

## Depressed Adolescents of Depressed and Nondepressed Mothers: Tests of an Interpersonal Impairment Hypothesis

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Two groups of depressed youngsters were compared. From an interpersonal perspective, it was hypothesized that depressed adolescents of depressed mothers would have significantly more interpersonal dysfunction than depressed youngsters of nondepressed mothers. In a large community sample of youth and their families, 65 depressed offspring of women with histories of a major depressive episode or dysthymia were compared with 45 depressed offspring of never-depressed women. As predicted, after controlling for current symptoms and family social status variables, depressed offspring of depressed mothers displayed significantly more negative interpersonal behaviors and cognitions compared with depressed offspring of nondepressed mothers, but they did not differ on academic performance. Implications concerning mechanisms, course, and consequences of different forms of adolescent depression are presented.

The early onset of depression commonly recalled by depressed adults (e.g., Burke, Burke, Regier, & Rae, 1990) and the increasing rate of depression in youngsters (reviewed in Birmaher et al., 1996) warrant concern and systematic study of causes and consequences of child and adolescent depression. Depression in children and adolescents is significantly impairing (e.g., Puig-Antich et al., 1985a, 1985b; reviewed in Hammen & Rudolph, 1996), and it portends recurrence and continuity into adulthood (Harrington, Fudge, Rutter, Pickles, & Hill, 1990; Kovacs et al., 1984; Rao, Hammen, & Daley, 1999; Rao et al., 1995; Weissman, Warner, Wickramaratne, Moreau, & Olfson, 1997). Among the many unanswered questions that might help direct prevention and treatment efforts is the matter of whether there are different forms of youth depression with different mechanisms and outcomes. Harrington, Rutter, and Fombonne (1996) discussed the heterogeneity of youth depression, pointing out that further study of differences between groups of depressed youngsters is needed for both theoretical and clinical reasons.

One of the best empirically supported predictors of depression in youth is having a depressed mother. A number of recent studies have demonstrated that half or more of the child and adolescent offspring of depressed women experience depressive disorders, as

well as other conditions (e.g., reviewed in Downey & Coyne, 1990; Hammen, Burge, Burney, & Adrian, 1990; Weissman, Fendrich, Warner, & Wickramaratne, 1992). Also, a good many depressed youngsters may have depressed mothers with disorders that are functionally linked in some fashion to maternal depression—although few studies of depressed children in clinical samples have reported on the status of the mothers (Hammen, Rudolph, Weisz, Rao, & Burge, 1999). On the other hand, obviously not all youth depression occurs in the context of a family with a depressed mother. It is not known whether depressed children of depressed women differ in any significant ways from depressed children of nondepressed women, because this question has not been addressed empirically.

This study addressed the issue of possible differences in youth depression. Our goal is not to simply demonstrate higher rates of disorders among adolescent children of depressed mothers compared to children of never-depressed women. Rather, we propose a comparison of the features of two groups of depressed youngsters in an effort to explore the issue of heterogeneity. Such explorations might help direct us toward further study of the mechanisms and consequences of youth mood disorder and indicate whether there are different pathways and unique characteristics of the two groups. The principle of equifinality suggests that adolescent depressions are not alike but may appear in offspring of depressed and nondepressed women stemming from somewhat different mechanisms.

There is reason to hypothesize that children of depressed women who experience depressive disorders may differ clinically and functionally from depressed children of nondepressed women. By way of background, we briefly review two streams of research on depression: (a) interpersonal dysfunction in depressed adults and (b) family-interaction variables contributing to children's risk for disorder as offspring of depressed women.

There has been increasing emphasis on interpersonal factors in adult depression that contribute to vulnerability to onset and re-

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currence of depression. There is no single unifying social model of depression but rather various empirical and theoretical developments that emphasize interpersonal cognitions and behaviors. A key characteristic of the interpersonal perspective is a particular emphasis on the dysfunctional transaction between the person and the social environment (e.g., Joiner & Coyne, 1999). Depressed individuals often function poorly in marriages and relationships with family members (e.g., reviewed in Barnett & Gotlib, 1988; Rao, Hammen, & Daley, 1999; Weissman & Paykel, 1974). They may engage maladaptively with others in ways that contribute to the occurrence of interpersonal stressful life events, which in turn may precipitate further depression (Davila, Hammen, Burge, Paley, & Daley, 1995; Hammen, 1991b). Depressed people are often dependent on others and seek reassurance in ways that distance others (Barnett & Gotlib, 1988; Joiner & Metalsky, 1995). They may often overvalue relationships as sources of self-worth but may also have acquired negative beliefs about the availability and trustworthiness of others (Beck, 1983; Blatt & Zuroff, 1992; Bowlby, 1980). In turn, negative attitudes by family members may predict a more protracted course of depression or precipitate relapses (e.g., Hooley, Orley, & Teasdale, 1986; Hooley & Teasdale, 1989; Keitner et al., 1995). Although many of the interpersonal deficiencies noted in depressed individuals may be depressive-state dependent, a number of the cited studies have indicated enduring difficulties even when the person is not currently depressed. Although obviously not all depressive disorders are functionally linked to maladaptive interpersonal relationships, research strongly suggests the importance of the contribution of social behaviors and beliefs in promoting depression and its recurrence.

An emphasis on the quality of the interpersonal context of depression also characterizes much of the recent research on mechanisms of risk to children who are offspring of depressed mothers. Studies of the intergenerational transmission of depression have frequently focused on the relationships between depressed mothers and their children. Dysfunctional interactions between depressed mothers and their infants, toddlers, and school-age children have been extensively documented (e.g., reviewed in Cummings & Davies, 1994; Downey & Coyne, 1990; Kaslow, Deering, & Racusin, 1994). These relationship difficulties are associated with insecure attachment in infants (e.g., Lyons-Ruth, Connell, Grunebaum, & Botein, 1990; Teti, Gelfand, Messinger, & Isabella, 1995) as well as a variety of emotional and behavioral disturbances. Although it is likely that the high risk for children to develop depression and other difficulties stems from multiple factors, including genetic liability and contextual features of the families' lives (e.g., Goodman & Gotlib, 1999), the maladaptive interpersonal milieu in which the children are raised is a critical factor. Youngsters may acquire maladaptive interpersonal cognitions and skills in the experience of interacting with and observing a depressed parent who him- or herself may experience a variety of difficulties in relationships with others.

