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Affective interactions of depressed and nondepressed mothers and their children

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The expressed affect of clinically depressed and nondepressed mothers as measured by the Schedule for Affective Disorders and Schizophrenia: Lifetime Version (SADS-L) and their children (1-1/2 to 3-1/2 years) was observed in seminatural situations. The objectives were to investigate how maternal depression enters into affective interactions between mother and child and how the affect patterns of mother and child are related. Forty-nine unipolar and 24 bipolar depressed mothers and 45 nondepressed mothers were observed on 2 days, 2 weeks apart, for a total of 5 h. Each minute was coded for the predominant affect of mother and child. Affects relevant to depression (anxious--sad, irritable--angry, downcast, pleasant, tender--affectionate) were coded. Depressed mothers expressed significantly more negative affect than did control mothers. Mothers' expressed affect and their self-reports of affect on days of observation were unrelated. Mother's and child's affects, measured on different days, were significantly correlated. Unipolar mothers and mothers severely depressed spent significantly more time in prolonged bouts of negative affect. There was significant synchrony between their bouts and the negative bouts of their daughters. Gender of child was related to mother's and child's affect, and to relations between mother's and child's affect.

Depressed mothers have been the subject of extensive research directed to understanding the difficulties that these women have in their parenting role and the risks their impairments bring to their children. Research has taken several forms. Offspring studies concerned with prevalence of problems (reviews by Beardslee, Bemporad, Keller, & Klerman, 1983; Downey & Coyne, 1990) have uniformly indicated elevated levels of disorder in children of depressed parents, although the nature and frequency of reported problems vary greatly across studies. Other research has focused on the qualities of depressed mothers' functioning. Compared with well mothers, depressed mothers have been reported to be less emotionally available to their children (Davenport, Zahn-Waxler, Adland, & Mayfield, 1984), less affectionate (Weissman and Paykel, 1974), more often hostile or in conflict with their children (Gordon et al., 1989), less effective in control practices (Kochanska, Kuczynski, Radke-Yarrow, & Welsh, 1987), more noncontingent (Cohn, Matias, Tronick, Connell, & Lyons-Ruth, 1986), and also more overinvolved (Davenport et al., 1984).

It is apparent that, should the full complement of these impairments characterize a given mother, it would constitute overwhelmingly inadequate mothering. But these findings are based on group mean differences, gleaned from studies in which only one or several of the dimensions were investigated in any given sample. Therefore, from these data we cannot answer the critical question of how depressed mothers vary in behavioral risk to their children.

Other research has been concerned with links between depressed mothers' functioning and child behavior. The severity and chronicity of mothers' depression were found to be significantly related to the magnitude of risk to the children (Keller et al., 1986; Harder, Kokes, Fisher, & Strauss, 1980).

To move further in research toward an understanding of parental depression and its consequences for children, a number of issues need to be addressed: The first is in regard to heterogeneity in maternal depression, in diagnostic terms and in functioning as a parent. The second concerns relations between specific aspects of mother's functioning and child behavior. The third directs attention to the contributions of child characteristics to the transmission process.

The Present Study

The present study grew out of these considerations and the conviction that, to understand processes by which maternal depression impacts on children, it is necessary to translate the diagnosis into properties that appear in the depressed mothers' parenting behavior. Mothers' expressions of affect in interactions with their children were the aspect of depression that was investigated. A related objective in this study was to examine mothers' diagnoses and their exhibited affect in relation to children's affective patterns. Gender of child was an interest relating to both goals.

METHOD

Subjects

The participants were 49 mothers with unipolar depression (29 boys, M age = 2.5 years, and 20 girls, M age = 2.5 years), 24 mothers with bipolar illness, (10 boys, M age = 3.0 years, and 14 girls, M age = 3.0 years), and 45 normal control mothers (23 boys, M age = 2.5, and 22 girls, M age = 2.8). Families were recruited through notices in day-care centers, parent groups, and clinical services, announcing a study of child development in families of depressed and nondepressed mothers. The approximately 500 mothers who responded were given a detailed telephone screening. Each mother who appeared to meet the criteria came to the laboratory for a psychiatric interview (Schedule for Affective Disorders and Schizophrenia: Lifetime Version, or SADS-L, RDC criteria, Spitzer & Endicott, 1977). A mother was eligible if she met the criteria for unipolar depression or bipolar illness (with other Axis I diagnoses excluded except possible anxiety secondary to the unipolar or bipolar illness), or if she had no past or current psychiatric problems. Ten interviews were coded independently with 100% agreement between coders on assignment of diagnosis. To be eligible, a mother had to be the primary caregiver to the child and could not have had long hospitalizations or other separations from the child.

