

# Parenting Behaviors Associated With Risk for Offspring Personality Disorder During Adulthood

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**Context:** Research has suggested that some types of parental child-rearing behavior may be associated with risk for offspring personality disorder (PD), but the association of parenting with offspring PD has not been investigated comprehensively with prospective longitudinal data.

**Objective:** To investigate the association of parental child-rearing behavior with risk for offspring PD during adulthood.

**Design:** The Children in the Community study, a prospective longitudinal investigation.

**Setting and Participants:** A community-based sample of 593 families interviewed during childhood (mean age, 6 years), adolescence (mean ages, 14 and 16 years), emerging adulthood (mean age, 22 years), and adulthood (mean age, 33 years) of the offspring.

**Main Outcome Measure:** The Structured Clinical Interview for DSM-IV Personality Disorders.

**Results:** Ten types of parenting behavior that were evident during the child-rearing years were associated with elevated offspring risk for PD during adulthood when

childhood behavioral or emotional problems and parental psychiatric disorders were controlled statistically. Parental behavior in the home during the child-rearing years was associated with elevated risk for offspring PD at mean ages of 22 and 33 years. Risk for offspring PD at both assessments increased steadily as a function of the number of problematic parenting behaviors that were evident. Low parental affection or nurturing was associated with elevated risk for offspring antisocial ( $P = .003$ ), avoidant ( $P = .01$ ), borderline ( $P = .002$ ), depressive ( $P = .02$ ), paranoid ( $P = .002$ ), schizoid ( $P = .046$ ), and schizotypal ( $P < .001$ ) PDs. Aversive parental behavior (eg, harsh punishment) was associated with elevated risk for offspring borderline ( $P = .001$ ), paranoid ( $P = .004$ ), passive-aggressive ( $P = .046$ ), and schizotypal ( $P = .02$ ) PDs.

**Conclusions:** Parental behavior during the child-rearing years may be associated with risk for offspring PD that endures into adulthood. This risk may not be attributable to offspring behavioral and emotional problems or parental psychiatric disorder, and it may not diminish over time. Low parental nurturing and aversive parental behavior during child rearing may both be associated with elevated risk for offspring PDs.

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**T**HE DEVELOPMENTAL psychopathology and etiology of personality disorder (PD) is of profound and growing interest to practitioners and researchers throughout the psychiatric and mental health community. Personality disorders are common, persistent conditions that cause significant impairment and distress<sup>1</sup> and are associated with increased risk for adverse outcomes, including Axis I disorders as well as antisocial and suicidal behavior.<sup>1-4</sup> It is important for researchers to investigate the developmental origins of PDs, which tend to become evident during adolescence or early adulthood.<sup>1</sup> Although research has suggested that genetic, environmental, and prenatal factors may all play important contributory roles in the

development of PD traits,<sup>5-11</sup> the etiology of PD is a field of investigation that remains in its infancy.

One important avenue of research involves the use of prospective longitudinal data to investigate risk factors that predict and contribute to the development of PD. Because PDs often originate during childhood or adolescence,<sup>12-15</sup> it is necessary for longitudinal studies to assess potential risk factors during childhood and adolescence and to assess PD symptoms from adolescence through adulthood. Such studies require sustained and intensive effort over several decades. To date, few prospective longitudinal studies have investigated the developmental precursors of PD, and relatively little empirical evidence is currently available with regard to the developmental psychopathology of PD.

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Traumatic childhood experiences such as childhood abuse and neglect are among the risk factors that have been investigated most extensively as potential risk factors for PD. Longitudinal studies<sup>6-8,16</sup> have suggested that childhood abuse and neglect may be associated with risk for the development of PD symptoms. However, few longitudinal findings have been reported regarding the effects that more common childhood adversities, such as problematic parenting, may have on the risk for PD. Nevertheless, the role of parenting is of particular interest because PDs have been hypothesized to result in part from maladaptive or deficient socialization during childhood and adolescence, when many personality traits tend to become evident.<sup>15,17</sup> The home environment is generally considered to be one of the most important sources of socialization for most children. Because parents typically play a crucial role in the rearing and early socialization of the child, the socialization deficits that are evident among individuals with PD may result in part from problematic parenting.<sup>15-17</sup> Recent studies<sup>18</sup> have suggested that problematic parenting may contribute to increased risk for PD, but these findings require replication, extension, and further investigation. It is of particular interest to investigate whether the association of parenting with offspring risk for PD persists into adulthood or diminishes with offspring age. It is also of interest to investigate whether specific types of parenting behaviors are differentially associated with the development of specific types of offspring PD symptoms.

