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Psychopathology in Children of Parents with Recurrent Depression

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We examined the prevalence of psychopathology in children of parents with recurrent major depression (n = 61) and children of normal control parents (n = 46). Rates of psychopathology in the children of depressed parents were consistently higher when compared either with the control children or with rates of disorder reported for nonclinically referred children from other studies. Forty-one percent of high-risk children met criteria for at least one psychiatric disorder compared with 15% of low-risk children. Significant differences between groups were found for affective disorders and attention deficit disorder, and a nonsignificant trend was noted for anxiety disorder, all of which were more prevalent in the children of depressed parents.

INTRODUCTION

The offspring of depressed parents have been the focus of increasing attention during the past decade (Beardslee, Bemporad, Keller, & Klerman, 1983; Billings & Moos, 1985; Cytryn, McKnew, Bartko, Lamour, & Hamovit, 1982; Orvaschel, Weissman, Padian, & Lowe, 1981; Weissman, Prussoff et

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al., 1984). Preliminary information on risk for psychopathology was obtained when these children were included as comparision groups in studies of children with schizophrenic parents (Gamer, Gallant, Grunebaum, & Cohler, 1977; Neale & Weintraub, 1975). Reports of the impaired parenting abilities of depressed patients provided additional evidence of potential risk to children. Depressed parents have been described as less involved with their children and showing increased friction, resentment, and helplessness, and decreased interaction and affection (Anthony & Ittleson, 1980; Cohler, Grunebaum, Weiss, Hartman, & Gallant, 1976; Weissman, Paykel, & Klerman, 1972).

Evidence from retrospective studies on the childhood histories of depressed adults also indicated that an affective disorder in a parent is related to poor prognosis in the offspring. Several of these studies reported that the childhoods of depressed adults are more likely to include parental rejection, abuse, inattention, family discord, and higher rates of parental psychopathology than are the childhoods of controls (Jacobson, Fasman, & DiMascio, 1975; Munro, 1966; Perris, 1966a). Reviews of first-generation research on children at risk for affective disorders have been previously published and provide historical perspective and discussions of unresolved research issues (Orvaschel, Weissman, & Kidd, 1980; Orvaschel, 1983a).

More recent research has been concerned with the type and magnitude of risk to these offspring and the factors that contribute to, or are associated with, the prevalence and incidence of psychopathology in children whose parents have an affective disorder (Weissman, 1987). In order to address the type and magnitude of risk, we present the results of a longitudinal study comparing the prevalence of psychiatric disorder, particularly affective illness, in children considered at high or low risk for psychopathology. While the focus of this presentation is on differential rates of disorder, subsequent papers will report our findings on associated or contributory risk factors.

We examined the prevalence of psychopathology in children of parents with recurrent major depression compared with children of control parents. Parents with recurrent depression (three or more episodes) were selected in an effort to decrease the heterogeneity of affective illness in the patient group and to increase the likelihood of studying familial depression (Gershon, Weissman, Guroff, Prusoff, & Leckman, 1986; Perris, 1966b). Parents with no known psychopathology, matched to the patient group for income and socioeconomic status, were selected as controls.

METHOD

Subjects

Sixty-one children from 34 families constituted the high-risk group and 45 children from 29 families made up the low-risk group. All of the children

were identified on the basis of their parents' psychiatric status. In the high-risk group, at least one parent in each family was in treatement for recurrent major depression. These patients were obtained from the Maintenance Interpersonal Psychotherapy (MIPT) study at Western Psychiatric Institute (MH 29618, David Kupfer, M.D., principal investigator). Patients were invited to participate if they met DSM-III criteria (American Psychiatric Association, 1980) for at least a third episode of major depressive disorder and had children between the ages of 6 and 17 years. Signed consent forms were obtained from patients and participating family members.

Of the 34 patient parents included, 8 were fathers and 26 were mothers. Their mean age of onset for major depression was 24.8 (median = 24) and the mean number of episodes was 7.8 (median = 5). All index parents were outpatients at the time of initial intake into the MIPT study, but they may have been hospitalized previously or since. It should be noted that all the depressed parents in this sample were severe cases, by definition, since they all met criteria for recurrent major depression. Patient evaluations were conducted by MIPT study staff and not by staff of this study. However, because of consent procedures, child and family assessment interviewers were not blind to the group membership of families.

Control families were selected for study if neither parent met DSM-III criteria for any Axis I psychiatric disorder. Some families were recruited from control groups of other studies assessing parental psychopathology but were reevaluated for this study with the SADS-L, a semistructured psychiatric interview (Endicott & Spitzer, 1978). However, most low-risk families were obtained from the community of Allegheny County.