Heterogeneity in mothers' diagnoses of depression was taken into account in three ways: (1) Unipolar and bipolar illness were differentiated because symptoms differ and mechanisms of intergenerational transmission are believed to differ (Gershon et al., 1982). (2) Differences in severity and chronicity were considered. An index of severity in the lifetime of the child was a Global Assessment Scale (GAS) score (Spitzer, Gibbon, & Endicott, 1973) of 50 or below indicating the most serious impairment in functioning to which the child had been exposed. The median score for unipolars was 50; for bipolars, 30. An index of chronicity was the amount of the child's life in which mother had been in depressive episodes. Data from the SADS interview provided estimates of weeks in each episode which were converted into percent of the child's life. Over 40% of a child's lifetime was considered high exposure. (3) To assess the mother's current mood, her self-report of moods (agreeable--hostile, elated--depressed, energetic--tired, clear minded--confused, composed--anxious, and confident-unsure) was obtained on the days of observation through the use of the Profile of Mood States (POMS; Lorr & McNair, 1984). The reported states were highly intercorrelated (r = .46 to .79, p [less than] .001) and stable over 2 days of observation (r = .66, p [less than] .001). Therefore, a composite score was used: an average of the 2 days, across the six categories. The group scores were divided as high, moderate, or low in negative feeling states.

Increasingly, depression is viewed as a dysfunctional process characteristic of the individual. Although depression is episodic, there are likely to be persisting residuals of dysfunction between episodes. In other words, the individual does not become an entirely different person from one period to the next. Several studies that have

specifically addressed this issue (Billings & Moos, 1985; Harder, Kokes, Fisher, and Strauss, 1980; Stein et al., 1991) have all reported behavioral and affective continuities between episode and nonepisode status, though symptoms are muted in periods out of episodes. In the present study, we have taken this perspective--namely, that the child of an affectively ill mother has experienced a history of interactions with its mother in which the core of her underlying affective disposition is expressed in day-to-day behavior. In observing the mother and child, we are observing that history as well as the immediate moment.

The families were mainly middle and upper middle class (M = 53, range = 26 to 66, on the Hollingshead index, 1975). The ethnic backgrounds were 85% Caucasian, 1% Hispanic, 2% Asian, and 12% Black. Mothers ranged in age from 22 to 45 (M = 32).

Procedures

Extended observation was needed to sample usual affect. Mothers and children were observed (and videotaped) in seminaturalistic conditions in a homelike laboratory apartment on 2 half-days, separated by 2 weeks (a total of approximately 5 h of observation). Time was scripted to have the half-days simulate everyday routines and events, and also to impose conditions to elicit specific behaviors of theoretical significance. Thus, mother and child were introduced to the apartment and what it offered in play materials, cupboard and refrigerator supplies, telephone, etc.; everything there was to be used as they wished. The staff person indicated that she would be interrupting with various tasks. A reasonably natural sequence was preserved and events included brief separations of mother and child, mother burdened with competing tasks, preparing and eating lunch, being visited by a stranger, and requiring compliance with specified rules. The conditions were planned to challenge the mother and child with the possibilities of enjoyment, frustration, uncertainties, accomplishment, and relaxation.

Measures of Affect. Dimensions of affect were chosen for their relevance to depression (either their expected elevated frequency or their absence): (a) sadness: sad expression, dejected tone of voice, verbal statements, body language (slumping, slouching), listlessness, crying; (b) anxiety and fear: inability to relax, worried look, muscle tension, anxiety in voice, apprehension, verbalized fear, trembling, panicked look; (c) irritability and anger: irritation in tone or words, frowns, scowls, jaws clenched, sarcastic tone, whiny tone, angry yelling, striking, silent seething; (d) downcast: clear negative affect (but the display could reflect mixed or masked feelings of anxiety or anger, downcast, somber, or unpleasant tone of voice or facial expression); (e) pleasure and joy: smiling (more than brief smiles), humming, singing, laughter, humor, joking; (f) tenderness and affection: physical or verbal demonstrativeness, considerateness in actions or words, caring in tone of voice. Minutes without affect were coded neutral.

Affects were coded as events in their own right, without regard to other behavior. The emotion or mood was coded as a "naive" observer or participant would experience it. Because time is required to "see" these affects, time was divided into 1-min units and each minute was coded for the predominant affect of mother and child.

