of treatment follow-through after psychiatric hospitalization noted that mothers' self-reported hostility was associated with less adolescent follow-through with medication management appointments (King et al., 1997), suggesting the importance of addressing parental characteristics

and concerns in efforts to maximize adolescents' medication follow-through.

The mechanisms underlying the association between medication follow-through and outcome are unclear because it was not possible to randomly assign adolescents to treatments or follow-through conditions. The positive association may reflect compliance in taking an effective psychoactive medication. It is also possible that medication follow-through was higher among adolescents for whom the medication was most effective or among adolescents with other unmeasured characteristics related to positive outcomes. These possible explanations are not mutually exclusive.

Limitations and Directions for Future Research

This naturalistic outcome study highlights predictors of adolescent functioning after hospitalization. Because it was not designed as an effectiveness study (pre- and post-measures with untreated control groups), it is important not to interpret findings in terms of the benefits, or lack thereof, of hospitalization. Possible informant biases must also be considered. Because parents completed measures assessing their adjustment and their child's social functioning, positive relationships between these measures may reflect a confound between maternal depression and perceptions of adolescent functioning. In terms of generalizability, findings may most appropriately be generalized to the population of Caucasian adolescents admitted to general psychiatric units.

Findings suggest that we would do well to study specific parameters related to daily medication compliance. It would also be helpful to obtain more specific information on follow-through with particular types of medication, as these are prescribed for specific psychiatric illnesses or target symptoms. Because this study did not make use of a systematically standardized measure of treatment follow-through, additional effort in this area is warranted.

Further research is also needed on psychotherapies for severely disturbed adolescents. Individual and family therapies may be less than optimally effective, as traditionally delivered, to the current population of adolescent psychiatric inpatients. Given standards of reimbursement for psychiatric hospitalization, it is probable that the majority of these adolescents have already received outpatient psychotherapy services. They may be resistant to the beneficial effects of psy-

chotherapy. Outcome studies are needed that assess treatment components as well as parameters of psychotherapy, such as treatment setting, number of missed sessions, and presence/absence of "working" alliance. Perhaps it will be possible to target specific types and intensities of psychotherapy that are helpful, in conjunction with medication, for this population of adolescents.

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