Community recruitment required the use of the Coles reverse telephone directory, which lists telephone numbers according to street addresses. Neighborhoods were selected on the basis of the listed mean education and income for the area, as well as the mean number of households with children under age 18. We conducted telephone screens to determine if the household had children who met our age range criteria and followed this with general questions regarding psychiatric treatment and episodes of psychopathology for parents. If the parental screen was negative and the family gave preliminary consent for participation, an appointment was scheduled. Written consents were obtained and parents were then more formally assessed with the SADS-L before a final inclusion decision was made. No assessment of children was undertaken until parent assessments were completed and a decision of inclusion was determined.

Assessment Procedure

Demographic information was obtained for all families and included marital status, parents' education and occupation, and family income. A

SADS-L interview provided information about parents' history of psychopathology. Psychiatric status of noninterviewed parents and extended family (children's maternal and paternal aunts, uncles, and grandparents) was based on the family history method (Andreasen, Endicott, Spitzer, & Winokur, 1977; Orvaschel, Thompson, Belanger, Prusoff, & Kidd, 1982), with the child's mother as informant.

Child psychopathology was assessed with the Schedule for Affective Disorders and Schizophrenia for School-Age Children-Epidemiologic Version (K-SADS-E, Orvaschel, Puig-Antich, Chambers, Tabrizi, & Johnson, 1982), a semistructured interview designed to ascertain information on past and current signs and symptoms of DSM-III Axis I psychiatric disorders. Mothers were interviewed first about their children and then children were interviewed separately about their own behavior. The same interviewer conducted both mother and child interviews. Mothers were more frequently relied on for information on treatment, overactivity, and chronology of behaviors, while children were generally considered better informants of their own internal states (i.e., depression and anxiety). The use of the K-SADS-E and similar available psychiatric interviews has been extensively reviewed elsewhere (Orvaschel, Sholomskas, & Weissman, 1980; Orvaschel, 1986). Information regarding treatment and impairment was also noted on the K-SADS-E, and a measure of verbal IQ was obtained with the Peabody Picture Vocabulary Test (PPVT; Dunn & Dunn, 1981).

Child and family assessments were never conducted while a patient parent was in an acute phase of depression. Interviews were conducted only when clinicians from the MIPT study indicated that the patient was in "maintenance phase" (remitted or stabilized). This procedure was followed so that we could minimize the extent to which assessments would reflect transitory family crisis and maximize our ascertainement of more stable behaviors or characteristics.

RESULTS

Demographic Characteristics

The groups were frequency matched for social class and income level, resulting in no significant differences between groups on these variables. Social class was assigned on the basis of the Hollingshead two-factor index (Hollingshead & Redlich, 1958). No significant differences between groups were found for children's demographic variables. Children ranged in age from 6 to 17 years, with a mean age of 10.7 (SD = 3.3) and 11.1 (SD = 3.8) for high- and low-risk groups, respectively. About 60% of children in both groups were between 6 and 11 years. The low-risk group had a somewhat higher

proportion of males than did the high-risk group (63% vs. 53%). There were no significant differences between groups on verbal *IQ* ($\bar{X}$ = 107, *SD* = 13 vs. $\bar{X}$ = 109, *SD* = 15, high and low risk, respectively).

Child Psychopathology

Analysis of the psychopathology data was performed using chi-square tests of significance (with Yates correction) between high- and low-risk groups. However, data in the tables are presented by group and sex because of clinical interest in sex differences in rates of disorders.

An examination of the diagnostic findings showed consistently higher rates of psychopathology for children of depressed parents than for children whose parents had no psychopathology. Table I provides the rates of disorder for high- and low-risk children. Forty-one percent of high-risk children met criteria for at least one psychiatric disorder, at some time in their lives, compared with 15.2% of low-risk children. In addition, the high-risk group more frequently met criteria for multiple diagnoses than the low-risk group (23% vs. 4.2%). These group differences were statistically significant.

As another indication of child psychopathology, Table II presents the proportion of children in each group who had ever been treated or received medication for emotional or behavioral problems, as well as the percentage of children who had ever made a suicide attempt. Treatment ranged from brief consultation to long-term (2+ years) care. None of the low-risk females were treated. About 14% of low-risk males were treated but none beyond consultation or brief care. About 33% of the high-risk group, compared with 9% of the low-risk group, have been in outpatient treatment, including long-term care for several ($p < .003$). None of the low-risk children were ever hospitalized or received medication for psychopathology and none ever attempted suicide, while in the high-risk group two children were hospitalized, four received medication, and three had made suicide attempts. However,

Table I. Rates of Child Psychopathology

	High risk (%)			Low risk (%)			
	Male $n = 32$	Female $n = 29$	Total $n = 61$	Male $n = 29$	Female $n = 17$	Total $n = 46$	Sig.[a]
Any disorder	40.6	41.4	41.0	17.2	11.8	15.2	<.004
One diagnosis	21.9	13.8	18.0	10.3	11.8	10.9	<.035
More than one diagnosis	18.8	27.5	22.9	6.8	0	4.4	<.001

[a]Chi square.