The nature of the phenomena (clinical depression or its absence and gender of child) made "blind" coding in part or altogether impossible. The long observation time and mothers' interactions with staff as they carried out scripted interactions gave many opportunities for mothers to break the blind by referring to their illness, medications, or therapist. Behavioral signs, such as very high or low levels of activity, slow responding, or dysphoric affect often provided strong clues. In fact, a blind coder assigned to a comparable session of interaction (not part of this analysis) conducted an (unauthorized)

prediction of mother's diagnosis. Based on 90 cases, she was correct in 86% of the classifications of depressed or nondepressed.

It was important, therefore, to have checks to detect possible biases in coding related to mothers' statues. A blind coder and the main coder for the present study who was aware of each mother's diagnosis independently coded eight sessions, in which depressed and control mothers were represented. Overall kappas were .78 for mothers and .75 for children, .78 for girls and .76 for boys. Intraclass correlations (ICCs) were used to assess agreement on specific affects, using the number of minutes in hour blocks of time in which the specific affect was reported by each coder. Aggregation of this kind was necessary because, in the majority of minutes, any given affect was not present. ICCs for specific maternal affects ranged from .85 to .98, and for specific child affects ranged from .52 (downcast) to .98. All coders were blind regarding severity and chronicity of mothers' depressions, mother's self-reports on the days of observation, and other assessments of the children.

Each affect was scored on percent of minutes in which it was observed. Sustained bouts of negative affect were defined as consecutive negatives for more than a 5-min period.

Analyses

Mothers' and children's affects were examined in relation to maternal diagnoses. Because of highly positively skewed distributions in the percent of minutes in which various emotions were displayed, a square root transformation of the data was performed. When approximately normal distributions resulted, data were entered into 3 x 2 analyses of variance (Diagnosis x Gender). Distributions remained skewed after transformation for mothers' specific affects. Therefore, for these affects only, nonparametric Kruskal--Wallis analyses (mean rank sums of affects in percent of minutes; Siegel, 1956) were used for examining group differences. Stability of total negative affect and associations between mothers' and children's affects over the 2 weeks were measured by Spearman correlations.

Because children varied in age, preliminary analyses were run to determine possible age effects. Analyses of mothers' affects by age of children indicated no significant differences. Age was a significant factor in children's negative affect (more negative in younger children [F (1, 111) = 12.25, p [less than] .001]. An analysis of covariance was performed to examine child negativity as a function of maternal diagnosis and child's gender, controlling for age. Whether or not age was entered into the analysis, maternal diagnosis and gender were not significantly related to child's total negativity.

RESULTS

Maternal Affect by Diagnostic Status

The majority of mothers displayed most of the affects at relatively low rates, but the range of display was broad. In the tail of the distributions, there were mothers who flooded interactions with affects. One mother expressed negative affects in 96% of the observed minutes, and not unexpectedly, affectively ill mothers were overrepresented in the negative extreme. Ignoring the positive or negative nature of the affect, affects of some kind were recorded in 33% of the minutes (group mean). Group profiles of maternal affect (raw scores) in relation to classifications of depression are presented in Table I.

Mothers' Scores on Total Negative Affect by Diagnostic Classifications, by Gender. There were significant diagnosis-related differences in mothers' total negative affect [F (2,

115) = 4.68, p [less than] .01]. Based on transformed scores, the means were 12% for control (C) mothers, 21% for bipolar (B) mothers, and 27% for unipolar (U) mothers. In post hoc comparisons, B and U mothers did not differ from each other but both were significantly more negative than C mothers [F (1, 67) = 5.13, p [less than] .03, comparing Bs and Cs; F (1, 92) = 8.13, p [less than] .005, comparing Us and Cs]. There were no gender effects.

There were again significant differences in total negative affect when mothers were classified on severity of illness [F (2, 115) = 7.11, p [less than] .001, transformed Ms = 12%, 20%, and 31%, for controls, less severe, and more severe groups, respectively]. The severely depressed group exhibited significantly more negative affect than the less severely depressed and the controls [F (1, 71) = 4.71, p [less than] .04, and F (1, 75) = 15.16, p [less than] .001, respectively]. The less severe group differed from the Cs only at a trend level [F (1, 84) = 2.95, p [less than] .09].

The amounts of time that mothers were in episodes of depression in their child's lifetimes did not differentiate mothers on total negative affect. Also mothers' self-reported moods on the days of observation were unrelated to their expressed negative affect.

[TABULAR DATA OMITTED]

Mothers' Scores on Specific Affects. The composite score of all negative affects obscures possible differences in specific negative affects that reflect differing manifestations of maternal depression. Therefore, anxious--sad, irritable--angry, and downcast expressions were examined separately. For these affects, it was necessary to use the nonparametric (mean ranks) analyses. Depressed and control mothers differed in anxious--sad and downcast affects [[[chi].sup.2] (2) = 11.19, p [less than] .01, and [[chi].sup.2] (2) = 6.26, p [less than] .01]; they did not differ in irritable--angry behavior. Mothers with unipolar and bipolar diagnoses showed more anxious and downcast affect than did control mothers but they did not differ from each other (see Table II for mean ranks).

