Parenting of mothers with a serious mental illness: Differential effects of diagnosis, clinical history, and other mental health variables

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This study examined the effects of mental illness on parenting in a large urban-based sample of women with serious mental illness. Seventy percent of the sample were women from ethnic minority groups, average age mid-30s; all had care responsibility for at least one minor child. Diagnostic Interview Schedule modules were administered; the women were interviewed to obtain information on parenting, clinical history, and current functioning. Diagnosis had a small but significant negative effect on parenting attitudes and behaviors, and there were race-by-diagnosis interactions. However, current symptoms mediated the effects of diagnosis and chronicity on parenting stress, and current symptomatology and community functioning partially mediated the effects of diagnosis on parenting satisfaction. Researchers–practitioners need to assess the status of mothers with mental illness rather than assuming problems or intervention needs.

Key words: **diagnosis; mental illness; mothers; parenting; symptomatology**

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Maternal mental illness is clearly a risk factor for children. Children whose mothers have long-term, serious mental illness are at increased risk of being placed in alternative settings such as foster care (for example, Oyserman, Benbenishty, & Ben Rabi, 1992). Furthermore, in their lifetimes, from one-third to more than one-half of these children will themselves have a DSM diagnosable disorder (Amminger et al., 1999; Jacobsen, Miller, & Kirkwood, 1997; Waters & Marchenko-Bouer, 1980). Some of the association between mother and child diagnosis may reflect the heritability (that is, estimated proportion of the phenotypic variance that is genetically determined) of major mental illnesses—estimated at 80 percent for bipolar disorder, from 34 percent to 48 percent for depression, and 75 percent for schizophrenia (Rutter, Silberg, O'Connor, & Simonoff, 1999). Children's increased risks of mental health and behavioral problems have also been related to the parenting provided by their mothers with mental illness (Masten, Best, & Garmezy, 1990).

A recent review of the empirical literature on the influence of serious mental illness on parenting concluded that these mothers have significantly less adequate parenting skills and behaviors than mothers who do not have a mental illness (Oyserman, Mowbray, Allen-Meares, & Firminger, 2000). Specifically, in parenting their children from preschool age through adolescence, mothers with a serious mental illness have been found to be less emotionally available, less reciprocal, less involved, and less positive (Cohler, Gallant, Grunebaum, Weiss, & Gamer, 1980; Cohler & Musick, 1983; Klehr, Cohler, & Musick, 1983;

Musick, Stott, Spencer, Goldman, & Cohler, 1984; Stott, Musick, Clark, & Cohler, 1983; Stott et al., 1984). They are also less encouraging (Scherer, Melloh, Buyck, Anderson, & Foster, 1996); less affectionate and responsive (Goodman & Brumley, 1990); and less able to differentiate their own needs from those of their children (Cohler et al., 1980) than are mothers who do not have an illness.

Sandler (2001) has presented a conceptual model of the aspects of adversity that contribute to problem outcomes in childhood; they include threats to satisfying basic needs for safety and biological integrity, self-worth, sense of personal control, social relatedness, and attaining developmental competencies. Masten et al. (1990) described how living with parents with mental illness might affect the physical and emotional care provided to children and therefore increase the likelihood that these children experience the stated aspects of adversity. Furthermore, Oyserman et al. (2000) summarized empirical support for a mediational model wherein maternal diagnosis and symptoms affect positive parenting attitudes that then affect children's behavior (for example, aggressive behavior, Hops et al., 1987; social behavior and IQ, Goodman & Brumley, 1990).

Besides describing parenting problems, research on mothers with mental illness has frequently examined the correlates of parenting practices: Diagnosis is undoubtedly the variable studied most frequently as a potential predictor, with depression the diagnosis most often examined (Oyserman et al., 2000). The withdrawal and negativity associated with depression have been hypothesized to produce anxious and disorganized child attachment, to decrease mothers' nurturing behavior toward their children, or to result in neglectful parenting when mothers withdraw from their responsibilities (Azar & Wolfe, 1998). Depressed versus nondepressed mothers have been found to have significantly more problems in attachment and in negative relationships with their children (Frankel & Harmon, 1996; Kochanska, Kuczynski, Radke-Yarrow, & Welsh, 1987; Radke-Yarrow, Nottelmann, Belmont, & Welsh, 1993). They also tend to be more critical of their children (Gordon et al., 1989; Hamilton, Jones, & Hammen, 1993), as well as inconsistent and noninteractive (Davenport, Zahn-Waxler, Adland, & Mayfield, 1984).

Research to date is insufficient to determine whether problems in parenting are differentially related to specific diagnoses. That is, although researchers have posited that maternal depression is particularly harmful and have documented its negative effects, few studies have compared parenting across diagnoses. We identified only five studies published between 1980 and 1999 that contrasted bipolar disorder and unipolar depression and 10 studies that contrasted unipolar depressive disorder with schizophrenia for effects on parenting. When unipolar and bipolar depressive disorders were compared, with one exception (Inoff-Germain, Nottelmann, & Radke-Yarrow, 1997), effects on parenting were more negative for mothers with a unipolar disorder (Gordon et al., 1989; Hamilton et al., 1993; Kochanska et al., 1987; Tarullo, DeMulder, Ronsaville, Brown, & Radke-Yarrow, 1995). When schizophrenia and depression were contrasted, effects on parenting were more negative for mothers with schizophrenia and related diagnoses in both a prospective Swedish study sequence (McNeil, Naeslund, Persson-Blennow, & Kaij, 1985; Naeslund, Persson-Blennow, McNeil, Kaij, & Malmquist-Larsson, 1984; Persson-Blennow, Binett, & McNeil, 1988) and an U.S. sample (Goodman & Brumley, 1990). Two additional U.S. studies did not find this pattern: In a prospective study, depressed mothers were more anxious and less socially competent than mothers with schizophrenia (Sameroff, Seifer, & Barocas, 1983); and in a small clinical study of hospitalized mothers of school-age children, no differences in self-rated maternal sensitivity were found across diagnoses (Rogosch, Mowbray, & Bogat, 1992). These results suggest that depression may be more harmful to parenting than bipolar disorder and that the effects of schizophrenia versus depression are mixed or depend on variables not assessed or analyzed. However, none of the studies compared the three diagnoses simultaneously; furthermore, because the studies comparing depression with schizophrenia typically involved mothers of infants and preschoolers, whereas mothers of older children were included in the comparisons of depression with bipolar disorder, the results are not strictly comparable.