An important methodological consideration for research in this field is that offspring behavioral and emotional problems during childhood and parental psychiatric symptoms have been found to be important determinants of parental child-rearing behavior.<sup>11,19</sup> Both have been found to be associated with risk for offspring psychiatric disorders,<sup>19,20</sup> including PDs,<sup>18,21</sup> and both are likely to be partially attributable to genetic risk factors.<sup>11,19</sup> Thus, in studies of the association of parenting with offspring psychiatric conditions, it is important to implement statistical procedures to control for offspring behavioral and emotional problems during childhood and for parental psychiatric disorders during the child-rearing years. To conduct a comprehensive and systematic investigation, it is necessary to assess a wide range of psychiatric symptoms and child-rearing behaviors among both biological parents and to assess offspring disorders during adulthood.

We describe findings from a community-based prospective longitudinal study that meets these methodological criteria regarding the association of parental child-rearing behavior with risk for offspring PD. The effects of behavioral and emotional problems during childhood and parental psychiatric disorders on offspring risk for PD are controlled statistically. In addition, we investigate the hypothesis that parental behavior in the home during the child-rearing years mediates the associations of behavioral and emotional problems during childhood and parental psychiatric disorders with the development of offspring PD. This hypothesis is consistent with the bioecological theory of Bronfenbrenner and Ceci<sup>22</sup> that postulates that environmental factors, such as parenting, play an important role in determining whether bio-

logical risk factors or diatheses lead to the development of psychiatric disorders. Although previous research<sup>23,24</sup> has supported several of the propositions set forth in the bioecological theory, the processes governing the interaction between biological and environmental risk factors for PDs and other psychiatric disorders have not yet been extensively investigated.<sup>25</sup>

## METHODS

### SAMPLE AND PROCEDURE

The present findings are based on data from 593 families with whom psychiatric and psychosocial assessments of both biological parents and a randomly sampled child were conducted between the childhood (mean offspring age, 5.5 years) and adulthood (mean offspring age, 33.1 years) of the offspring. The study began in 1975 with comprehensive psychosocial assessments of 976 mothers of children between the ages of 1 and 10 years (mean  $\pm$  SD age, 5.5  $\pm$  2.8 years) who were randomly sampled on the basis of residence in 2 upstate New York counties. Subsequent interviews assessing psychiatric disorders and psychosocial functioning were conducted with the mothers and a randomly sampled child in 1983 (n = 778; mean  $\pm$  SD offspring age, 13.7  $\pm$  2.8 years), 1985 to 1986 (n = 776; mean  $\pm$  SD offspring age, 16.3  $\pm$  2.8 years), 1991 to 1993 (n = 749; mean  $\pm$  SD offspring age, 22.1  $\pm$  2.7 years), and 2001 to 2004 (n = 658; mean  $\pm$  SD offspring age, 33.1  $\pm$  2.9 years). The participating families were generally representative of families in the northeastern United States with regard to socioeconomic status and most demographic variables.<sup>26</sup> The 593 families described in this article did not differ from the remainder of the original sample with regard to the prevalence of maternal or offspring behavioral or emotional problems, although paternal substance abuse was less prevalent. Study procedures were approved according to appropriate institutional guidelines and were approved by the Columbia University College of Physicians and Surgeons Institutional Review Board and the New York State Psychiatric Institute Institutional Review Board, New York. A National Institutes of Health Certificate of Confidentiality was obtained for these data. Written informed consent or assent was obtained from all of the participants after the interview procedures were fully explained. Additional information regarding the study methods is available from previous articles<sup>2,3,8,15,18,26,27</sup> and on the study Web site (<http://nyspi.org/childcom>).

### ASSESSMENT OF OFFSPRING BEHAVIORAL PROBLEMS, EMOTIONAL PROBLEMS, AND PD

Ten types of childhood behavioral and emotional problems were assessed during the maternal interviews in 1975 with the Disorganizing Poverty Interview (DPI)<sup>27</sup>: (1) clumsiness or distractibility (5 items;  $\alpha$  = .53); (2) nonpersistence or noncompliance (6 items;  $\alpha$  = .46); (3) anger (4 items;  $\alpha$  = .48); (4) aggression to peers (9 items;  $\alpha$  = .68); (5) problem behavior (9 items;  $\alpha$  = .45); (6) temper tantrums (3 items;  $\alpha$  = .48); (7) hyperactivity (3 items;  $\alpha$  = .31); (8) crying or demanding (6 items;  $\alpha$  = .46); (9) fearful withdrawal (7 items;  $\alpha$  = .63); and (10) moodiness (5 items;  $\alpha$  = .62). These childhood behavioral and emotional problems have been found to predict subsequent behavioral problems, substance use, and psychiatric disorders during adolescence and early adulthood.<sup>28,29</sup>

