

Association of Maladaptive Parental Behavior With Psychiatric Disorder Among Parents and Their Offspring

Jeffrey G. Johnson, PhD; Patricia Cohen, PhD; Stephanie Kasen, PhD; Elizabeth Smailes, MPhil; Judith S. Brook, PhD

Background: A longitudinal study was conducted to investigate the role of maladaptive parental behavior in the association between parent and offspring psychiatric disorder.

Methods: Psychosocial and psychiatric interviews were administered to a representative community sample of 593 biological parents and their offspring from 2 counties in the state of New York in 1975, 1983, 1985 to 1986, and 1991 to 1993. In 1975, the offspring were a mean age of 6 years. Maladaptive parental behavior was assessed in 1975, 1983, and 1985 to 1986. Parent and offspring psychiatric symptoms were assessed in 1983, 1985 to 1986, and 1991 to 1993.

Results: Maladaptive parental behavior substantially mediated a significant association between parental and offspring psychiatric symptoms. Parents with psychiatric disorders had higher levels of maladaptive behavior in the household than did parents without psychiatric disorders.

Maladaptive parental behavior, in turn, was associated with increased offspring risk for psychiatric disorders during adolescence and early adulthood. Most of the youths that experienced high levels of maladaptive parental behavior during childhood had psychiatric disorders during adolescence or early adulthood, whether or not their parents had psychiatric disorders. In contrast, the offspring of parents with psychiatric disorders were not at increased risk for psychiatric disorders unless there was a history of maladaptive parental behavior.

Conclusions: Maladaptive parental behavior is associated with increased risk for the development of psychiatric disorders among the offspring of parents with and without psychiatric disorders. Maladaptive parental behavior appears to be an important mediator of the association between parental and offspring psychiatric symptoms.

Arch Gen Psychiatry. 2001;58:453-460

INTRAFAMILIAL TRANSMISSION of psychopathology is an important factor in the etiology of psychiatric disorders.^{1,2} Research has indicated that individuals with a familial history of psychiatric disorder are at elevated risk for onset of psychiatric disorder,³⁻⁵ and that genetic and environmental factors may both play important roles in intrafamilial transmission.⁶⁻¹⁰ Nevertheless, the mechanisms that cause psychiatric disorders to be transmitted from parents to their offspring remain poorly understood.

Maladaptive parenting has long been viewed as an important determinant of offspring psychopathology.¹¹ Parental behavior may be influenced by offspring temperament and parental psychopathology, both of which are likely to be determined in part by genetic factors.¹¹ However, while numerous studies have examined associations between parental psychopathology, parental behavior, and offspring psychopathology, few studies have included a comprehensive assessment of all 3 sets of factors using a multiwave prospective longitudinal method. Furthermore, no previous study has assessed parental psychopathology, parental behavior, and offspring psychopathology repeatedly from childhood through the early adulthood of the offspring, controlling for the effects of offspring temperament, offspring psychopathology, and parental psychopathology on parental behavior. Therefore, important questions remain unanswered about the role that parental behavior plays in the intrafamilial transmission of mental disorders. The nature of this association is of considerable interest to clinicians and scientists alike, in part because it may be possible to reduce the likelihood that children will develop psychiatric disorders by helping parents to modify their child-rearing behavior.¹²

Maladaptive parental behavior is likely to be one of the important aspects

From the Columbia University and the New York State Psychiatric Institute (Drs Johnson, Cohen, and Kasen and Ms Smailes); and the Mount Sinai Medical Center (Dr Brook), New York.

SUBJECTS, MATERIALS, AND METHODS

SAMPLE AND PROCEDURE

The participants in the Children in the Community Study were 976 randomly sampled families from 2 upstate New York counties, interviewed in 1975, 1983, 1985 to 1986, and 1991 to 1993.^{21,22} The families in this study were representative of families in the northeastern United States with regard to most demographic variables, but reflected the region regarding high percentages of Catholic (54%) and white (91%) participants.²² The current analyses were conducted with data from 593 families for whom information regarding psychiatric disorders and maladaptive parental behavior were available through 1985 to 1986 with regard to both biological parents, and for whom data were available through 1991 to 1993 regarding offspring psychopathology. These 593 families did not differ from the remainder of the original sample with regard to the prevalence of maladaptive parental behavior, difficult offspring temperament, or maternal psychopathology, although paternal substance abuse in 1975 was less prevalent than in the remainder of the original sample. During the follow-up interviews, administered by extensively trained and supervised lay interviewers, the youths and their mothers were interviewed to assess parental and offspring psychiatric symptoms, parental behavior, and other psychosocial variables. The mean (SD) age of the youths was 6 (3) years in 1975, 14 (3) years in 1983, 16 (3) years in 1985 to 1986, and 22 (3) years in 1991 to 1993. Study procedures were approved according to appropriate institutional guidelines. Written informed consent was obtained after the interview procedures were fully explained. Youths and their mothers were interviewed separately, and both interviewers were blind to the responses of the other informant. Additional information regarding the study methods is available from previous reports.^{21,22}