Drawing on research supporting attachment difficulties in infants of depressed women and difficulties in the parent-child relationship, we speculate that interpersonal dysfunction in adolescence and adulthood might be a unique correlate, and possible mechanism, of offspring risk for depression. The acquisition of dysfunctional schemas about the self and others, and the deficiencies in interpersonal skills, may set the stage for vulnerability to depression, particularly when stressors are encountered that de-

plete or challenge the child's sense of worth, competence, and social relatedness. On the basis of the available data on dysfunctional interpersonal behavior and beliefs in depressed individuals generally, and depressed mothers specifically, we hypothesized that depressed youngsters of depressed and nondepressed women could be distinguished from each other.

The goal of the present cross-sectional study was not to test the causal mechanisms but to explore differences consistent with an interpersonal model of intergenerational transmission of depression. This model speculates that in the depressed mothers' interactions with their children, and the children's observations of their mothers, dysfunctional interpersonal skills and cognitions may be transmitted that contribute to youngsters' vulnerability to depression. Although social and interpersonal impairments are generally typical of depressed youngsters compared to their nondepressed peers, we predicted that the depressed offspring of depressed women would be more impaired, as indicated by worse functioning on a wide variety of indicators of social functioning and interpersonal cognitions. The predicted differences would occur independent of severity of depressed mood and of family social status factors. Also, the impairments would be expected to be specific to the interpersonal domain and not simply worse functioning generally (e.g., groups would not differ on academic functioning, the major nonsocial role in which youngsters may be evaluated).

We speculate that the social vulnerabilities of offspring of depressed women may contribute to earlier onset of depressive disorders and worse clinical features. Although biological and genetic factors may heighten risk for early onset, acquisition of interpersonal vulnerabilities may also result in early experiences of depressive disorders. Two studies of offspring of depressed women that compared them with youth depression in a normal proband group indicated earlier onset for the high-risk group. Weissman and her colleagues (1997) found that the depression in the offspring of depressed probands had onset at a mean age of about 12-13, compared with the depression in the control group (mean age, 16-17). Beardslee, Keller, Lavori, Staley, and Sacks (1993), with a small sample of adolescents, found earlier onset of depression among the children of a depressed parent and observed more comorbidity in the depressed youth of depressed parents. Only one other study has reported on differences between groups of depressed youth: Shiner and Marmorstein (1998), on the basis of an epidemiological study of twins, found that depressed adolescents could be separated into those with ever-depressed or never-depressed mothers; the former group, and their mothers, reported significantly more negative family environments than did those in the never-depressed-mother group.

The goal of this study, therefore, was to test differences in current social functioning and clinical history data in depressed youngsters. In this study two groups of young adolescents with current or past depressive disorders, as defined by major depressive episode (MDE) or dysthymic disorder, were compared. The groups differed in whether their mothers had a history of a diagnosable depressive disorder. The sample is uniquely suited to explore the issue of potential differences in interpersonal functioning that we hypothesize distinguish the groups. For one thing, it is a community sample rather than a clinical, treatment-seeking sample in which the treatment seeking itself may be affected by the family's overall circumstances, including maternal depression. A

community sample, therefore, is more likely to be an unbiased sample. It may also be a more representative sample, permitting generalization to the wider population of depressed youth on which many of the epidemiological findings of increased incidence are based. Another advantageous feature of the current sample is that all the youth were the same age, 15 years.<sup>1</sup> The homogeneity permits evaluation of differences between groups that are not confounded with age effects. Moreover, young adolescence is a developmental period during which social activities and alliances outside of the family take on increasing importance, potentially highlighting interpersonal maladjustment. A third advantage is that the sample is large enough to have a meaningful comparison between groups of depressed adolescents who are—or are not—offspring of depressed women.

In this study we compared the depressed adolescent children of depressed and nondepressed women in families who originally participated in a birth cohort study of prenatal factors affecting child development. Families were selected for the 15-year follow-up to oversample women who had reported depressive symptoms early in the child's life. A random sample of women who had never been depressed also was selected. As detailed below, diagnostic evaluations identified their actual clinical histories. We compared the groups on a variety of interview-based and questionnaire evaluations of their social functioning and cognitions about interpersonal situations. We also compared the youngsters on clinical aspects of their depression, such as age of onset, episode history, and comorbidity, to determine whether such differences might characterize a more severe or unique presentation of depression associated with maternal depression.

## Method

### *Participants*

The sample consisted of 816 fifteen-year-old adolescents and their mothers. They were selected from a birth cohort originally consisting of 7,775 mothers and their children born between 1981 and 1984 at the Mater Misericordiae Mother's Hospital in Brisbane, Queensland, a city of more than 1 million people on the east coast of Australia (Keeping et al., 1989). The original cohort was predominantly Caucasian (92%) and of lower middle and working socioeconomic status. The Mater-University of Queensland Study of Pregnancy (MUSP) was originally devised to investigate the children's physical, cognitive, and psychological health as a function of pregnancy and obstetric conditions, birth weight, and psychosocial conditions, and to predict age 5 health, development, and behavior. Mothers in the sample provided data about themselves and their circumstances at the first clinic visit (mean gestation 18 weeks) and provided additional details about their infants 3–4 days after delivery, when the child was ages 6 months and 5 years, and again at age 13. In this article we report on data collected from a follow-up assessment conducted when the target child was 15 years of age.