Another significant problem with these studies is that the different diagnostic labels may be confounded with other clinical characteristics. For

example, chronicity–duration of disorder and current symptom severity level have been found to affect parenting and children's functioning. Oyserman et al. (2000) reviewed nine studies examining the role of clinical characteristics: specifically, symptom severity, current community functioning, and chronicity. Severity of depressive symptoms was found to relate to less maternal emotional availability, more maternal negativity, less secure infant attachment, and lower quality of mother–child relationships (Frankel & Harmon, 1996; Nolen-Hoeksema, Wolfson, Mumme, & Guskin, 1995). In one study, mothers' community functioning was related to all the parenting variables studied (Inoff-Germain et al., 1997). When assessed as number or frequency of past hospitalizations, chronicity relates negatively to parenting quality (Andrews, Brown, & Creasey, 1990; Gross, 1983; Rogosch et al., 1992). However, when assessed as lifetime history of mental illness (Gordon et al., 1989), number of episodes–duration of current episode (Nolen-Hoeksema et al., 1995), or amount of time in children's lifetime that mothers experienced depressive episodes (Radke-Yarrow et al., 1993), chronicity had no relationship with parenting behaviors.

Although interesting, these findings are limited both because of lack of diversity in diagnoses used and because, with one exception (Gross, 1983), studies did not account for diagnosis before examining the effects of the clinical variables. Thus, it is unclear whether effects were additive or duplicative. In addition to insufficient comparisons across diagnoses and inadequate examination of the independent effects of diagnosis versus other clinical variables on parenting, there are other important gaps in the literature. That is, samples have primarily included a majority of mothers with infants and preschool children, with little exploration of parenting among mothers of adolescents or of mothers from ethnic minority groups (Oyserman et al., 2000). This is important because race–ethnicity has been found to influence the reliability and stability of diagnosis (Kutchins & Kirk, 1997; Nathan & Langenbucher, 1999; Prudo & Blum, 1987). African Americans with affective disorders are significantly more likely than white people to be misdiagnosed with schizophrenia-spectrum disorders, especially paranoia (Whaley, 1998).

Thus, research does consistently show increased risk of problematic outcomes for children of mothers with serious mental illness and increased risk of problems in parenting for these mothers. However, it is not clear to what extent depression compared to other specific clinical and diagnostic psychiatric variables are predictive of these problems. It is also not clear whether there are differential effects of race–ethnicity and whether the findings reported apply as well to parenting with older children. To address these gaps, the analyses reported in this article examined parenting among mothers who vary both in diagnosis and in severity, chronicity, and community functioning, and who are parenting older as well as younger children; further, possible differential effects by race were examined. The study investigated the following hypotheses:

(1) Among women with serious mental illness, those with a depression diagnosis show significantly more problems on parenting measures than those with bipolar disorders and an equal number of problems as women with schizophrenia-spectrum disorders.

(2) However, because there are differences in the functional implications of schizophrenia compared with affective disorders by race (Baker, 2001; Whaley, 1998), the relationship between diagnosis and parenting measures is weaker for African American mothers compared with white mothers.

(3) Diagnostic differences across parenting measures are reduced when analyses separately take into account the effects of clinical variables other than diagnosis; specifically, chronicity, duration, symptomatology, and community functioning.

The research to be reported is part of a study funded by the National Institute of Mental Health (NIMH) of mothers with serious mental illness recruited from the public mental health system in a large urban area. Women provided information on their clinical histories and current mental health status as well as on their parenting attitudes and behaviors. Trained interviewers administered modules of the Diagnostic Interview Schedule (DIS) (NIMH, 1980) to obtain research diagnoses. First, the analysis reported tests for the presence of significant differences across the diagnostic categories on measures of parenting attitudes and behaviors with controls for demographic variables (such as race, education, and children's ages). Multivariate methods were then

used to analyze the relative contributions of diagnosis, chronicity, symptom severity, and community functioning to variations in parenting, using appropriate controls. The study had the advantage of a large and diverse sample of women ($N = 379$) who were parenting children from preschool through adolescence (target age: four years through 16 years).

METHOD

The research design of this study is descriptive, collecting self-report data from a sample of mothers with serious mental illness to addressing the hypotheses presented with a low-income population, primarily from ethnic minority populations, recruited from the public mental health system.

Participants

Mothers ($N = 379$) between 18 and 55 years of age, were recruited from 12 community mental health (CMH) agencies and three inpatient psychiatric units in southeast Michigan. According to treatment plans at these agencies, all the women had a serious mental illness (evidenced by duration greater than a year; diagnoses primarily of schizophrenia, major affective disorder, or bipolar disorder; and causing major dysfunction in one or more life areas). Prescreening confirmed that all the women had care responsibilities for at least one child between four and 16 years of age. This age range was selected to maximize diversity of developmental levels while still allowing valid use of common parenting and child assessment measures across the entire age range.