ASSESSMENT OF OFFSPRING TEMPERAMENT, OFFSPRING PSYCHOPATHOLOGY, AND PARENTAL PSYCHOPATHOLOGY

Ten dimensions of difficult childhood temperament were assessed during the 1975 maternal interviews: (1) clumsiness/distractibility; (2) nonpersistence/noncompliance; (3) anger; (4) aggression to peers; (5) problem behavior; (6) temper tantrums; (7) hyperactivity; (8) crying/demanding; (9) fearful withdrawal; and (10) moodiness. Children with severe problems in these domains were identified as having a difficult temperament.²²

The parent and youth versions of the Diagnostic Interview Schedule for Children²³ were administered to assess offspring anxiety, depressive, disruptive, and substance use disorders in 1983 and 1985 to 1986. In 1991 to 1993, the Diagnostic Interview Schedule for Children was administered only to the offspring. Mothers and youths were interviewed because the use of multiple informants increases the reliability and validity of psychiatric diagnoses among children and adolescents.^{24,25} Symptoms were considered present if reported by either informant. The reliability and validity of the Diagnostic Interview Schedule for Children as employed in the present study are comparable with those of other structured interviews.²⁶ Items used to assess personality disorders (PDs) were adapted from instruments including the Personality Diagnostic Questionnaire²⁷ and the Structured Clinical Interview for *DSM-III-R* Personality Disorders,²⁸ combined using computer algorithms,²⁹ and modified to maximize correspondence with *DSM-IV* diagnostic criteria. Because PD symptoms must be persistent for an adolescent to be diagnosed as having a PD,³⁰ a PD was not diagnosed unless PD diagnostic criteria were met in 1985 to 1986 or 1991 to 1993 and substantially elevated PD symptom levels were present on both occasions. Research has supported the reliability and validity of the items and algorithms used to assess PDs.³¹⁻³³

Two types of interview data were used to assess parental psychopathology. Current psychopathology was assessed during the 1975, 1983, and 1985 to 1986 maternal interviews. Lifetime psychopathology was assessed during the 1991 to 1993 maternal interview. Interview items used to assess current maternal anxiety; depressive, disruptive, personality, and substance use symptoms were obtained from the Disorganizing Poverty Interview,²¹ the California Psychological Inventory,³⁴ the Hopkins Symptom Checklist,³⁵ and instruments that assessed maternal alienation,³⁶ rebelliousness,³⁷ and other dysfunctional traits.^{38,39} Paternal alcohol abuse, drug abuse, and antisocial behavior were assessed using the Disorganizing Poverty Interview. Lifetime maternal and paternal anxiety, and depressive, disruptive, personality, and substance use disorders were assessed using items adapted from the New York High-Risk Study Family Interview.⁴⁰ Data regarding the onset of parental disorders permitted identification of disorders that were evident by the time that the mean age of the offspring was 16 years.

Diagnostic algorithms were developed using items that assessed *DSM-IV* diagnostic criteria for maternal anxiety, depressive, disruptive, personality, and substance use disorders. Diagnoses were not assigned unless there was clear and convincing evidence indicating that *DSM-IV* diagnostic criteria were met. Sufficient information was available to permit the assessment of maternal alcohol abuse, attention-deficit/hyperactivity disorder, conduct disorder, drug abuse, generalized anxiety disorder, major depressive

of the childhood environment that accounts for the increase in risk for psychiatric disorders among the offspring of parents with psychiatric disorders. Two bodies of research support this inference. First, research has indicated that parental psychopathology is associated with maladaptive parental behavior.^{11,13} Second, research has demonstrated that maladaptive parental behavior is associated with increased offspring risk for psychiatric disorders.¹⁴⁻¹⁷ It has thus been hypothesized that mal-

adaptive parental behavior plays a significant role in the association between parental and offspring psychiatric disorder.¹⁸⁻²⁰