*Sample selection.* At each of the MUSP contacts, the mothers had completed a depression scale, the Delusions-Symptoms States Inventory (DSSI; Bedford & Foulds, 1978). The DSSI had been chosen as the measure of maternal mental health for the Mater Hospital birth cohort study because it was a valid screening instrument for mental health (e.g., Bedford & Foulds, 1977) and did not include symptoms that might be confused with the effects of pregnancy or childbirth. (Actual diagnostic information was collected in the present study as described below). In the present study, as noted below, the DSSI was not used to categorize maternal depression history: it was simply used to identify a sample for

inclusion into the diagnostic interview study on which the present report is based.

The present study was intended as an intensive follow-up of a large sample of depressed and nondepressed women and their children. Therefore, women's DSSI scores at the initial four testings were reviewed, and families were targeted for inclusion when their child became 15 years old, on the basis of patterns of elevation of scores and their participation in the questionnaire follow-up of the original MUSP investigators at age 13. The goal was to include as many women with putative depressive disorders as possible, varying in frequency of elevated scores (representing both chronicity and severity), along with a sample of comparison women who had no or few depressive symptoms. Specifically, women were included if they indicated severe depression at two or more times, severe depression only once between pregnancy and when the child was age 5, moderate depression two or more times but never severe, and low depression at all testings. From the sample still available for follow-up at age 13 (5,277, or 68% of the original sample), 991 families were targeted for inclusion in the present study when the children were age 15 because of mothers' depression scores. Of the 991, 816 consented and were included (82%); 68 families could not be located, 103 declined to participate in this wave, 3 included a child with a hearing or visual impairment that precluded participation, and 1 child had died.

*Characteristics of the sample.* There were 414 boys and 402 girls, whose mean age was 15 years, 2 months ( $SD = 0.29$  years). The overall sample included 92% Caucasians, median family income was \$35,000–\$45,000 (Australian), the median level of mother education was grade 10 (approximately equivalent to a U.S. high school graduate), and the mothers' mean age at the time of the youth 15-year follow-up was 41 years. Mothers' marital status included 76.8% who were currently married or cohabiting, and overall 64.8% were currently married to the biological father of the youth. Several of the demographic variables were used as covariates in the analyses to be reported: mothers' occupational status ( $Mdn =$  tradesperson, clerk, service worker), total family income, and whether she was at present married to the father of the target youth. The maternal-depression groups differed on these variables, and they were controlled to reduce their value as competing explanations for children's outcomes.

### *Procedure*

Interviews were conducted in the homes of the families at a time when both the mother and child were available. Interviewers were blind to the mother's depression status or history, and a team of two interviewers conducted the parent and child interviews separately and privately. Between interviews, the participants also completed a battery of questionnaires as noted below. The mother, child, and father gave written informed consent and were paid for their participation, which lasted approximately 3.5 hr.

A team of six interviewers was trained by Constance L. Hammen to conduct the diagnostic evaluations and life stress interviews. All were advanced graduate students in clinical psychology at the University of Queensland and had prior clinical and research interview experience. They were trained to proficiency and were closely supervised by means of audiotape and periodic visits by the investigators. Systematic reviews of samples of interviews were conducted at 6-month intervals over the 3-year course of data collection to prevent drift.

Interview staff had access to a project psychiatrist for consultation regarding urgent clinical situations, and the local administration of the project was overseen by the original MUSP researcher, Jake Najman.

<sup>1</sup> Our selection of follow-up for 15-year-olds was determined by practical factors, such as funding and establishment of collaborative arrangements.

Specific procedures and interrater reliability information are provided below.

### Assessments

**Maternal diagnostic evaluation.** As noted, a self-report instrument, the DSSI, was used to select women and their families into the study, but *Diagnostic and statistical manual of mental disorders* (4th ed. [DSM-IV]; American Psychiatric Association, 1994) diagnoses were derived from the Structured Clinical Interview for DSM-IV (First, Spitzer, Gibbon, & Williams, 1995). Presence of lifetime and current diagnoses were ascertained blind to the woman's prior scores on the DSSI, with dating of onsets and episodes made as precisely as possible. A reliability study based on 52 women in the study rated by independent judges yielded weighted kappas of .87 for current diagnoses of MDE or dysthymic disorder and subsyndromal depression and .84 for past depressive diagnoses or symptoms.

The depressed-mother sample consisted of 358 women with current or past MDE (at least one episode) or dysthymic disorder. One hundred sixty-four of the women had had at least one period of dysthymic disorder, and 271 had had at least one MDE (34% of the total had had two or more MDEs). Four of the depressed women had bipolar disorder (2 bipolar I and 2 bipolar II) and were omitted from the analyses. The depressed women also had lifetime histories of the following disorders: 26% reported one or more anxiety disorder, 5% reported alcohol abuse or dependence, 2% reported other substance abuse, and 4% reported eating disorders.

**Child diagnostic evaluation and self-reported depression.** Presence of depressive disorders in the child was ascertained using the Schedule for Affective Disorders and Schizophrenia for School-Age Children—Revised for DSM-IV (K-SADS-E; Orvaschel, 1995). The instrument is a semi-structured interview, administered by trained clinical interviewers, covering current and lifetime disorders. It is administered separately to the parent and the child; diagnostic decisions were reviewed by the clinical rating team with judgments based on all available information. The original K-SADS (e.g., Orvaschel, Puig-Antich, Chambers, Tabrizi, & Johnson, 1982) reported excellent reliability and validity for use with clinical samples. Orvaschel (1995) reported that the DSM-IV version had a kappa of .73 for current major depressive disorder and .72 for dysthymia, based on a clinical sample of 72 youngsters of mean age 11.6 years.