Table II. Treatment of High- and Low-Risk Children

	High risk (%)			Low risk (%)			
	Male $n = 32$	Female $n = 29$	Total $n = 61$	Male $n = 29$	Female $n = 17$	Total $n = 46$	Sig.[a]
Outpatient treatment	37.5	27.6	32.8	13.8	0	8.7	<.003
Inpatient treatment	0	6.9	3.3	0	0	0	n.s.
Medication	6.3	6.9	6.6	0	0	0	n.s.
Suicide attempt	0	10.3	4.9	0	0	0	n.s.

[a]Chi square.

these differences were not statistically significant, probably because of the very small cell sizes.

Rates of the most frequently occurring psychiatric disorders are presented in Table III. The categories are not mutually exclusive. Significant differences between groups were found for affective disorders ($p < .008$) and attention deficit disorder (ADD) ($p < .05$), and a nonsignificant trend was noted for anxiety disorders, all of which were higher for the high-risk children. While the prevalence rates for ADD in the low-risk group were similar to expected population rates for males and females (Barkley, 1981), rates of ADD for males and females were almost equal in the high-risk group. The types of anxiety disorders present for high- and low-risk children, respectively, were separation anxiety (8% vs. 4%), phobias (12% vs. 7%), and obsessive-compulsive disorder (7% vs. 0%). In the low-risk group, one male child had an adjustment disorder with depressed mood and one female adolescent had dysthymia, but no low-risk child met criteria for a major depression (MDD).

We examined the data from the teacher report version of the Achenback CBCL (TRFs; Edelbrock & Achenbach, 1984) as an additional check on the validity of our ADD diagnoses. This was done because teachers are considered crucial informants in the determination of ADD and because teachers' reports were blind to parental diagnosis and the purposes of this

Table III. Prevalence of Types of Disorders by Group

	High risk (%)			Low risk (%)			
	Male $n = 32$	Female $n = 29$	Total $n = 61$	Male $n = 29$	Female $n = 17$	Total $n = 46$	Sig.[a]
Affective disorder	18.8	24.1	21.3	3.4	5.9	4.3	<.008
Anxiety disorder	18.8	20.7	19.7	10.3	5.9	8.7	n.s.
ADD[b]	21.9	17.2	19.7	10.3	0	6.5	<.05

[a]Chi square.
[b]Attention deficit disorder.

Table IV. Affective Illness in High-Risk Group

	Male (%) (n = 32)	Female (%) (n = 29)	Total (%) (n = 61)
Mania	0	3.4	1.6
MDD	12.5	17.2	14.8
Dysthymia	9.4	20.7	14.8
Dbl dep.[a]	3.1	13.8	8.2
Any aff	18.8	24.1	21.3
Treat	83.3	85.7	84.6

[a]Double depression.

investigation. The results were consistent whether we compared all the ADD children (n = 13) with the rest of the sample (n = 74) or just the H-R ADD children (n = 11) with the H-R non-ADD children (n = 36) (TRFs were available on only 87 children because not all teachers returned forms). Children with a K-SADS-E diagnosis of ADD were rated by teachers as more overactive ($p < .018$), inattentive ($p < .016$), and externalizing ($p < .010$), and as having more behavior problems ($p < .028$) than childlren without a diagnosis of ADD (p values given are for H-R ADD vs. H-R non ADD group and are even stronger for total sample comparisons).

Affective Illness

A more detailed examination of affective illness in the high-risk group is presented in Table IV. Although there were no statistically significant sex differences females had somewhat higher rates of MDD and dysthymia and they were more likely to have both, listed as double depression. Males and females were equally likely to be treated for affective illness, but two females were also hospitalized and three females had made suicide attempts. All the females had a prepubertal onset of affective illness, as did all but one of the males. The one female who met criteria for mania had a postpubertal onset of manic disorder and a prepubertal onset of dysthymia, and her major depression included psychotic symptoms. About 85% of the high-risk children who met criteria for an affective illness received some form of treatment for their depression.

Finally, we examined the association between sex of sick parent, mean age of onset, number of episodes, and intake Hamilton (severity) ratings of depression in parents, and the presence of depression, ADD, anxiety disorder, or any psychiatric disorder in high-risk children. Except for sex of ill parent, this information about the parents was not available to this study until after the completion of our first wave, so that child diagnosis and family assessments were completed blind to specific proband illness characteristics.