To conduct a systematic examination of this mediational hypothesis, it is necessary to conduct prospective longitudinal research with a sizable general population sample, assessing a wide range of psychiatric disorders and maladaptive behaviors among both biological parents while they are raising their children, and

disorder, oppositional defiant disorder, personality disorders, and posttraumatic stress disorder. There was also sufficient information to permit the assessment of paternal alcohol abuse, antisocial personality disorder, conduct disorder, drug abuse, generalized anxiety disorder, and major depressive disorder.

ASSESSMENT OF MALADAPTIVE PARENTAL BEHAVIOR

A wide range of maternal and paternal behaviors were assessed during the 1975, 1983, and 1985 to 1986 interviews. Inconsistent maternal enforcement of rules, loud arguments between the parents, low maternal educational aspirations for the child, maternal difficulty controlling anger toward the child, maternal possessiveness, maternal use of guilt to control the child, maternal verbal abuse, parental cigarette smoking, parental supervision, paternal assistance to the child's mother, and paternal fulfillment of the role of father in the family were assessed using items from the Disorganizing Poverty Interview and measures of maternal child-rearing attitudes and behaviors that were administered during the maternal interviews.^{21,22,41,42} Harsh maternal punishment, parental affection, parental time spent with the child, and poor parental communication with the child were assessed in the maternal and offspring interviews using scales assessing parental warmth, parent-child communication, and parental support and availability.^{21,41,42} Parental home maintenance and maternal behavior during the interview were assessed by interviewer observations.

Scales and items assessing each type of parental behavior were dichotomized at the maladaptive end of the scale, facilitating identification of specific types of parental behavior that were associated with parental and offspring psychopathology. Dichotomies were established empirically to identify statistically deviant parental behaviors. Parental behavior was not defined as maladaptive unless the percentage of parents engaging in such behavior was at least 1 SD from the sample mean. Four scales, assessing parents' involvement in their child's life, were not associated with parental or offspring psychopathology. The types of parental behavior that were associated with parental and offspring psychopathology, listed in **Table 1** and **Table 2**, were included in the analyses reported below. A body of research supports the validity of the measures that were used to assess maternal and paternal behavior.^{21,22,41-45}

DATA ANALYSES

Analyses of contingency tables were conducted to investigate associations between parental psychiatric disorders and maladaptive parental behaviors. All analyses were

conducted using 2-tailed significance tests and an α level of .05. Analyses of covariance were conducted to investigate whether parents with disorders behaved in a more maladaptive manner than did parents without disorders. Logistic regression analyses were conducted to investigate whether maladaptive parental behavior was associated with increased offspring risk for psychiatric disorders during late adolescence (1985-1986) or early adulthood (1991-1993) after controlling for parental education, offspring age, sex, difficult childhood temperament, psychiatric disorders during early adolescence (1983), and parental psychiatric disorders. Logistic regression analyses were also conducted to investigate whether parental psychiatric disorders were associated with increased offspring risk for psychiatric disorders during late adolescence or early adulthood after controlling for parental education, offspring age, sex, difficult childhood temperament, psychiatric disorders during early adolescence, and maladaptive parental behavior. Power analyses indicated that parental and offspring anxiety, depressive, disruptive, personality, and substance use disorders were too rare to permit analyses regarding associations between specific types of parental and offspring psychiatric disorders. Therefore, multiple regression analyses were conducted to investigate associations between specific types of parental and offspring psychiatric symptoms after controlling for parental education, offspring age, sex, difficult childhood temperament, offspring psychiatric disorders during early adolescence, and maladaptive parental behavior. Unlike the logistic regression analyses, the multiple regression analyses took into consideration the severity of maternal and paternal psychopathology.

An established 3-step procedure⁴⁶ was used to test whether parental behavior mediated the associations between parental and offspring psychiatric disorders. For parental behavior to mediate these associations, 3 conditions are required: (1) parental psychiatric disorders must predict offspring psychiatric disorders; (2) parental psychiatric disorders must predict maladaptive parental behavior; and (3) maladaptive parental behavior must predict offspring psychiatric disorders after parental psychiatric disorders were controlled statistically. Difficult childhood temperament and offspring psychiatric disorders during early adolescence were controlled in all of the mediation analyses.