A reliability study in the current community sample was based on 75 interviews with the youth. Weighted kappas were .82 for current depressive diagnoses (MDE or dysthymia) or subclinical depression and .73 for past depressive diagnoses or subclinical depression. Reliabilities for current anxiety disorders, substance use disorders, disruptive disorders (conduct disorder or oppositional defiant disorder), and "other" (primarily eating disorders) ranged from .67 to 1.0, with a mean of .82; reliabilities for these disorders in the past have ranged between .72 and 1.0, with a mean of .81.

Self-reported depressive symptoms were obtained with the Beck Depression Inventory (BDI), a widely used and well-validated instrument for assessing severity of depressive symptomatology (Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961).

**Child role functioning.** To evaluate adolescents' ongoing experience in important roles, a semistructured interview for adolescents was developed from earlier versions of chronic strain/functioning measures for children (e.g., Hammen, 1991a) and adults (e.g., Hammen et al., 1987). The adolescent version used in the present study assessed six domains: social life, close friendship, romantic relationships (or dating interest), relations with family members, academic performance, and school behavior. The four interpersonal domains were of particular interest in the present study. Interviewers probed each area with the youth, using standard general probes and follow-up queries where needed. Each domain was scaled on a 5-point scale with behaviorally specific anchors such that 1 represented superior functioning and 5 represented severe difficulties. Reliabilities were based on independent judges' ratings of audiotaped interviews, with sample sizes between 88 and 96 for individual items (depending on completeness of tape recordings). Intraclass correlations were social life,

.63; close friendship, .76; relationship with family members, .84; romantic relationship, .55; academic performance, .94; and school behavior, .88.

**Youth stressful life events.** A semistructured episodic life stress interview procedure (e.g., Hammen, Ellicott, Gitlin, & Jamison, 1989; Hammen, Marks, Mayol, & deMayo, 1985), modeled after the contextual threat assessment of stressful life events (Brown & Harris, 1978), was administered to the youth. Covering the past year, the interview probed the occurrence of specific events, elicited as careful dating of occurrence as possible, and obtained information about the nature of the event and the circumstances in which it occurred. The interviewer prepared a narrative of each event and presented it to a rating team whose members were blind to the youth's family status and actual reactions to the event. The team rated each event on two 5-point scales: *severity* (how much impact the event would have on a typical person under similar conditions) and *independence* (extent to which the occurrence of the event was independent or dependent on behaviors or characteristics of the individual). Severity ranged from 1 (*no impact*) to 5 (*extremely severe*), and independence ranged from 1 (*fateful, entirely independent of the person*) to 5 (*totally dependent on the individual*). Two content classes of stressors were relevant to the present analyses: interpersonal events and conflict events (a subtype of interpersonal). Virtually all interpersonal events (and, thus, conflict events) were rated as at least partly dependent on the individual.

An interview for episodic life events developed by Constance L. Hammen has been used extensively with adult psychiatric patients and nonpatients (e.g., Hammen, 1991b), and was recently used in a study of young community women in the transition from adolescence to adulthood (e.g., Hammen et al., 1995); data on reliability and predictive validity have been reported by Hammen (1991b, 1995). In the present study, interrater reliabilities based on independent ratings by Australian and U.S. teams for 89 cases yielded intraclass correlations of .92 for severity rating and .89 for independence.

**Child interpersonal cognitions.** Children were administered the Self-Perception Profile for Adolescents (Harter, 1988), a 45-item self-report scale that assesses domain-specific areas of competence. Three subscales, each consisting of 5 items, were included in the present study: Close Friendship (perceived ability to make close friends); Romantic Appeal (perceptions of being romantically attractive, dating those they wish to date), and Social Acceptance (acceptance by peers, has friends, easy to like). Harter (1988) reported mean internal consistency reliabilities across four samples of .82, .81, and .82, respectively. Scores were summed across the five items of each scale to form totals, with higher scores representing more positive self-perceptions.

The four attachment prototypes developed by Bartholomew and Horowitz (1991) were administered, each rated on a 7-point scale ranging from 1 (*not at all like me*) to 7 (*very much like me*). (The prototypes may be scored dimensionally, as in the present study, or categorically.) The prototypes included *Fearful* (uncomfortable getting close to others, want emotionally close relationships but find it difficult to trust others or depend on them, worry about being hurt if allow self to get close to others), *Preoccupied* (wish to be emotionally intimate with others but find that others reluctant to get as close as I like, uncomfortable being without close relationships but worry that others don't value me as much as I value them), *Secure* (easy to become emotionally close to others, comfortable depending on others and having them depend on me, don't worry about being alone), and *Dismissing* (comfortable without close emotional relationships, important to feel independent and self-sufficient, prefer not to depend on others or have them depend on me). Several studies have demonstrated the construct and convergent validity of the prototypes in young adults (e.g., Bartholomew & Horowitz, 1991; Carnelley, Pietromonaco, & Jaffe, 1994). Data have not been reported on the use of Bartholomew and Horowitz's measure in 15-year-olds, but the results of the present study show predicted associations among interpersonal variables, suggesting construct validity.

The Youth Self Report (YSR) version of the Child Behavior Checklist (Achenbach, 1991) was administered to provide symptom status from the perspective of his multiaxial, empirically based methodology. For the present study, three items from the Social Competence subscale that pertained to youths' perceptions of their friendships were summed for a social subscale. These included the items "about how many close friends do you have?," "about how many times a week do you do things with any friends outside of regular school hours?," and "compared to others of your age, how well do you get along with other kids?" In the YSR questionnaire items are scored on a 3-point scale, and for the present items, lower scores indicate worse social functioning.

## Results

### *Clinical Features of Depression Among Children of Depressed and Nondepressed Mothers*

A total of 110 youngsters received a current or past diagnosis of major depressive episode or dysthymic disorder. As Table 1 indicates, this figure includes 65 offspring of depressed mothers (18.4%; 24 male, 41 female) and 45 children of nondepressed mothers (9.8%; 9 male, 36 female). As expected, the distribution indicated significantly more depressed offspring of depressed mothers,  $\chi^2(1, N = 812) = 12.43, p < .001$ .