Of 484 women originally identified, 59 (12 percent) refused participation, and 46 (10 percent) could not be contacted or scheduled. For the remaining 379 participants, 60 percent were African American, 29 percent were white, 8 percent were Hispanic, and 3 percent were from other racial–ethnic groups; median age was 36.2 years. Participants' educational levels varied widely, with 40 percent having at least some years of college, 25 percent having a high school diploma or GED, and 35 percent having less than a high school education. Except for an overrepresentation of Hispanics, planned to provide the possibility of analyses focusing on this subgroup, maternal race, age, and education mirrored the composition of the population in the CMH catchment area, based on a comparison of management information system reports from the Detroit-Wayne County CMH agency (see Mowbray et al., 2000).

Measures

Trained female interviewers administered a comprehensive two-part interview. The first part covered demographics, personal history, symptomatology, community functioning, and parenting. The second part (administered within about one week) contained modules of the DIS (NIMH, 1980).

Demographic information included age, race, education, and income level (Mdn = \$929 per month). Adjusted for household size, 68 percent of incomes were below the federal poverty level (U.S. Bureau of the Census, 1996).

Clinical History. To estimate mental illness chronicity, women were asked their age at onset (first hospitalization); women with no psychiatric hospitalizations were asked for the age at which they first saw a psychiatrist or other mental health professional, as a proxy for age of onset (M age of onset = 26.7 years, SD = 8.21, Mdn = 27). (Twenty-five women reported they never had a psychiatric hospitalization, been prescribed medications, or seen a mental health professional—the age of onset for these women was taken from questions in the DIS asking for the age of their worst psychiatric symptoms.) The duration of mental illness was then calculated from age at the time of the interview (M duration = 10.38 years, SD = 7.54, Mdn = 9). Women were also asked about their lifetime number of psychiatric hospitalizations (M = 4.24, SD = 7.44, Mdn = 2). To minimize the effect of age, lifetime hospitalizations were adjusted by the number of years since onset, yielding the average number of hospitalizations per year for mental illness (M = 0.32, SD = 0.51, Mdn = 0). This variable was log transformed to minimize skew.

Current Clinical Status. Symptom severity was assessed with the 14-item, five-point (ranging from 1 = never to 5 = at least every day) Colorado Symptom Index (Shern et al., 1994) (Cronbach's alpha = .90; M = 2.27, SD = 0.83). The mean suggests that most women were experiencing symptoms, overall, several times a month. Current functioning was measured with the 18-item, five-point (ranging from 1 = never to 5 = frequent independent activity) Self-Report Community Functioning Scale (Bybee, Mowbray, Oyserman, &

Lewandowski, 2000) (Cronbach's alpha =.83; *M* = 3.37, *SD* = 0.54). The community functioning measure includes assessment of activities of daily living, medication and symptom management, and interpersonal relations relevant to community life.

Other research has reported evidence of this measure's convergent validity through significant correlations in the expected direction with other self-report measures (Bybee et al., 2002) and with Global Assessment of Functioning ratings by mental health professionals (Bybee & Mowbray, 1995). The mean score on this measure indicates, overall, most women were able to function in their communities, only requiring some level of assistance.

Diagnosis. The diagnostic portion of the interview consisted of the depression, mania, and psychosis sections of the DIS, version III-R, modified for DSM-IV criteria (NIMH, 1980). A PhD psychologist who was originally trained in the use of DIS by Washington University (WU) staff conducted training of lay interviewers. The structured nature of the protocol meant that interviewers had few if any decisions to make in its administration. All interviews were audiotaped, and a random 10 percent of these were reviewed for reliability. The WU-trained clinical researcher reviewed completed interviews (blind to the demographic characteristics of the participant) and assigned diagnoses manually using an algorithm based on the DIS protocol revised for DSM-IV. Six diagnostic categories were used. Before the diagnoses were finalized, the clinical researcher and the interview coordinator rereviewed them all; differences in diagnostic determinations were identified and discussed to reach a consensus determination for the final diagnosis.

It should be noted that the DIS has been criticized because lay interviewers have been found to produce higher estimates of prevalence and incidence in general population studies than those found by psychiatrists (Frances, 1998) and because one-year follow-ups have shown problematic levels of diagnostic stability (Sher & Trull, 1996). However, in the present study, these validity issues are of less concern for several reasons. The participants in this study were women, primarily of childbearing age, who met the criteria for long-term serious mental illness. Discrepancies between DIS and psychiatric clinical diagnoses have occurred primarily with household samples (Brugha, Bebbington, & Jenkins, 1999; Sher & Trull, 1996)

with individuals who were older, male, had a less recent episode, and reported fewer depressive symptoms (Eaton, Neufeld, Chen, & Cai, 2000; Rogers, 1995), and for individuals with personality diagnoses (Sher & Trull, 1996). Furthermore, in the original ECA (Regier et al., 1984) validity studies, lay interviewers were naive and had no interviewing experience (Robins, Helzer, Ratcliff, & Seyfried, 1982). Our interviewers all had experience in interviewing and in working with mental health populations. Finally, of the two most common structured diagnostic interviews for nonclinician interviewers, the DIS and the CIDI (Semler et al., 1984)**.** Rogers (1995) recommended use of the former because of CIDI's psychometric limitations.

The women in the sample were distributed across the six diagnostic categories as follows: 35 (10.4 percent) schizophrenia, 34 (10.1 percent) schizoaffective, 134 (39.8 percent) major depression, 40 (11.9 percent) major depression with psychotic features, 41 (12.2 percent) bipolar disorder, and 53 (15.7 percent) bipolar disorder with psychotic features. Diagnostic determinations were available for 337 women; 14 women did not complete part II of the interview, which included the DIS, and for 28 women no clear diagnosis could be determined from the information that was gathered. The 14 women with missing diagnostic interviews did not differ from the rest of the respondents on any diagnostic or functioning variables. The 28 women with insufficient information did differ from the rest of the sample in being significantly better off financially, less symptomatic, and more independent in level of community functioning. Their part II interview was also of significantly shorter duration. All of these differences suggest that women with insufficient information for diagnosis were functioning somewhat better and experiencing fewer signs of serious mental illness. Thus, their exclusion from the present study may be appropriate, ensuring that the sample excludes individuals that agencies may have designated as "seriously mentally ill," but who, clinically, may not fit.