Logistic regression analyses were also conducted to investigate whether maladaptive maternal and paternal behaviors independently predicted offspring psychiatric disorder, the statistical interaction of maladaptive maternal and paternal behaviors predicted offspring psychiatric disorder, maternal and paternal psychiatric disorders independently predicted offspring psychiatric disorder, and the interaction of maternal and paternal psychiatric disorders predicted offspring psychiatric disorder.

assessing psychiatric disorders among the offspring during their childhood, adolescence, and early adulthood. It is also necessary to control for the effects of parental psychopathology, offspring temperament, and offspring psychopathology on maladaptive parental behavior.¹¹ We report findings from such a community-based prospective longitudinal study to investigate whether maladaptive parental behavior mediates the association between parental and offspring psychiatric disorders.

RESULTS

PREVALENCES OF MATERNAL, PATERNAL, AND OFFSPRING PSYCHIATRIC DISORDERS

Data regarding the cumulative prevalence of maternal and paternal psychiatric disorders before and during the childhood and adolescence of the offspring, and of offspring

Table 1. Maternal Psychiatric Disorders and Maladaptive Maternal Behaviors During the Childhood and Adolescence of the Offspring*

Maladaptive Maternal Behavior	Prevalence of Maladaptive Behavior Among Mothers, %†		Odds Ratio (95% CI)
	Without Psychiatric Disorder (n = 459)	With Psychiatric Disorder (n = 134)	
Harsh punishment of child	7	22	3.72 (2.17-6.38)‡
Inconsistent enforcement of rules	12	25	2.60 (1.61-4.22)‡
Low amount of time spent with child	18	29	3.16 (1.96-5.09)§
Low educational aspirations for child	18	33	2.18 (1.42-3.35)‡
Low maternal affection toward child	7	15	2.19 (1.22-3.96)‡
Maternal possessiveness toward child	4	13	3.80 (1.92-7.54)‡
Maternal use of guilt to control child	6	24	4.49 (2.61-7.72)‡
Numerous loud arguments with child's father	13	33	3.19 (2.03-5.00)‡
Poor control of anger toward child	2	6	2.59 (1.02-6.57)§
Poor maternal communication with child	19	31	1.89 (1.22-2.91)‡
Poor maternal supervision of child	4	10	2.97 (1.40-6.35)‡
Poor maternal maintenance of home	6	16	2.66 (1.47-4.82)‡
Regular cigarette smoking in presence of child	14	29	2.63 (1.66-4.16)‡
Verbal abuse directed toward child	7	22	3.81 (2.20-6.61)‡

*CI indicates confidence interval.

†Maternal behaviors that were not significantly associated with maternal psychiatric disorders are not included in this table.

‡Remained significant after controlling for offspring age, sex, and difficult temperament during childhood, for parental education, and for offspring psychiatric disorders during early adolescence.

§Remained significant after controlling for offspring age, sex, and difficult temperament during childhood.

Table 2. Paternal Psychiatric Disorders and Maladaptive Paternal Behaviors During the Childhood and Adolescence of the Offspring*

Maladaptive Paternal Behavior	Prevalence of Maladaptive Behavior Among Fathers, %†		Odds Ratio (95% CI)
	Without Psychiatric Disorder (n = 445)	With Psychiatric Disorder (n = 148)	
Low amount of time spent with child	16	27	2.02 (1.29-3.15)‡
Low level of paternal assistance to child's mother	11	43	6.02 (3.88-9.33)‡
Low paternal affection toward child	6	14	2.52 (1.36-4.66)‡
Numerous loud arguments with child's mother	13	32	3.10 (1.99-4.83)‡
Poor fulfillment of paternal role in family	8	36	6.54 (4.04-10.58)‡
Poor paternal communication with child	16	29	2.09 (1.35-3.22)‡
Poor paternal supervision of child	8	16	2.20 (1.29-3.96)‡
Regular cigarette smoking in presence of child	14	39	3.98 (2.60-6.09)‡
Poor paternal maintenance of home	4	12	3.48 (1.71-7.08)‡

*CI indicates confidence interval.

†Paternal behaviors that were not significantly associated with maternal psychiatric disorders are not included in this table.