Regarding gender, 13% of sons of depressed mothers, and 23.6% of the daughters, were depressed; 3.9% of sons of nondepressed women, and 15.9% of the daughters, were depressed. The distribution of depressed youth by gender and mother depression approached significance,  $\chi^2(1, N = 110) = 3.63, p = .057$ , two tailed—indicating that depressed boys were more likely to come from the depressed-mother group, whereas depressed girls were equally likely to come from either group.

A minority of the youth in both groups were currently experiencing an MDE or dysthymic disorder. The maternal groups did not differ in presence of youth current MDE,  $\chi^2(1, N = 110) = 1.54, ns$ . However, there was a higher proportion of currently dysthymic youth in the depressed-mother group compared to the nondepressed-mother group,  $\chi^2(1, N = 110) = 4.50, p = .03$ . Rates for presence of current disorder within maternal group and gender are shown in Table 1 and indicate that there were no significant gender differences.

The analyses tested the hypothesis that offspring of depressed mothers would have an earlier age of onset, and more episodes, of diagnosable depression. However, depressed youth in the two maternal groups did not differ in mean age of onset,  $F(1, 106) < 1$ . As commonly reported in epidemiological samples, depressed boys had a somewhat younger age of depression onset than depressed girls, but the effect was not significant, and there was no interaction of maternal group and gender. A few children experienced depressive disorders in early childhood as young as age 5, and the median age of onset for all the youngsters was 13.1 years. About one third of the entire group of depressed youth had experienced depressive disorders in the past year (or currently). Very few youngsters had experienced more than one prior MDE (6 children of depressed mothers and 2 of nondepressed mothers). Correspondingly, the hypothesis that children of depressed mothers would have more MDEs was not supported, as shown in Table 1; neither did episodes differ by gender (all  $F$ s nonsignificant). Among all depressed youth, offspring of depressed mothers tended to have higher rates of past dysthymic disorder than did children of nondepressed women,  $\chi^2(1, N = 110) = 3.01, p = .08$ . As

Table 1  
*Clinical Features of Depression in Children of Depressed and Nondepressed Mothers*

Feature of depression	Depressed children of depressed mothers		Depressed children of nondepressed mothers		Significance test for gender
	Male (n = 24)	Female (n = 41)	Male (n = 9)	Female (n = 36)	
No. (and %) with:					
Current MDE	4 (17) <sup>a</sup>	9 (22)	1 (11)	4 (11)	$\chi^2(1, N = 18) < 1, ns$
Current dysthymia	3 (13)	11 (27)	1 (11)	2 (6)	$\chi^2(1, N = 17) < 1, ns$
Mean age at onset of depression	11.4	12.7	10.6	13.1	$F(1, 106) = ns^d$
SD	3.4	2.1	3.5	2.0	
Past MDE (%)					
None <sup>b</sup>	12 (50)	15 (37)	6 (67)	9 (25)	$\chi^2(1, N = 42) < 1, ns$
M no. of MDE episodes	0.62	0.71	0.44	0.78	$F(1, 106) = ns^d$
SD	0.71	0.60	0.73	0.48	
Past dysthymia (%)	13 (54)	21 (51)	6 (67)	10 (28)	$\chi^2(1, N = 50) < 1, ns$
Other diagnoses (%)					
Attention deficit disorder	3 (13)	2 (5)	1 (11)	0 (0)	$\chi^2(1, N = 6) < 1, ns$
Conduct disorder	2 (8)	4 (10)	1 (11)	0 (0)	$\chi^2(1, N = 7) < 1, ns$
Oppositional defiant disorder	3 (13)	2 (5)	1 (11)	1 (3)	$\chi^2(1, N = 7) < 1, ns$
Anxiety disorders <sup>c</sup>	3 (13)	12 (29)	3 (33)	2 (6)	$\chi^2(1, N = 20) = 2.86, p > .10$
Eating disorders	0 (0)	4 (10)	0 (0)	4 (11)	$\chi^2(1, N = 8) < 1, ns$
Substance use disorder	3 (13)	4 (10)	0 (0)	3 (8)	$\chi^2(1, N = 10) = 1.84, ns$
Any disorder	9 (38)	21 (51)	4 (44)	8 (22)	$\chi^2(1, N = 42) < 1, ns$

Note. MDE = major depressive episode.

<sup>a</sup> Percentage within own gender/maternal group. <sup>b</sup> Some youth had only dysthymic disorder. <sup>c</sup> Excludes social and specific phobias. <sup>d</sup> For main effects and interaction.

indicated in Table 1, analyses by gender indicated no significant differences in sex distribution by group.

With respect to comorbidity, depressed youth in the maternal groups differed overall in the presence or absence of any other disorder,  $\chi^2(1, N = 110) = 4.28, p = .04$ , with higher rates among depressed children of depressed mothers. Past and current major diagnoses among depressed youth by gender and maternal group are presented in Table 1. None of the individual diagnoses was more prevalent across the maternal groups within gender, and the overall rates of any comorbid disorder were approximately equal for boys and girls.

### *Interpersonal Functioning in Depressed Children of Depressed and Nondepressed Mothers*

The next analyses tested the hypotheses that the two groups of depressed youngsters could be distinguished by interpersonal functioning, with worse social functioning and more negative self-perceptions of social functioning observed in depressed youth of depressed mothers. A series of two-way analyses of covariance (ANCOVAs or multivariate analyses of covariance for multiple subscales) were first conducted for general interest to demonstrate differences between depressed and nondepressed youth. A priori contrasts with one-tailed tests were performed to specifically compare the two depressed groups of youth with depressed or nondepressed mothers, testing the hypothesis of worse social functioning and perceptions among the depressed offspring of depressed mothers. Three demographic factors known to be associated with depression, and that could also have an impact on youth social adjustment, were evaluated. The depressed- and nondepressed-mother groups differed significantly, and therefore the three variables (mothers' occupational status, total family income, and whether married to the child's father) were included as covariates in the following analyses. Also, to rule out reported social functioning and social cognition differences that might be due to current depressed mood, youth BDI scores were also included as covariates.<sup>2</sup>

A set of preliminary analyses included youth gender as a factor in evaluations of social outcomes among the depressed youth. Only one variable indicated a significant Gender  $\times$  Maternal Group interaction: Daughters of depressed women were more likely than sons to report recent interpersonal negative life events. In the absence of further evidence of gender differences, in the following analyses sons and daughters are combined.