Mothers' anxious affects differed by severity of illness [[[chi].sup.2] (2) = 13.09, p [less than] .01]. Severely ill mothers were more anxious than less severely ill mothers [[[chi].sup.2] (1) = 5.22, p [less than] .01] and more anxious than control mothers [[chi].sup.2] (1) = 12.44, p [less than] .001]. Likewise, mothers' downcast affects differed by severity of illness [[[chi].sup.2] (2) = 8.02, p [less than] .02]. Severely ill mothers were more downcast than control mothers [[[chi].sup.2] (1) = 7.97, p [less than] .01]. Amounts of time that mothers had been in episodes in their children's lifetimes, and mothers' self-reports of mood states on the days of observation, were not related to differences in mothers' exhibited affect.

Specific Negative Affects in Relation to Gender of Children. Gender of children made a difference in mothers' specific affects. Depressed mothers of daughters and normal mothers of daughters were significantly different in anxious--sad affect [[[chi].sup.2] (2) = 16.97, p [less than].0001]. In followup comparisons, B mothers of daughters were more anxious--sad than U mothers [[[chi].sup.2] (1) = 6.38, p [less than] .01], and more anxious than C mothers [[[chi].sup.2] (1) = 16.28, p [less than] .001]. Also, depressed mothers of daughters and control mothers of daughters differed in downcast affect [[[chi].sup.2] (2) = 9.38, p [less than] .01]. Bipolar mothers were more frequently downcast than C mothers [[[chi].sup.2] (1) = 5.63, p [less than] .02], and U mothers were more downcast than C mothers [[[chi].sup.2] (1) = 7.55, p [less than] .01].

In contrast to these differences in mothers of daughters, depressed mothers of sons and control mothers of sons exhibited similar kinds and frequencies of specific negative affects in interactions with their children. Other diagnostic classification of mothers did not add information on gender.

Mothers' Prolonged Bouts of Negative Affect. Sustained displays of negative affect were related to maternal diagnosis [F (2, 115) = 3.71, p [less than] .03; transformed Ms = 6.2, 11.3, and 18.3, for C, B, and U, respectively]. In post hoc analyses, prolonged bouts were more frequent in U mothers than in C mothers [F = (1, 92) = 7.10, p [less than] .01]. Severity of illness also differentiated mothers on negative bouts [F (2, 115) = 3.65, p [less than] .03, transformed Ms = 6.2, 13.2, and 19.6 in controls, less severe, and severe, respectively]. In followup analyses, severely ill mothers spent more time in bouts than did control mothers [F (1, 75) = 8.27, p [less than] .01]. Amount of time in negative bouts in relation to mothers' high exposure of children to episodes approached significance, [F (2, 112) = 2.66, p [less than] .07].

Mothers' Scores on Positive Affects. On average, maternal expressions of pleasure or joy appeared in about 6% of the minutes; tenderness or affection was expressed in about 8% of the minutes (raw Ms). There was a single group difference in tenderness-affection related to maternal diagnosis measured as amount of exposure of children to episodes [[[chi].sup.2] (2) = 7.37, p [less than] .02, M ranks 57.8, 47.3, and 68.9, for C, low exposure, high exposure, respectively]. It was mothers of sons whose tenderness-affection was elevated in the high-exposure group [[[chi].sup.2] (2) = 9.50, p [less than] .01, M ranks 28.83, 22.00, and 39.50 for Cs, less, and more exposure, respectively].

Stability of Mothers' Affects. Because observations were made on 2 days separated by 2 weeks, it was possible to examine the stability of mothers' affect patterns. Spearman rank order correlations for matched samples for total negative affect across the 2 weeks showed correlations of .73, .63 and .74, p [less than] .01 for C, B, and U mothers, respectively.

Children's Affects

Children's levels of negative affect were first compared with maternal total negative affect. Group mean levels indicated that, in the control group, children expressed twice the amount of negative affect displayed by mothers (M = 23.5, 12.5% for children and mothers, respectively). This difference follows expectations. In the depressed groups, however, mothers and children expressed negative affect with almost equal frequency (Ms = 26.9% by unipolar mother and 29.3% by their children; Ms = 21.0% by bipolar mothers and 25.4% by their children).