‡Remained significant after controlling for offspring age, sex, and difficult temperament during childhood, for parental education, and for offspring psychiatric disorders during early adolescence.

psychiatric disorders during late adolescence and early adulthood, are presented in **Table 3**.

ASSOCIATION BETWEEN PREEXISTING OFFSPRING PSYCHOPATHOLOGY AND SUBSEQUENT PARENTAL BEHAVIOR

Difficult childhood temperament at a mean age of 6 years was associated with higher levels of maladaptive parental behavior at a mean age of 14 ($t_{591} = 3.28, P = .001$) and 16 ($t_{591} = 2.37, P = .02$) years. Psychiatric disorder at a mean age of 14 years was associated with higher levels of maladaptive parental behavior at a mean age of 16 years ($t_{591} = 5.67, P < .001$).

ASSOCIATION BETWEEN PARENTAL PSYCHIATRIC DISORDERS AND MALADAPTIVE PARENTAL BEHAVIOR

Fourteen types of maladaptive maternal behavior and 9 types of maladaptive paternal behaviors were more prevalent among parents with psychiatric disorders than among parents without psychiatric disorders. These associations remained significant after parental education, offspring age, sex, difficult childhood temperament, and psychiatric disorders during early adolescence were controlled statistically (Tables 1 and 2). Overall, parents without psychiatric disorders had an adjusted mean (SD) of 1.89 (1.84) maladaptive behaviors. Parents with psychiatric

disorders had an adjusted mean (SD) of 3.93 (3.00) maladaptive behaviors. This difference remained significant after controlling for the same covariates ($F_{592}=116.09$, $P<.001$).

ASSOCIATION BETWEEN MALADAPTIVE PARENTAL BEHAVIOR AND OFFSPRING PSYCHIATRIC DISORDERS

Maladaptive parental behavior was associated with increased offspring risk for anxiety, depressive, disruptive, personality, and substance use disorders during late adolescence and early adulthood after the covariates were controlled statistically. All of these associations remained significant after parental psychiatric disorders were controlled statistically (**Table 4**). Offspring psychiatric disorders increased markedly in prevalence as the number of maladaptive parental behaviors increased. The same pattern of findings was obtained when the analyses were repeated using an index of maladaptive parental behavior based solely on the maternal interviews and an index of offspring psychopathology based solely on the offspring interview during early adulthood. Supplemental analyses indicated that persistent maladaptive parental behavior was associated with higher offspring risk for psychiatric disorders than was episodic maladaptive parental behavior.

Maladaptive maternal (adjusted odds ratio [AOR], 1.38; 95% confidence interval [CI], 1.22-1.55; $P<.001$) and paternal behavior (AOR, 1.19; 95% CI, 1.06-1.34; $P=.003$) were independently associated with increased offspring risk for psychiatric disorder. The statistical interaction of maladaptive maternal and paternal behavior did not predict offspring risk for psychiatric disorder, although the addition of 1 maladaptive maternal and paternal behavior was associated with a 64% increase in offspring risk for psychiatric disorder.

ASSOCIATION BETWEEN PARENTAL AND OFFSPRING PSYCHIATRIC DISORDERS

Parental psychiatric disorders were associated with increased offspring risk for anxiety, disruptive, personality, substance use, and any psychiatric disorders during late adolescence and early adulthood after the covariates were controlled statistically (**Table 5**). However, none of these associations remained significant after controlling for maladaptive parental behavior. The same pattern of findings was obtained when the analyses were repeated using an index of the total number of maternal and paternal disorders in each family. Supplemental analyses indicated that persistent parental psychiatric disorders were associated with higher offspring risk for psychiatric disorders than were episodic parental psychiatric disorders.

Maternal (AOR, 2.38; 95% CI, 1.58-3.58; $P<.001$) and paternal (AOR, 1.62; 95% CI, 1.08-2.43; $P=.02$) psychiatric disorders were independently associated with offspring risk for psychiatric disorder. Neither the interaction of maternal and paternal psychiatric disorders nor the interaction of parental psychiatric disorders with maladaptive parental behavior was associated with offspring risk for psychiatric disorder. As the **Figure** indi-

Table 3. Prevalence of Maternal, Paternal, and Offspring Psychiatric Disorders*

Psychiatric Disorder†	Prevalence, %		
	Among Mothers (N = 593)	Among Fathers (N = 593)	Among Offspring (N = 593)
Anxiety disorder	11	5	13
Depressive disorder	11	2	10
Disruptive disorder	4	7	7
Personality disorder	5	3	11
Substance use disorder	5	13	8
Any disorder	23	25	31

*All prevalence rates are cumulative, indicating the total prevalence of disorder, including all assessments.