In Table 2 are reported the adjusted means comparing the overall groups. Sample sizes were reduced somewhat because of missing values of one or more covariates. Across the entire sample, there were 25 missing maternal occupational status, 30 missing family income, 24 missing marital status, and 11 missing youth BDI scores. In addition, there were between 1 and 34 cases missing youth outcome variables, depending on the variable. Accordingly, sample sizes vary somewhat for different analyses.

**Social functioning.** First, interviewer-based functioning ratings covering the past 6 months were summed across youth interpersonal domains (family relations, close friendship, romantic relationships, and social life). ANCOVAs indicated that the depressed youth differed significantly overall compared to nondepressed youth,  $F(1, 761) = 26.54, p < .0001$ . The a priori

contrast between the two depressed groups was significant,  $t(102) = 1.74, p < .05$ , with depressed adolescents of depressed mothers showing worse functioning in the social domains than depressed youth of nondepressed mothers. Inspection of the scales indicated that one of the most problematic interpersonal domains for the depressed youth of depressed mothers was quality of family relationships, with the groups differing markedly,  $t(102) = 2.73, p < .004$ .

As a demonstration that the social impairment was uniquely characteristic of depressed offspring of depressed mothers—rather than merely worse overall functioning—we also examined academic functioning, which is the only major nonsocial role generally played by young adolescents. Although overall the depressed and nondepressed youth differed in the expected direction at the trend level,  $F(1, 761) = 2.98, p = .085$ , the planned comparison between the two depressed youth groups was not statistically significant,  $t(102) < 1, p > .05$ .

**Stressful interpersonal life events.** Next we examined with ANCOVAs problematic interpersonal functioning as indexed by the experience of negative life events with primarily interpersonal content. These are events to which the individual contributed, and therefore they represent a measure of the extent to which the person's behaviors or characteristics either precipitated difficulties with another person, failed to resolve such problems before they became a significant negative event, or both. Two scores index such experiences: (a) total number of interpersonal negative events and its subcategory, (b) number of interpersonal conflict events. As expected, depressed and nondepressed youngsters differed from each other overall on total interpersonal negative events,  $F(1, 762) = 16.52, p < .0001$ , and conflict events,  $F(1, 762) = 26.82, p < .0001$ . Planned comparisons indicated that within the depressed groups, children of depressed mothers had significantly elevated rates of interpersonal and conflict events compared to offspring of nondepressed mothers,  $t(102) = 2.01, p < .05$ , and  $t(102) = 1.86, p < .05$ , respectively.

**Cognitions about social functioning.** Several variables indicated youngsters' perceptions about their social status, functioning, and beliefs about relationships. Three items from the Competence subscale of the YSR asked about relationships with friends. ANCOVAs of the sum of the items indicated marginally significantly more negative perceptions by depressed compared to nondepressed youth overall,  $F(1, 740) = 3.00, p < .08$ . The a priori contrast between the depressed groups revealed a significant difference, with depressed children of depressed women rating themselves more negatively on these items,  $t(97) = 1.72, p < .05$ .

Three interpersonal subscales of the Harter Self-Competence Scale indicated a nonsignificant overall difference between depressed and nondepressed youth, multivariate  $F(3, 672) < 1$ . However, planned comparisons specifically contrasting the two groups of depressed adolescents determined a significant difference for the Close Friendship subscale,  $t(93) = 2.44, p < .01$ —indicating that the depressed children of depressed women

<sup>2</sup> The two depressed groups of youth of depressed and nondepressed mothers differed marginally on current BDI ( $M = 11.2, SD = 10.22$ , and  $M = 8.78, SD = 7.64$ , respectively),  $t(107) = 1.32, p = .09$  (one-tailed).

Table 2  
Adjusted Mean Scores for Depressed and Nondepressed Children of Depressed and Nondepressed Mothers  
on Social Functioning Variables

Variable	Children of depressed mothers		Children of nondepressed mothers		Planned comparisons between depressed offspring groups
	Depressed	Nondepressed	Depressed	Nondepressed	
Role functioning <sup>a</sup>					
Social functioning					
<i>M</i>	9.8	9.0	9.3	8.1	$t(102) = 1.74, p < .05$
<i>SD</i>	1.4	1.3	1.4	1.1	
Family relations					
<i>M</i>	2.8	2.5	2.4	2.3	$t(102) = 2.73, p < .004$
<i>SD</i>	0.7	0.6	0.8	0.5	
Academic performance					
<i>M</i>	3.1	2.6	2.8	2.7	$t(102) < 1, ns$
<i>SD</i>	1.1	0.9	1.1	0.9	
Stressful life events					
No. interpersonal events					
<i>M</i>	2.5	1.4	1.8	1.5	$t(102) = 2.01, p < .05$
<i>SD</i>	2.0	1.4	1.2	1.4	
No. interpersonal conflict events					
<i>M</i>	0.90	0.28	0.45	0.29	$t(102) = 1.86, p < .05$
<i>SD</i>	1.20	0.62	0.66	0.51	
Cognitions about social functioning					
CBCL (YSR) <sup>b</sup>					
Social/friendships					
<i>M</i>	6.0	6.7	6.6	6.7	$t(97) = 1.72, p < .05$
<i>SD</i>	1.6	1.4	1.4	1.3	
Harter Self-Concept Scales <sup>c</sup>					
Close friend					
<i>M</i>	15.8	16.4	17.6	16.7	$t(93) = 2.44, p < .01$
<i>SD</i>	3.6	3.5	2.8	3.12	
Romantic appeal					
<i>M</i>	14.1	13.2	12.8	13.0	$t(93) = 2.14, p < .02$
<i>SD</i>	2.8	3.0	3.2	3.0	
Social acceptance					
<i>M</i>	15.5	15.6	15.8	16.0	$t(93) < 1, ns$
<i>SD</i>	3.6	3.0	3.2	2.9	
Bartholomew Attachment Prototypes <sup>d</sup>					
Secure					
<i>M</i>	4.3	5.1	5.6	5.2	$t(97) = 2.26, p < .02$
<i>SD</i>	1.9	1.6	1.6	1.6	
Dismissive					
<i>M</i>	3.4	3.1	2.6	3.3	$t(97) = 2.26, p < .02$
<i>SD</i>	1.8	1.7	1.5	1.7	
Preoccupied					
<i>M</i>	2.7	2.9	2.5	2.8	$t(97) < 1, ns$
<i>SD</i>	1.6	1.6	1.8	1.7	
Fearful					
<i>M</i>	3.2	2.6	2.0	2.5	$t(97) = 3.57, p < .001$
<i>SD</i>	2.0	1.7	1.2	1.5	