Congruent with an established literature showing increased incidence of schizophrenia diagnoses among African Americans (Baker, 2001; Whaley, 1998), in the current sample there was a significant relationship between the six diagnostic categories and race (dichotomously coded as African

American versus other; χ^2 (5, $N = 337$) = 12.88, p < .02, with African Americans being overrepresented in the schizophrenia group and underrepresented in the depression group).

Parenting Variables. The domains selected for study reflect attributes of parenting viewed as critical to child outcomes (Masten et al., 1990) across the range of child ages in the present study, attributes that have been shown to be problematic in parents with mental illness (that is, discipline, nurturance, parent–child relations, and stress). We used four standard and often-used parenting instruments. Each of these measures had satisfactory reliabilities that did not differ for either African American or white respondents or across child ages (preschool to adolescence). Parenting stress (Parental Stress Index, Abidin, 1990), a 14-item, five-point Likert-type scale (ranging from 1 = not at all to 5 = very much), focused on maternal stress (M = 2.52, SD = .78, Cronbach's alpha = .86). Nurturance, parental nurturance subscale of the Block Child Rearing Practices Scale (Rickel & Biasatti, 1982), a 13-item, four-point Likert-type scale (ranging from 1 = not at all to 4 = very much), focused on mothers' willingness to listen to and share feelings and experiences with their children (M = 3.66, SD = .33, Cronbach's alpha = .80). Parenting satisfaction with the mother–child relationship (Parenting Sense of Competence Scale, Gibaud-Wallston, & Wandersman, 1978), an eight-item, five-point Likert-type scale (ranging from 1 = very dissatisfied to 5 = very satisfied), focused on mother's feelings of competence and satisfaction with being a mother (M = 4.0, SD = .80, Cronbach's alpha = .84). Parental discipline (Parental Attitudes toward Childrearing Scale, Easterbrooks & Goldberg, 1984), a 20-item measure on a six-point Likert-type scale (ranging from 1 = strongly disagree to 6 = strongly agree), reflected mothers' self-reports of strictness of discipline practices and structure in child management (M = 3.45, SD = .50, Cronbach's alpha = .75).

Analysis Plan

To address the questions of this study, we first examined the extent to which parenting differed by diagnosis and then examined the possibility that other clinical variables also influenced parenting after controlling for the effect of diagnosis. The first step was a multivariate analysis of variance (MANOVA) to determine if there were overall diagnostic differences across the set of four parenting measures considered simultaneously, controlling for race. This analysis also included the race-by-diagnosis interaction to test the possibility that diagnostic effects might differ by race (that is, that parenting might be affected by a significant interaction between diagnosis and race). Preliminary analyses also controlled for child age, but it was found to be unrelated to the parenting measures, either as a main effect or in interaction with race.

Next, we examined the relative contributions of diagnosis and other relevant clinical variables— chronicity, symptom severity, and community functioning. Analyses were hierarchical multiple regressions. Each of the parenting measures was predicted by a set of independent variables entered sequentially in the following six blocks: (1) demographics (to control for the effects of race, income, and maternal education on parenting variability), (2) diagnosis, (3) the interaction of diagnosis and race (to test for racial differences in the effect of diagnosis, given known relationships between these variables), (4) chronicity, (5) symptomatology, and (6) community functioning. The rationale for this ordering was to examine the extent to which diagnosis remained a significant predictor of parenting once the clinical variables entered the model and to assess whether current symptomatology or community functioning mediated the effect of diagnosis on parenting. The order of entry for the clinical variables reflected the need to account for a historical variable, chronicity, first. Symptomatology was second, because treatment can influence symptoms to some degree; and community functioning was last, since it is most amenable to treatment, rehabilitation, and external supports.

RESULTS

Diagnostic Differences on Parenting Measures

The initial MANOVA examined diagnostic differences on the four parenting measures, considered simultaneously, adding race as a second factor and incorporating the diagnosis-by-race interaction. This analysis revealed significant main effects for both diagnosis [$F(20, 1,300)$ = 2.24, p = .001] and race [$F(4, 322)$ = 6.39, p = .001] as well as an interaction between race and diagnosis [$F(20, 1,300)$ = 1.76, p = .03], indicating that

the effect of diagnosis on parenting was significantly different for African American and non-African American mothers. For all dependent variables except discipline, there was a significant main effect of diagnosis [parenting stress: $F(5, 325) = 2.72$, $p = .02$; nurturance: $F(5, 325) = 2.55$, $p = .03$; satisfaction with relationship with child: $F(5, 325) = 3.17$, $p = .01$]. In addition, there was a significant effect of the interaction of diagnosis and race for nurturance [$F(5, 325) = 3.92$, $p = .01$]. Because effects differed by race, reporting of the MANOVA results focuses on the simple effects of diagnosis within each racial group (Bonferroni-corrected to family-wise $p < .05$, reflecting the number of comparisons) for each dependent variable (Table 1)

For non–African American women, the multivariate comparison of parenting variables across diagnostic categories was significant, indicating the presence of overall diagnostic differences on the set of parenting measures. Considering the individual parenting variables, univariate differences were significant for both nurturance and satisfaction with relationship. Paired comparison tests indicated that for nurturance, women with a diagnosis of schizophrenia were significantly lower than all other diagnostic groups, with the exception of the schizoaffective group, which did not differ significantly from other diagnostic groups. For satisfaction with relationship, women with major depression–psychotic features were significantly more satisfied than were women with either major depression or schizoaffective diagnoses; the other diagnostic groups did not differ significantly.