†Maternal alcohol abuse, attention-deficit/hyperactivity disorder, conduct disorder, drug abuse, generalized anxiety disorder, major depressive disorder, oppositional defiant disorder, personality disorders, and posttraumatic stress disorder were assessed during the childhood and adolescence of the offspring. Paternal alcohol abuse, antisocial personality disorder, conduct disorder, drug abuse, generalized anxiety disorder, and major depressive disorder were assessed during the childhood and adolescence of the offspring. Offspring alcohol abuse, attention-deficit/hyperactivity disorder, conduct disorder, drug abuse, dysthymia, generalized anxiety disorder, major depressive disorder, oppositional defiant disorder, panic disorder, personality disorders, obsessive-compulsive disorder, separation anxiety disorder, and social phobia were assessed during the adolescence and early adulthood of the offspring.

cates, the overall increases in offspring risk for psychiatric disorders as a function of maladaptive parental behavior were nearly identical among the offspring of parents with and without psychiatric disorders.

ASSOCIATIONS BETWEEN SPECIFIC TYPES OF PARENTAL AND OFFSPRING PSYCHIATRIC SYMPTOMS

As **Table 6** indicates, symptoms of parental and offspring anxiety, depressive, disruptive, personality, and substance use disorders were significantly associated after parental education, offspring age, sex, difficult childhood temperament, and early adolescent psychiatric disorders were controlled statistically. Maladaptive parental behavior was associated with symptoms of offspring anxiety, depressive, disruptive, personality, and substance use disorders after the covariates listed above, and parental psychiatric symptoms were controlled statistically. Substantial reductions in the magnitudes of the associations between parental and offspring psychiatric symptoms were observed when maladaptive parental behavior was controlled statistically.

PARENTAL DISORDERS, PARENTAL BEHAVIOR, AND OFFSPRING PSYCHIATRIC DISORDERS DURING EARLY ADULTHOOD

Although statistical controls were used in the above analyses to minimize the influence of preexisting offspring psychopathology, it would have been possible to further reduce the influence of preexisting offspring psychopathology by restricting the analyses to associations involving only those offspring disorders that were pres-

Table 4. Maladaptive Parenting and Offspring Psychiatric Disorders During Late Adolescence and Early Adulthood*

Offspring Psychiatric Disorder	Prevalence of Psychiatric Disorders Among Offspring Who Experienced Various Levels of Maladaptive Parental Behavior, %			Odds Ratio†‡ (95% CI)	Adjusted Odds Ratio†§ (95% CI)
	<2 Maladaptive Parental Behaviors (n = 261)	2-5 Maladaptive Parental Behaviors (n = 253)	≥6 Maladaptive Parental Behaviors (n = 79)		
Anxiety disorder	8	13	29	1.19 (1.10-1.29)	1.13 (1.03-1.24)
Depressive disorder	5	12	20	1.22 (1.12-1.33)	1.21 (1.09-1.34)
Disruptive disorder	3	6	23	1.34 (1.21-1.48)	1.30 (1.16-1.45)
Personality disorder	4	12	30	1.36 (1.25-1.49)	1.34 (1.21-1.49)
Substance use disorder	5	10	15	1.19 (1.09-1.30)	1.16 (1.04-1.29)
Any disorder	19	34	63	1.32 (1.23-1.42)	1.29 (1.19-1.39)

*CI indicates confidence interval.

†Odds ratios indicate the increase in the odds for offspring psychiatric disorder associated with an increase of 1 in the number of maladaptive parental behaviors that were present during childhood.

‡Logistic regression analyses indicated that all of these odds ratios remained significant after controlling for parental education and for offspring age, sex, difficult childhood temperament, and psychiatric disorders during early adolescence.

§Controlling for parental psychiatric disorders. All of the odds ratios in this column are significant.