Note. Means are adjusted for covariates of maternal occupational status, marital status, total family income, and youth Beck Depression Inventory score. Planned comparisons are of adjusted means of depressed youth of depressed and nondepressed mothers, one tailed. CBCL = Child Behavior Checklist; YSR = Youth Self-Report.

<sup>a</sup> Higher values indicate worse role functioning. <sup>b</sup> Higher values indicate more involvement. <sup>c</sup> Higher values indicate more positive assessment. <sup>d</sup> Higher values indicate more self-descriptive.

had more negative self-concept on this dimension. An unexpected finding was that the significant difference between depressed groups on the Romantic Appeal scale suggested higher self-perceptions for the depressed youngsters of depressed mothers,  $t(93) = 2.14, p < .02$ . The groups did not differ on the Social Acceptance scale.

Next, multivariate analysis of covariance of the four scales of the Bartholomew attachment measure indicated that overall, depressed and nondepressed adolescents did not differ, multivariate  $F(4, 726) = 1.13, ns$ . Nevertheless, the planned comparisons on the four scales indicated that, as expected, the depressed children of depressed mothers saw themselves as less secure,  $t(97) = 2.26,$

$p < .02$ ; more fearful,  $t(97) = 3.57$ ,  $p < .001$ ; and more dismissing,  $t(97) = 2.26$ ,  $p < .02$ . They did not differ, however, on preoccupied attachment style.<sup>3</sup>

### Discussion

This research explored possible differences among groups of depressed youth and specifically evaluated the hypothesis consistent with an interpersonal perspective on intergenerational transmission of depression: that depression occurring in a family with a depressed mother is associated with more interpersonal impairment than depression occurring in offspring of women without mood disorders. The results confirm the overall hypothesis, demonstrating that in a large community sample depressive disorders in 15-year-olds are not all alike. Results go beyond the demonstration that depressed mothers produce depressed youngsters and indicate qualitative differences in the social functioning of the two groups of depressed youth.

The most pronounced differences among the groups occurred in interpersonal functioning. Indicators of ongoing social role performance revealed more impaired functioning in social domains, with a particularly marked problem, not surprisingly, in relationships with family members for depressed youth of depressed mothers. The depressed children of depressed mothers were also highly likely to have elevated rates of interpersonal and conflict life events, reflecting at least in part their relative difficulties in negotiating interpersonal relationships. The depressed adolescents of depressed mothers were also more likely to evidence dysfunctional cognitions about their social selves and worlds. They were significantly more likely than depressed children of nondepressed women to report fewer friends and social activities, and on the Bartholomew attachment scales they reported less secure and more dismissing and fearful cognitions about relationships. However, they were not generally more negative on the Harter Self-Concept subscales pertaining to perceived social value, although the depressed children of depressed mothers believed that they were less likely to be effective in the Close Friendship area. It is interesting that depressed children of depressed mothers were more positive about their romantic appeal than depressed children of nondepressed women, possibly indicating earlier involvement or greater hopefulness about such relationships (cf. Gotlib, Lewinsohn, & Seeley, 1998).

It is important to note that the differences between depressed offspring of depressed and nondepressed women were not attributable to differences in current depressive symptoms. Moreover, the groups did not appear to vary in age of onset or number of episodes. The depressed offspring of depressed mothers were not simply more impaired overall and showed no worse academic functioning than did the depressed offspring of nondepressed women. On the basis of these patterns of results it may be speculated that the interpersonal difficulties of the depressed youth are enduring and unique characteristics of a subgroup of depressed offspring of depressed women. However, the specific mechanisms that account for such outcomes, such as maternal depression, maternal social functioning, and other environmental conditions, require further analysis, which we plan to pursue.

An important implication of subgroup differences may be that the depressed youth of depressed women, because of interpersonal difficulties, will have earlier and more frequent recurrences of

depression, which could result from stressors associated with social maladjustment. Moreover, it might be speculated that youth interpersonal difficulties might set the stage for adult social difficulties, including dysfunctional marital relationships and even transmission of depression to their own offspring (e.g., Hammen, 1992). By contrast, if depressed adolescents of nondepressed mothers are relatively less socially impaired, they may function relatively normally when not depressed and may have less likelihood of recurrence of depression. If the two depressed groups actually do differ in clinical and social outcomes over time, the treatment implications are noteworthy, suggesting the need for changing interpersonal schemas and skills as targets of intervention particularly among the offspring of depressed women. Follow-up data are needed to specifically test the hypothesis of differential depression outcomes of the two groups as well as the stability of social functioning and cognitions.