For the African American mothers, the multivariate comparison was also significant, indicating overall parenting differences across diagnoses. Univariate analyses across all diagnostic groups were not significant for parenting stress, nurturance, or satisfaction with relationship. Pairwise comparisons (recommended by Wilcox, 1997, regardless of the significance of the overall F) indicated that women with a schizoaffective disorder reported lower satisfaction with their relationship with their child than did women with schizophrenia.

TABLE 1—Parenting Variables by Race and Diagnostic Category: Two-Way Multivariate Analysis of Variance

Simple Effect of Diagnosis within Race		Estimated Means within Each Diagnostic Category					
Dependent Variable	Univariate F (5, 325)	Schizophrenia (n = 35)	Schizoaffective (n = 34)	Major Depression (n = 134)	Major Depression with Psychotic (n = 40)	Bipolar (n = 41)	Bipolar with Psychotic (n = 53)
Non-African American		(n = 6)	(n = 11)	(n = 65)	(n = 15)	(n = 18)	(n = 23)
Parenting Stress Index	1.67	2.87[ab]	2.94	2.49	2.23	2.33	2.65
Nurture	4.34**	3.18[a]	3.46[ab]	3.68[b]	3.77	3.77[b]	3.66[b]
Satisfaction with relationship	3.17**	3.69[ab]	3.45	3.83[b]	4.53	4.11[ab]	3.86[ab]
Discipline	0.64	3.55	3.30	3.25	3.40	3.25	3.32
Multivariate Effect of Diagnosis on Parenting		Pillai's Trace = .109; Mult. $F(20, 1,300) = 1.817$, $p = .015$					
African American		(n = 29)	(n = 23)	(n = 69)	(n = 25)	(n = 23)	(n = 30)
Parenting Stress Index	1.94	2.28	2.83	2.47	2.47	2.45	2.75
Nurture	2.13	3.73	3.57	3.61	3.61	3.80	3.72
Satisfaction with relationship	2.12	4.29[a]	3.71[b]	4.00[ab]	4.12[ab]	3.76[ab]	4.11[ab]
Discipline	1.63	3.59	3.42	3.65	3.45	3.42	3.61
Multivariate Effect of Diagnosis on Parenting		Pillai's Trace = .129; Mult. $F(20, 1,300) = 2.170$, $p = .002$					

NOTE: Multivariate race × diagnosis interaction was significant (Pillai's Trace = .105, multivariate $F(20, 1,300) = 1.757$, $p = .021$). Univariate race × diagnosis interaction was significant for nurture [$F(5, 325) = 3.921$**, eta squared = .057].
[ab]Means that do not share the same subscript letter are significantly different at Bonferroni-adjusted $p < .05$.
**$p < .01$.

Independent Effects of Diagnosis and Other Clinical Variables

The three parenting variables that showed a univariate relationship with diagnosis as a main effect or in interaction with race—parenting stress, nurturance, and satisfaction with relationship—were used as dependent variables in three hierarchical multiple regressions designed to focus on the relative contribution of diagnosis versus other clinical variables in accounting for variability in parenting. The clinical variables were chosen because of their conceptual importance and because correlational analyses had indicated that they were relatively independent. The predictor variables were demographics (education, race, adjusted income); diagnosis (five dummy variables with schizoaffective as the contrast diagnosis); the interaction between diagnosis and race; chronicity (duration of mental illness and hospitalizations per year); symptomatology; and community functioning. (Note, schizoaffective diagnosis was chosen as the contrast diagnosis because the MANOVA results had indicated that women with schizoaffective diagnoses were most often significantly different from other diagnoses in post hoc comparisons.) Collinearity diagnostics were examined for each regression equation. Despite the "essential multicollinearity" caused by the presence of six dummy variables for diagnoses, there was no indication of problematic collinearity in any equation: Variance inflation factors were less than two for all blocks other than diagnosis (and less than four for dummy variables in the diagnosis block). No condition index exceeded 30, and there were no instances of a single component accounting for more than half the variance of multiple predictors.

Parenting Stress. With parenting stress as the dependent variable, initial regression results indicated that the race-by-diagnosis interaction made no additional contribution to prediction, and the interaction block was omitted to simplify the equation (see Table 2). Both sets of coefficients are presented in Table 2 to facilitate illustration of mediation effects; formal tests of mediation (Baron & Kenny, 1986; Holmbeck, 1997) are described

TABLE 2—Hierarchical Regression Predicting Parenting Stress from Diagnosis, Clinical History, and Current Clinical Status

Blocks of Predictors	Entry Block		Final Block		Adjusted $\triangle R^2$	Adjusted R^2
	β	t	β	t		
Block 1 demographics					0.003	0.003
African American	0.01	0.11	0.02	0.33		
Adjusted income (ln)	–0.03	–0.52	0.03	0.65		
Years of education	–0.10	–1.76	–0.03	–0.54		
Block 2 diagnosis					0.028*	0.031
Schizophrenia	–0.20	–2.75**	–0.05	–0.77		
Major depression	–0.24	–2.52*	–0.11	–1.15		
Major depression with psy.	-0.21	-2.76**	-0.12	–1.66		
Bipolar disorder	–0.18	–2.34*	–0.08	–1.04		
Bipolar with psy.	–0.06	–0.78	–0.01	–0.14		
Block 3 race x diagnosis interaction					0.014*	0.045
Duration of mental illness	-0.01	-0.20	0.05	0.97		
Hospitalizations per year MI	–0.15	–2.58*	–0.10	–1.79		
Block 4 symptoms					0.135***	0.180
Symptomatology	0.40	7.34***	0.35	5.06***		
Block 5					0.002	0.182
Functioning (self-rated)	–0.09	–1.29	–0.09	–1.29		

NOTE: MI = mental illness.
*$p < .05$. **$p < .01$. ***$p < .001$.

in the text below. The magnitude of (R^2 indicates the additional variance that is accounted for as each successive block is added to the equation.