Table 5. Association Between Parental Psychiatric Disorders and Offspring Psychiatric Disorders During Late Adolescence and Early Adulthood*

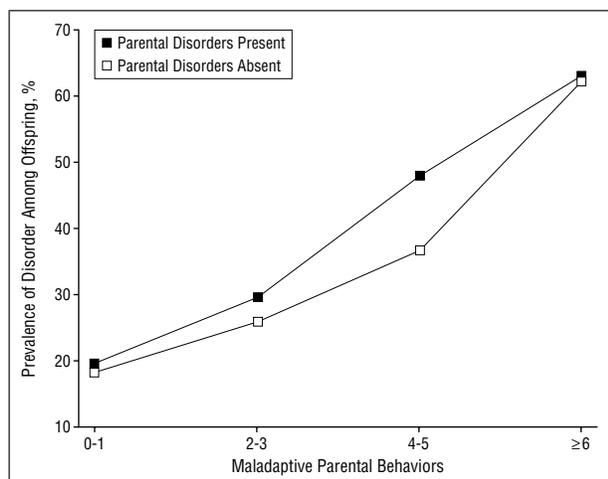
Offspring Psychiatric Disorder	Prevalence of Psychiatric Disorders Among Offspring, %			Odds Ratio†‡ (95% CI)	Adjusted Odds Ratio†§ (95% CI)
	Parents Without Psychiatric Disorders (n = 370)	One Parent With a Psychiatric Disorder (n = 164)	Both Parents With a Psychiatric Disorder (n = 59)		
Anxiety disorder	10	12	34	1.41 (1.16-1.70)	1.15 (0.91-1.46)
Depressive disorder	8	10	18	1.37 (1.11-1.69)	1.07 (0.82-1.39)
Disruptive disorder	4	10	17	1.40 (1.11-1.77)	0.87 (0.64-1.19)
Personality disorder	7	13	25	1.62 (1.34-1.97)	1.11 (0.86-1.42)
Substance use disorder	6	11	15	1.35 (1.01-1.57)	1.08 (0.81-1.43)
Any disorder	25	37	58	1.57 (1.33-1.85)	1.16 (0.95-1.41)

*CI indicates confidence interval.

†Odds ratios indicate the increase in risk for offspring disorder associated with an increase of 1 in the number of parents with disorders.

‡Logistic regression analyses indicated that all of the odds ratios except that for disruptive disorders remained significant after controlling for parental education and for offspring age, sex, difficult childhood temperament, and psychiatric disorders during early adolescence.

§Controlling statistically for maladaptive parenting. None of the odds ratios in this column are significant.



Association between maladaptive parental behavior and offspring psychiatric disorders among offspring of parents with and without psychiatric disorders.

ent during early adulthood. However, small numbers of cases precluded such analyses regarding the 5 specific types of offspring psychiatric disorders. There was suf-

ficient statistical power to permit analyses regarding the overall association between parental disorders, maladaptive parental behavior, and offspring psychiatric disorders during early adulthood. Results were consistent with the findings reported above: parental psychiatric disorders were associated with increased offspring risk for psychiatric disorders during early adulthood before (OR, 1.67; 95% CI, 1.27-2.19), but not after, controlling for maladaptive parental behavior (AOR, 1.19; 95% CI, 0.87-1.64).

COMMENT

The present findings suggest that maladaptive parental behavior may play an important role in the association between parental and offspring psychopathology. In the present study, maladaptive parental behavior met all of the statistical criteria⁴⁶ required to indicate that it mediated this association: parental psychopathology was associated with maladaptive parental behavior and with increased offspring risk for psychiatric disorders during late adolescence and early adulthood, and maladaptive parental behavior was associated with elevated offspring risk

Table 6. Association Between Parental Psychiatric Symptoms and Offspring Psychiatric Symptoms During Late Adolescence and Early Adulthood

Offspring Symptoms/ Parental Symptoms	Association Between Parental Psychiatric Symptoms and Offspring Psychiatric Symptoms			
	Before Controlling for Maladaptive Parental Behavior		After Controlling for Maladaptive Parental Behavior	
	β^* (SE)	$R^2\ddagger$	β^* (SE)	$R^2\ddagger$
Anxiety/Anxiety	0.24‡ (0.04)	0.06	0.14‡ (0.04)	0.02
Depressive/Depressive	0.16‡ (0.04)	0.03	0.05 (0.04)	0.00
Disruptive/Disruptive	0.35‡ (0.04)	0.12	0.25‡ (0.04)	0.05
Personality/Personality	0.31‡ (0.04)	0.09	0.13‡ (0.04)	0.01
Substance/Substance	0.12‡ (0.04)	0.02	0.07 (0.04)	0.00
Total/Total	0.41‡ (0.04)	0.17	0.23‡ (0.04)	0.04

*Indicates the regression coefficient.