The amounts of time that children spent in sustained negative bouts were significantly related to mothers' diagnoses [F (2, 112) = 3.80, p [less than] .02, transformed Ms = 7.9, 8.8, and 13.1 for C, B, and U groups, respectively]. In followup comparisons, it was children of unipolar mothers who spent more time in negative bouts than children of control mothers [F (1, 92 = 4.77, p [less than] .03].

Gender differences in children's affects were next examined. Although there were no differences by gender of child in total negative, differences were evident when specific negative affects were examined. Irritability--anger appeared significantly more in boys (M = 27%) than in girls (M = 20.0%) [F (1, 112) = 5.44, p [less than] .02]. Girls, on the other hand, expressed anxious-sad affect (M = 32%) significantly more than did boys (M = 27%) [F (1, 112) = 8.76, p [less than] .004]. Maternal diagnosis did not alter these gender differences. Boys and girls, then, carried different affective dispositions into the

relationships with their mothers and had different dispositions with which to cope with their mothers' depression-related dysfunctions.

Children's affect scores were examined for stability over time. Scores of negative affect on the two days of observation were significantly correlated (r = .44 to .70) in the control and unipolar groups. They were generally not stable in the bipolar group.

Mother and Child Affects Within the Dyad

To examine the associations between mothers' and children's affects, affect scores within the dyads were analyzed. Mothers' affect scores on day 1 were correlated with children's scores on day 2, two weeks later (Spearman rank order). The reverse crossover of days was also obtained. The crossover was used to avoid capitalizing on the influence of immediately preceding events and interactions. There was a moderate to high degree of similarity in total negative affect expressed by mothers and children in the control group, unipolar group, and severely depressed group (r = .43 to .62, p [less than] .01). Significant correlations between mothers and children replicated in both crossovers. The amount of negative affect expressed by bipolar mothers and children was not correlated. Correspondence in amount of time spent in negative bouts by mother and child was considered. Unipolar mothers' or severely depressed mothers' scores and the scores of their daughters were significantly correlated (r = .59 to .71, respectively, p [less than] .01).

SUMMARY AND DISCUSSION

The objective of this research was to investigate differences between well and depressed mothers in their affective behavior with their children, and to examine the reflection of these differences in the children's functioning.

Mothers with unipolar or bipolar illness expressed more total negative affect, and, within this total, more anxious-sad and downcast affect than control mothers. Unipolar mothers and severely depressed mothers were most likely to interact with their children with sustained bouts of negative affect. Interestingly, mothers' irritability-anger was not related to diagnosis. Patterns of maternal affect were very stable over the 2-week period studied. This finding and the finding that time in episodes did not differentiate mothers on behavior with their children are consistent with the findings of Billings and Moos (1985) that the behavior of depressed mothers shows considerable consistency over time.

The absence of association between mothers' reports of their feelings on the days of observation and their displayed affects is puzzling. One reason may be that, because each mother was responding relative to her own norm of moods (this would be especially important in depressed mothers), the same ratings from different mothers may not have had the same meaning. The comment of one of the depressed mothers suggests another explanation. She indicated that she makes every effort to manage her feelings in relating with her child. Just as in the broader scene of adult depression, there are individuals who function effectively in their work and social roles, there are depressed mothers who function well in their parenting role. This aspect of depressed mothers' parenting has not been investigated.

The significant correlations between mothers and children on levels of negative affect and bouts of negative affect (from assessments on different days) indicate an important synchrony. This link is complicated, however, by the findings relating to gender. First, depressed mothers of sons maintained patterns of affect that were not different from those of well mothers. This was not the case with depressed mothers of daughters. Do

depressed mothers make a stronger effort to shield their sons than their daughters? Or do boys respond (irritably) differently from girls (anxiously) to mothers' negative affect and thereby draw different responses from mothers? Second, bouts of negative affect were correlated only between unipolar depressed or severely depressed mothers and their daughters, indicating a synchrony that brings daughters and mothers closer in symptoms. These differences in the experiences of sons and daughters of depressed mothers, which appear to result from mutual mother and child contributions, set the stage for differences in boys' and girls' modes of coping with maternal depression.

Although maternal affect is only one dimension of depression that enters into parenting, it is an inseparable part of all of rearing (e.g., teaching, regulating, caring for the child). Therefore, it is likely, to have not only a direct effect on the child (as suggested by the present data), but also to modify the effects on the child of other rearing dimensions.

To understand more fully the significance of maternal depression for children's development, a shift in research approaches seems needed: from purely diagnostic terms to the functional behavioral manifestations of depression in mothers' interactions with their children. In this interaction, consideration of how specific child characteristics influence maternal behavior and how the child responds to depression-related maternal behavior should provide further information regarding the processes of transmission.

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