In predicting parenting stress, significant increases in the variance accounted for were added by variables in the diagnosis, chronicity, and symptomatology blocks; the demographic and community functioning blocks did not make significant contributions to prediction. With all blocks entered into the equation, 18 percent (adjusted) of the variance in parenting stress was accounted for ($p < .001$). As entered in block 2, diagnosis made a significant contribution; compared to the omitted schizoaffective category, the following diagnostic groups had significantly different parenting stress scores: schizophrenia, major depression, major depression–psychotic features, and bipolar disorder. In all cases, the beta coefficients were negative, indicating that women with schizoaffective diagnoses reported significantly more parenting stress. The chronicity block also made a significant contribution because of the significant coefficient for hospitalizations per year for mentally ill; the negative coefficient indicates that women with more hospitalizations per year reported lower parenting stress. The symptomatology block made a large, significant contribution, accounting for 13.5 percent (adjusted) of the variance in parenting stress after the effects of other blocks had been accounted for. The positive coefficient indicates that higher symptomatology related to increased parenting stress. Symptomatology also appeared to be a significant mediator of the effects of diagnosis and hospitalizations. That is, Baron and Kenny's (1986) criteria for testing mediation were applied as follows: symptomatology (the putative mediator) was significantly associated with both diagnosis (semipartial multiple $R = -.30$, $p < .001$) and hospitalizations (semipartial $r = -.15$, $p < .01$). When the symptom measure was added to the equation predicting parenting stress at block 4, previously significant contributions of diagnosis and hospitalizations to the prediction of parenting stress dropped to nonsignificance, as can be seen in the final block columns of Table 2. This pattern indicates that the variance in parenting stress accounted for by diagnosis and hospitalizations was shared with symptomatology and suggests that the effects of diagnosis and lifetime hospitalizations on parenting stress are completely mediated by, or

expressed through, their effect on current symptoms.

Nurturance. Significant variance in nurturance was accounted for by the blocks for diagnosis and for the interaction of race and diagnosis (Table 3). The significance of the interaction block required that the diagnosis effect be examined separately for African American and non-African American mothers. Simple effects for diagnosis were calculated for each racial group, following procedures described by Aiken and West (1991). These simple effects, which cannot be retrieved directly from the results presented in Table 3, are summarized as follows: among non-African Americans, mothers with schizoaffective disorder (the omitted comparison category) had significantly lower nurturance scores than those with major depression ($\beta = .34$), major depression–psychotic features ($\beta = .32$), or bipolar disorder ($\beta = .31$). Among African Americans, mothers with schizoaffective disorder were significantly less nurturant than those with bipolar disorder ($\beta = .22$).

To summarize, the diagnostic differences by race among non-African American mothers, those with major depression, depression with psychotic features, or bipolar disorder had significantly higher nurturance scores than women with schizoaffective disorder. The contrast between schizophrenia and schizoaffective disorder was not significant, but the effects were in opposite directions—higher nurturance was found for African American mothers with schizophrenia and for non-African American mothers with schizoaffective disorder.

Although chronicity was not significantly related to nurturance, symptomatology and functioning both made significant but small contributions to the prediction once the effects of diagnosis and the race-by-diagnosis interaction were accounted for (see Table 3). Symptomatology partially mediated the differential diagnostic effects, reducing the coefficients for all but the contrast between schizophrenia and schizoaffective disorder to nonsignificance. In turn, community functioning completely mediated the effect of symptomatology on nurturance, as the coefficient for symptomatology declined from –.16 to nonsignificant –.05 following the entry of community functioning into the equation. (As reported above, the significant association between diagnosis and

TABLE 3—Hierarchical Regression Predicting Nurturance from Diagnosis, Clinical History, and Current Clinical Status

Blocks of Predictors	Entry Block		Final Block		Adjusted $\triangle R^2$	Adjusted R^2
	β	t	β	t		
Block 1 demographics					0.003	0.003
African American	0.00	−0.05	0.14	0.78		
Adjusted income (ln)	0.11	1.86	0.04	0.77		
Years of education	0.02	0.26	−0.03	-0.56		
Block 2 diagnosis					0.021*	0.024
Schizoaffective (omitted comparison)	—	—	—	—		
Schizophrenia	0.10	1.35	−0.37	−2.33*		
Major depression	0.17	1.82	0.28	1.73		
Major depression with psy.	0.15	2.02*	0.24	1.92		
Bipolar disorder	0.25	3.22**	0.24	1.96		
Bipolar with psy.	0.19	2.38*	0.21	1.63		
Block 3 race x diagnosis interaction					0.044**	0.068
Schizophrenia	0.42	2.48*	0.43	2.57*		
Major depression	−0.23	−1.43	−0.19	−1.21		
Major depression with psy.	−0.22	−1.72	−0.16	−1.31		
Bipolar disorder	−0.07	−0.56	−0.03	−0.29		
Bipolar with psy.	−0.04	−0.30	−0.1	−0.41		
Block 4 mental illness history					0	0.067
Duration of mental illness	0.03	0.55	0.00	0.04		
Hospitalizations per year MI	0.07	1.26	0.06	1.10		
Block 5 symptoms					0.018**	0.085
Symptomatology	−0.16	−2.68**	−0.63			
Block 6 community functioning					0.016*	0.101
Functioning	0.18	2.57*	0.18	2.57*		

*p < .05. **p < .01. ***p < .001.

symptomatology fulfilled Baron and Kenny's (1986) criteria for symptomatology as a mediator of the relationship between diagnosis and nurturance. Similarly, the association between symptoms and functioning (semipartial r = −.55, p < .01) completed the criteria for functioning as a mediator of the effects of symptoms on nurturance.) Higher nurturance scores were associated with lower symptomatology and higher functioning.