†The proportion of variance in offspring symptoms accounted for by parental symptoms.

‡Association remained significant after controlling for parental education and for offspring age, sex, difficult childhood temperament, and psychiatric disorders during early adolescence.

for psychiatric disorders after parental psychiatric disorders were controlled statistically.

Such findings are of particular interest because it may be possible to prevent the onset of psychiatric disorders among many children and adolescents by helping parents to modify their child-rearing behavior.¹² Importantly, our findings suggest that maladaptive parental behavior may play a significant role in the development of offspring psychiatric disorders whether or not the parents have psychiatric disorders. The present findings also indicate that some parents with psychiatric disorders do not behave in a particularly maladaptive manner while raising their children, and that their offspring may not be at substantially elevated risk for psychiatric disorders. Because some types of maladaptive parental behavior are relatively common in our society, our findings suggest that it may be important to educate the public about the kinds of parental behavior that are most strongly associated with risk for mental disorders among offspring.

These data are consistent with previous research indicating that parental psychopathology is associated with maladaptive parental behavior,^{11,13} that maladaptive parental behavior is associated with offspring risk for psychopathology,^{14-20,47} that a substantial proportion of the intrafamilial association involving several types of psychiatric disorders is accounted for by environmental factors,^{8,9,47} and that the effects of parental behavior on offspring behavior have sometimes been underestimated because the unique or "nonshared" aspects of the relationship between each child and his or her parents have not been adequately recognized.⁴⁸ At the same time, it is also important to note that there is evidence indicating that genetic factors may play a predominant role in the intrafamilial transmission of some types of mental disorders, including schizophrenia and bipolar disorder,⁶ which were too rare to investigate in this study.

As noted above, previous research has indicated that parenting can be adversely affected by parental psychopathology and offspring temperament, both of which seem to be determined in part by genetic factors.^{6,11} In this regard, our findings indicating that the association between maladaptive parental behavior and subsequent offspring psy-

chiatric disorders was not attributable to the effects of parental psychopathology, offspring temperament, or offspring psychiatric disorders during early adolescence are of particular interest. It will, nevertheless, be of interest for future research to investigate whether genetic factors that are not expressed in the phenotypic form of either parental psychopathology or difficult offspring temperament may play a role in the association between maladaptive parental behavior and offspring psychopathology. It will also be of interest for future research, designed to optimize the detection of genetic influences on behavior, to investigate whether a shared genetic liability for parental psychopathology and maladaptive parental behavior may affect parental behavior even in the absence of parental psychiatric disorder, and whether indirect genetic effects may adversely influence parental behavior through their association with environmental adversities.

The limitations of the present study require consideration. Because the fathers were not interviewed, data from the maternal and offspring interviews were used to assess paternal behavior and psychopathology. We considered restricting the focus of this article to the association between maternal psychiatric disorder, maladaptive maternal behavior, and offspring psychiatric disorder. However, our concerns about the paternal data were outweighed by the enhanced contribution to the field that results from the inclusion of data regarding both biological parents. Confidence in the validity of the paternal data was increased because the present findings are consistent with regard to the mediational roles of maladaptive maternal and paternal behavior, and because the present findings regarding the estimated prevalence of paternal disorders are similar to the findings of major epidemiological studies.^{49,50} Another limitation is the absence of systematic observational data on parent-child interactions. Several studies have indicated that observer ratings of parental and offspring behavior tend to yield higher estimates of the role of the environment in the association between parental and offspring behavior than are obtained when parental ratings are used.⁵¹ Nevertheless, the unique methodological strengths of the present study permit the findings of this investigation to contribute to an increased understanding of the role of pa-

rental behavior in the association between parental and offspring psychiatric disorders.

Accepted for publication November 27, 2000.

Supported by grant MH-36971 from the National Institute of Mental Health, Bethesda, Md (Dr Cohen), and National Institutes of Health grant DA-03188 from the National Institute on Drug Abuse, Bethesda, Md (Dr Brook).

Corresponding author: Jeffrey G. Johnson, PhD, Unit 60, New York State Psychiatric Institute, 1051 Riverside Dr, New York, NY 10032 (e-mail: jjohnso@pi.cpmc.columbia.edu).

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