No significant association was found between the sex of the patient parents and children's diagnostic status (depression, ADD, anxiety disorder, or any psychiatric disorder). There were also no significant differences for the mean number of parental episodes or Hamilton ratings of depression and any of the children's diagnostic findings. However, parents' age of onset for depression was significantly associated with depression in children, but not with ADD, anxiety disorder, or any psychiatric disorder. Mean age of onset of depression for parents with a depressed child was younger than that of parents whose children did not (yet) manifest an affective disorder ($\bar{X} = 19.0$, $SD = 7.6$ vs. $\bar{X} = 25.5$, $SD = 9.2$, respectively, $p < .05$).

DISCUSSION

The children in this study were a nonclinically referred sample identified as a function of the presence or absence of parental psychopathology. While prevalence rates of specific psychiatric disorders are available from community studies of adults (Robins et al., 1984; Weissman, Myers, & Harding, 1978), no similar population studies have been reported for children. However, comparisons between the low-risk sample in this study and comparable nonreferred samples of children are possible.

Prevalence estimates for affective disorders in children have been reported to range from 2 to 7% (Kashani & Simond, 1979; Kashani, Barbero, & Bolander, 1981). The rate for the low-risk children in this study was 5%. Kovacs et al. (1985) reported on the behavioral and psychiatric problems of diabetic children that predated their medical illness. The mean age of these children was 11 years, the same as the mean age for the low-risk children. Rates for the Kovacs sample and our low-risk sample, respectively, were 14% versus 15% for any psychiatric disorder, 8% versus 9% for anxiety disorders, and 4% versus 7% for attention deficit disorder. These comparisons suggest that the prevalence of specific types of psychopathology in the low-risk sample in this study is similar to those reported for comparable nonreferred community children.

Rates of psychopathology in the children of depressed parents were considerably higher when compared either with the low-risk group or with estimated rates of disorder for nonreferred children from other studies. In fact, while quantitative differences between the groups were pronounced, qualitative differences, not reflected in the tables, were even stronger. The high-risk children not only had higher rates of all types of disorder, their psychopathology was more severe, as reflected by their impaired functioning and their need for longer-term mental health intervention.

The high-risk children in the study had a very early age of onset for depression (all but one of the depressed children had a prepubertal onset).

Given that the probability of having an affective disorder increases with age, our findings suggest that the morbid risk for depression in the high-risk group may be extremely high over their lifetime. In addition, the sex ratio for affective disorders in the high-risk sample was almost equal. This is contrary to the substantially higher rates of depression reported for adult females compared with adult males (Weissman & Klerman, 1977). From the current data, it is unclear whether change over time in the sex ratio is the result of an increased incidence of depression in females only or whether males at risk for affective disorders manifest other forms of psychopathology (i.e., alcoholism) in adulthood while females continue to have increased rates of depression. It should be noted that the very early onset of depression in our high-risk children is significantly associated with an early age of onset in their parents, suggesting that age of onset for depression may be a familial characteristic.

Finally, 85% of the high-risk sample who met criteria for an affective disorder had been referred for treatment for depression; 15% of these depressed children were hospitalized and 23% had made a suicide attempt. Although we do not know what proportion of depressed children in the general population are referred for treatment, the treatment rates for this sample appear high. This finding may reflect depressed patients' increased sensitivity or concern about their children or their greater awareness of treatemnt availability, since the parents were themselves all treated for depression. However, the treatment rates may also indicate a more severe manifestation of affective illness in the high-risk sample, particularly with respect to suicidality and functional impairment.

Clearly, the data presented indicate that depression in parents is significantly associated with psychopathology in their offspring. This finding in itself is neither surprising nor new (Beardslee, Klerman, Keller, Lavori, & Podorefsky, 1985; Orvaschel, 1983b; Weissman, Leckman, Merikangas, Gammon, & Prusoff, 1984). More interestingly, the disorders in children most associated with parental depression were depression and attention deficit disorder. Higher rates of depression in the offspring of depressed parents are compatible with genetic or environmental explanations. The higher rates of attention deficit disorder in these offspring, while consistent with previous reports, are more difficult to explain (Biederman, et al., 1987; Kuyler, Rosenthal, Igel, Dunner, & Fieve, 1980; Orvaschel et al., 1981; Strober et al., in press). In addition, the sex ratio for attention deficit disorder in the high-risk group is contrary to reported population rates (Barkley, 1981). This is in contrast to our low-risk group, whose male/female rates of attention deficit disorder conform to population estimates.

In subsequent analyses, we will examine the psychiatric histories of extended family members of the children in this study, as well as family environment measures, in order to explore possible explanations for the

increased prevalence of psychopathology, particularly depression and attention deficit disorder, in children of depressed parents. Our findings indicate that these children have not only higher rates of disorder than children of psychiatrically healthy parents, but an early age of onset of psychopathology. We hope to identify specific risk factors associated with the occurrence of these disorders so that we can test their predictive value and examine their potential for primary prevention strategies.

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