Satisfaction with Relationship with Child. For this dependent variable, the race-by-diagnosis interaction made no significant contribution and was omitted. All other blocks added unique predictive power, with the exception of demographics (Table 4). The overall adjusted R^2 indicated that 22 percent of the variance in satisfaction with re-

lationship could be accounted for by the variables in the equation. At entry into the equation in block 2, mothers in all diagnostic groups were significantly more satisfied than those with schizoaffective disorder, the omitted comparison diagnosis. In the chronicity block (block 3), average number of hospitalizations per year for mental illness was positively associated with satisfaction. Symptomatology (block 4) made a large negative contribution, accounting for an additional 12 percent of the variance in satisfaction once diagnosis and chronicity had been entered. As with parenting stress and nurturance, symptomatology served as a partial mediator of the effects of diagnosis, reducing the coefficients for all but the contrast between major depression with psychotic features and schizoaffective disorder to nonsignificant

TABLE 4—Hierarchical Regression Predicting Satisfaction with Relationship with Child from Diagnosis, Clinical History, and Current Clinical Status

Blocks of Predictors	Entry Block		Final Block		Adjusted $\triangle R^2$	Adjusted R^2
	β	t	β	t		
Block 1 demographics					0.004	0.004
African American	0.08	1.43	0.08	1.60		
Adjusted income (ln)	0.01	0.11	–0.06	–1.10		
Years of education	–0.09	–1.60	–0.17	–3.27**		
Block 2 diagnosis					0.034**	0.038
Schizoaffective (omitted comparison)	—	—	—	—		
Schizophrenia	0.23	3.19**	0.09	1.24		
Major depression	0.22	2.32*	0.09	1.02		
Major depression w. psy.	0.28	3.68***	0.18	2.60*		
Bipolar disorder	0.15	2.00*	0.04	0.56		
Bipolar with psy.	0.19	2.33*	0.13	1.75		
Block 3 mental illness history					0.013*	0.051
Duration of mental illness	-0.03	-0.48	-0.09	–1.79		
Hospitalizations per year MI	0.14	2.37*	0.11	2.05*		
Block 4 symptoms					0.124***	0.175
Symptomatology	–0.39	–7.01***	–0.21	–3.04**		
Block 5 community functioning					0.046***	0.221
Functioning	0.29	4.43***	0.29	4.43***		

*$p < .05$. **$p < .01$. ***$p < .001$.

levels. Community functioning also made a significant positive contribution to predicting satisfaction. The magnitude of the coefficient for symptomatology declined from –.39 at its entry to –.21 at the final block, suggesting, as with nurturance, functioning served as a partial mediator of symptomatology, although the fact that the coefficient for symptomatology remained significant indicates that it was not a complete mediator of these effects.

DISCUSSION

One goal in the current study was to broaden analyses of the impact of maternal mental illness on parenting by using a sample heterogeneous as to maternal diagnosis, race, and age of children. Second, we sought to fill some gaps in the literature regarding the effects of maternal diagnosis on parenting versus the effects of other clinical variables (that is, chronicity, symptomatology, and current community functioning) once maternal diagnosis, race, and other demographics had been

taken into account. To address these research problems, we carried out multivariate analyses. Analyses controlled for race, adjusted income, and education, and examined race-by-diagnosis interactions. Age of children was also examined as a control variable, but not found to relate to any of the parenting measures. This result is not surprising, however, because the investigation purposely selected parenting variables that would be applicable to the age range of children included in this study (ages four through 16 years).

Diagnostic Differences in Parenting Controlling for Race

The first set of analyses addressed the hypotheses that women with a depression diagnosis versus some other diagnoses would show significantly more dysfunction in parenting; and relationships between diagnostic category and parenting would differ by race, with weaker relationships expected for African American women. Significant though small differences across diagnoses were found for

a set of standard parenting variables (nurturance, parenting stress, and satisfaction with relationship). However, some of the relationships between the various diagnostic categories and the parenting variables differed for African American and non-African American women. That is, for African American mothers, the only significant paired contrast involved satisfaction with relationship: Women with schizophrenia were more satisfied than those with schizoaffective disorder. For non-African American mothers, nurturance and satisfaction with parenting relationships were both influenced by diagnosis. That is, mothers with a schizophrenia diagnosis were significantly less nurturant to their children than mothers with depression or bipolar disorders; mothers with major depression–psychotic features were significantly more satisfied in their relationships with their children than those with either major depression or schizoaffective diagnoses.

The results confirmed the second hypothesis—differences in the pattern of results were evident by racial group, reinforcing the need to study mothers of diverse ethnicities and races. However, the results failed to confirm the first hypothesis. Significant differences were found across diagnoses, but a depression diagnosis infrequently related to significantly poorer self-reported parenting attitudes and behaviors for either racial group. The exception was for white women and parenting satisfaction; perhaps their significantly lower scores in this domain were more reflective of depressed women's overall negative attitudes than parenting per se. For most of the parenting variables, though, the results suggest that African American women with a schizoaffective diagnosis and non-African American women with schizophrenia or schizoaffective diagnoses had more parenting problems than women with other diagnoses.

Effects of Diagnosis Versus Other Clinical Variables

A third hypothesis stated that after controlling for chronicity, current symptomatology, and community functioning, the differences across diagnoses on parenting variables would be reduced. This hypothesis was supported. Other clinical factors were important and added to an understanding of the relationships with parenting variables once the effects of diagnoses had been taken into account. Thus, in the hierarchical regression predicting parenting stress, diagnosis did make a significant contribution, as did chronicity. However, diagnosis and chronicity contributed small effects compared to the effect of symptomatology, and entering symptomatology into the model eliminated their effects. This suggests that chronicity and diagnosis expressed their influence on parenting stress through their effects on current symptoms—mothers with more severe symptoms felt more stressed as parents.