As noted, the clinical features of age of onset and history of depressive disorders did not differ among groups. However, greater frequency of current dysthymic disorder was observed in depressed adolescents of depressed mothers. Also, although there was no difference in specific comorbid disorders in the two groups, the children of depressed women had higher rates of comorbidity overall (46%) than did depressed youth of nondepressed mothers (27%), a finding similar to those of Beardslee et al. (1993). The meaning of such patterns of current dysthymia and comorbidity requires further exploration to determine whether such outcomes are uniquely related to maternal depression. Also, it is unclear whether such clinical features may be a cause or a result of maladaptive social functioning. It is interesting that there was a tendency for a higher male proportion among the offspring of depressed women, whereas most of the depressed children of nondepressed women were girls. This pattern may indicate the operation of genetic factors in the high-risk group that reduce gender differences, or it may also suggest that potent psychosocial factors that override gender-related mechanisms are more prevalent among offspring of nondepressed women. The patterns of clinical variables overall did not reveal sharp distinctions among the groups but hint at the possibility of greater chronicity and overall symptomatology among the depressed children of depressed mothers. It would be useful to follow the unfolding course of disorder over time, anticipating that—consistent with their greater interpersonal impairment—depressed offspring of depressed women have a higher likelihood of recurrent depression and additional disorders. Also, although we did not observe differences in the two depression groups in age of onset, as did Weissman et al. (1997) and Beardslee et al., our participants were younger and may yet show such effects as they grow older.

<sup>3</sup> A set of analyses was conducted in which presence of a comorbid (lifetime) condition except specific phobias and mild social phobia was added to the demographic and BDI covariates. These analyses were very similar to those reported, with similar significant depressed group differences on composite social functioning ( $p = .06$ ), family relationships, interpersonal events, conflict events ( $p = .09$ ), self-report (Child Behavior Checklist) friendships ( $p = .06$ ), Bartholomew and Horowitz attachment representations, and Harter Romantic Appeal and Close Friendships. Also, similar to the results reported, there were no differences in academic functioning on the Bartholomew and Horowitz Preoccupied prototype and Harter's Social Acceptance scale.

Exploratory analyses of gender differences among the groups of depressed youth found few significant effects. However, on the dimensions of interpersonal life events, the depressed daughters of depressed mothers exceeded the means of all groups of depressed youth. This pattern is consistent with "stress generation" observed in samples of depressed females (e.g., Hammen, 1991b). Stress generation is the tendency to contribute to occurrence of interpersonal and conflict events and is especially maladaptive because it may contribute to further depressive reactions (e.g., Davila et al., 1995).

Overall, the results are consistent with the perspective that depression among children of depressed mothers is especially likely to occur in the context of—and perhaps result from—difficulties in their interpersonal skills and perceptions of others. The youths' difficulties may represent a mechanism of intergenerational transmission of depression that results in part from the parents' own interpersonal difficulties acquired in their childhood family environments. However, the present data are cross-sectional and descriptive, and they do not specifically test the mechanisms by which parental depression may be linked to adolescents' difficulties in social functioning. Mechanisms of offspring risk for depression await further testing based on more fine-grained studies of interactions and acquisition of maladaptive skills and beliefs. Similarly, further research is needed to determine whether the adolescents continue to display difficulties in their social spheres and what the consequences and outcomes may be over time.

Two other issues not addressed in the present study that represent intriguing questions to pursue are why many of the offspring of depressed women did not display depression or other disorders: the processes of multifinality (different outcomes for children of depressed mothers) and whether disrupted interpersonal functioning is specific to maternal depressive disorders or may also accompany other forms of parental psychopathology. The question of why some of the offspring of depressed women did not display disorders or social maladjustment requires further longitudinal study as the offspring pass further into the age of risk. We are also pursuing the issue by exploring in greater depth the clinical characteristics of depressed women, such as severity and chronicity of disorder, as well as various contextual variables, that may contribute to their children's different outcomes. Other characteristics of the children and their families may represent resilience factors, and further study over time would greatly enhance our knowledge of those who are truly resilient, and why. The present study did not include sufficiently large samples of women with nondepressive disorders to test the specificity issue, but it is an important question to pursue. It might be speculated that certain interpersonal impairments are unique to depressive disorders, but such issues require empirical evaluation.

Several limitations of the research design and methods are acknowledged. One is the cross-sectional nature of the data, which does not permit clarification of the origins, consequences, and stability of the observed social difficulties of the depressed offspring of depressed women. It would be extremely informative to observe these high-risk youth in their development of intimate relationships as they enter late adolescence and early adulthood and, of course, whether the processes of intergenerational transmission of depression repeat themselves. A second problem is that although few depressive-history differences were observed in the

two groups of depressed youth, the sample's limitation to 15-year-olds constrained the opportunity to observe differences that might occur at later ages. Moreover, there may be other clinical differences among groups that were not detected, perhaps at the level of symptoms and episode severity. As noted, additional analyses must be undertaken to test models by which to understand the role of interpersonal difficulties in depression and the possible link between parents' and children's social impairments. Further analyses should include an array of parental and contextual variables predicting youth outcomes, so that the unique role of maternal depression, if any, and the mechanisms involved, may be clarified. The present study was based on a large Australian community sample, but generalization to other populations differing in culture and age must await verification.

Although further study of groups of depressed youth will certainly enhance the confidence with which the interpersonal approach to intergenerational transmission of depression is supported, the current findings are provocative and have potentially important implications. They underscore the value of unraveling the heterogeneity of depressive disorders in youth and suggest that there may be different pathways to depression with different implications—and, potentially, different treatments. Clearly, if the present results are replicated in other samples or in follow-up analyses, they suggest the need for aggressive treatment of the social dysfunctions that may accompany being raised in high-risk families, in order to help reduce the risk for recurrence of depression and other disorders.

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