With regard to nurturance, the interaction between race and diagnosis accounted for most of the variance; symptomatology and community functioning made significant but small additional changes in variance accounted for. The effects of diagnosis on nurturance were partially mediated through symptomatology and community functioning. With regard to satisfaction with the parent–child relationship, symptom severity had an important predictive role and also was an important mediator of the effect of diagnosis. Once severity of symptoms was taken into account, the only remaining influence of diagnosis was that mothers with a diagnosis of schizoaffective disorder were less satisfied with their relationship than those with a diagnosis of major depression with psychotic features. The effects of symptom severity on satisfaction were partially mediated by the effects of current community functioning on satisfaction—mothers who were functioning better and those with fewer current symptoms were more satisfied with their relationships with their children.

Thus, overall, diagnosis made small independent contributions in accounting for variability in parenting. Mothers' symptomatology and community functioning had much stronger effects. This conclusion reflects the concerns raised in the introduction about our knowledge of the effects of diagnosis relative to other factors affecting parenting of mothers with mental illness (Oyserman et al., 2000). That is, current knowledge about the negative effect of maternal depression is primarily based on main effect analyses contrasting mothers with and without depression. Failure to take into account key demographics, to compare depression to other diagnoses, and to examine the independent effects of diagnosis once chronicity, current symptoms, or community functioning are taken into account may lead to inflated estimates of the negative effects of depression. The

results clearly point to the need to assess a mother's current clinical condition in predicting likely parenting problems. The results also highlight the current lack of understanding about the ways that race may matter, as discussed below.

Limitations

This study advanced current empirical literature by using a large sample diverse in education, work history, race, marital status, and poverty, and using extensively trained interviewers and a clinician with expertise in urban populations diagnosed with serious mental illnesses. However, these findings share the limitations of other clinical research with difficult-to-study populations. The sample was not a national one and did not allow separate analysis for all major racial–ethnic groups; results are based on data collected from participants recruited from the public mental health system in an urban area of one midwestern state. Although we oversampled for Hispanic women, we found too few to allow for separate analyses of this group and numbers of Asian and Native Americans were not sufficient for analysis. Even for the analyses of African American and white mothers, there were small cell sizes for some within-race diagnostic groups (for example non-African Americans with schizophrenia diagnoses). Because the participants recruited had to be engaged in some level of parenting of their children, the results would not generalize to mothers who had already lost custody of one or more children.

Another limitation is common to many clinical studies: Results are dependent on the quality of the available diagnostic tools and on participant self-reports. Diagnoses were determined with the DIS; other diagnostic tools, the SCID, RDC (Spitzer, Endicott, & Robins, 1978), or the CIDI, may have provided somewhat different results, since the DIS has been criticized for overcounting psychosis in the experiences of urban minority subjects. Also, parenting nurturance, stress, and satisfaction were assessed via maternal self-reports; other methods, such as reports of others and direct observations of mother–child interactions, are desirable and should be pursued in order to verify these findings. However, although parenting self-reports must be acknowledged as a limitation, this should not lead to a dismissal of the findings. Many studies of parenting among women with mental illness have relied exclusively on self-reports. As

Luthar and Suchman (2000) pointed out, the use of observational measures to study the parenting of women with psychopathology is often recommended, but rarely used. Across a wide range of children's ages, especially school age and adolescence, it becomes extremely difficult to construct relevant scenarios eliciting equivalent maternal responses (for example, in terms of discipline or nurturance) that also have acceptable reliability.

IMPLICATIONS FOR SOCIAL WORK RESEARCH AND PRACTICE

Future research clearly needs to move beyond much of the published literature, which has primarily involved white, middle-class, intact families. To assess the generalizability of the findings reported here, additional subpopulations (for example, Latinas, Asian Americans) should be included. Multisite studies with even larger samples could simultaneously examine race–ethnic group membership along with age and socioeconomic status. Other methodological improvements to consider would be adding observational and other non-self-report measures of parenting. Future research should also look at the possibility that race–ethnicity matters not only in its effects on diagnosis obtained using standard instruments but also in other important clinical variables of interest—chronicity, as measured by early onset or by multiple hospitalizations, as well as the likelihood of having severe symptoms and diminished community functioning.

In spite of the limitations, these results are congruent with and add to major conclusions of a recent critical review of the literature (Oyserman et al., 2000). Because of this, we believe that our results are likely to be useful in considering parenting among mothers with serious mental illness. The significant implications for practice and research are, first, specific mental illness diagnosis in itself is neither an independent nor very useful predictor of parenting problems or strengths. In fact, any effects of diagnosis are likely to interact with race–ethnicity, having quite different implications for parents who are African American and parents who are not. Second, when more rigorous and complex multivariate analyses are used, important effects of mothers' symptoms and functioning become clear. Clinicians and researchers alike would benefit from examining current symptomatology and community functioning of individuals with mental illness

who are parents. Providing culturally appropriate support for parenting, strengthening family networks, and assisting parents to function more independently in their communities may be appropriate methods of improving parenting for women with mental illness (Barrio, 2000) and, consequently, the outcomes for their children.

The notion of focusing on symptoms and functioning of individuals with mental illness is congruent with the relatively small effects of chronicity found in our results and in research on serious mental illness reported by others: Several studies on the effects of duration of mental illness suggest "plateaus" in functioning (often after the first five years of disability), as individuals are able to manage aspects of their mental illness (Harding, Brooks, Ashikaga, Strauss, & Breier, 1987; Lehman, 1999; Williams & Collins, 1999). Thus, mothers with severe and persistent mental illness are not necessarily at higher risk of problematic parenting than mothers with less serious or more acute mental illness, if current symptoms are under control and community functioning is positive. The best intervention for children with a mentally ill parent is probably comprehensive and quality treatment and rehabilitation services for the parent (Cook & Steigman, 2000). ∎

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