Items used to assess PD at a mean age of 22 years were adapted from instruments including the Personality Diagnostic Questionnaire<sup>30</sup> and the Structured Clinical Interview for DSM-III-R Personality Disorders.<sup>31</sup> The items selected from these

instruments, which were developed to assess *DSM-III-R* diagnostic criteria, were combined using algorithms developed by consensus among 1 psychiatrist and 2 clinical psychologists.<sup>32</sup> Following the publication of *DSM-IV*, the items selected from the study protocol were modified to maximize correspondence with *DSM-IV* diagnostic criteria. Items from the protocol were added when necessary, most notably to permit assessment of depressive PD. Research has supported the reliability and validity of these items and diagnostic algorithms. Personality disorders assessed using these items and algorithms were associated with elevated risk for subsequent Axis I disorders, suicidality, violence, and criminal behavior.<sup>2,3</sup> The temporal stability of PD symptoms assessed using these procedures was similar to that obtained in other studies that have used comparable test-retest intervals.<sup>15</sup> Personality disorder was assessed at a mean age of 33 years using the *DSM-IV* version<sup>33</sup> of the Structured Clinical Interview for *DSM-III-R* Personality Disorders, which was administered by experienced mental health professionals. Research has supported the reliability and validity of the Structured Clinical Interview for *DSM-III-R* Personality Disorders.<sup>34-36</sup>

### ASSESSMENT OF PARENTAL PSYCHIATRIC DISORDER

Two types of interview data were used to assess parental psychiatric disorders. Current parental emotional and behavioral problems were assessed during the 1975, 1983, and 1985 to 1986 maternal interviews. Lifetime psychiatric disorders were assessed during the 1991 to 1993 maternal interview. Current maternal anxiety, depressive, disruptive, PD, and substance abuse symptoms were assessed with items from the DPI, the California Psychological Inventory,<sup>37</sup> the Hopkins Symptom Checklist,<sup>38</sup> and the Multiple Affect Adjective Checklist.<sup>39</sup> Research has provided considerable support for the internal reliability and concurrent, criterion, and construct validity of these instruments.<sup>27-29,37-39</sup> Current paternal alcohol abuse, drug abuse, and antisocial behavior were assessed with the DPI. Lifetime maternal and paternal anxiety, depressive, disruptive, and substance use disorders as well as antisocial PD were assessed using items adapted from the New York High Risk Study Family Interview,<sup>40</sup> which was administered during the maternal interview at a mean offspring age of 22 years. Research has supported the reliability, concurrent, and diagnostic validity of this instrument.<sup>41</sup>

Interview data regarding the age at disorder onset permitted identification of parental disorders that were evident by the offspring age of 16 years. Diagnostic algorithms were developed using items that assessed *DSM-IV* diagnostic criteria for maternal anxiety, depressive, disruptive, and substance use disorders as well as PD. Research<sup>18,42,43</sup> has provided considerable support for the diagnostic and predictive validity of the items and algorithms used to assess maternal and paternal psychiatric disorders in this study. The prevalence of maternal and paternal psychiatric disorders assessed using these procedures corresponds with the findings of major epidemiological studies.<sup>18,44,45</sup> Both maternal and paternal psychiatric disorders have been found to be associated with problematic child-rearing behavior and with elevated risk for the development of offspring psychiatric disorders.<sup>18,42,43</sup>

### ASSESSMENT OF PARENTAL BEHAVIOR IN THE HOME DURING THE CHILD-REARING YEARS

A wide range of maternal and paternal behaviors were assessed during the 1975, 1983, and 1985 to 1986 interviews using items from the DPI and parent and offspring versions of

the Cornell Parent Behavior Inventory<sup>46</sup> and the Child's Report of Parental Behavior Inventory.<sup>47</sup> Numerous studies have supported the reliability and validity of these instruments.<sup>27,29,46-53</sup> Cornell Parent Behavior Inventory and Child's Report of Parental Behavior Inventory items assessing parental affection for the child (4 items;  $\alpha = .61$ ), communication with the child (5 items;  $\alpha = .58$ ), and time spent with the child (3 items;  $\alpha = .64$ ) were administered during the maternal and offspring interviews at mean ages of 14 and 16 years. Cornell Parent Behavior Inventory, Child's Report of Parental Behavior Inventory, and DPI items assessing parental punishment (10 items;  $\alpha = .67$ ) and verbal abuse (3 items;  $\alpha = .52$ ) were administered during the maternal and offspring interviews at mean ages of 6, 14, and 16 years. Cornell Parent Behavior Inventory, Child's Report of Parental Behavior Inventory, and DPI items assessing parental use of guilt to control the child (5 items;  $\alpha = .78$ ), inconsistent parental enforcement of rules (3 items;  $\alpha = .55$ ), loud or rough arguments between the child's parents, parental educational aspirations for the child, parental possessiveness (4 items;  $\alpha = .44$ ), problems controlling anger toward the child, and parental supervision of the child (10 items;  $\alpha = .67$ ) were administered during the maternal interviews. Supplemental evidence of poor parental supervision was obtained from state records.

Scales and items assessing each type of parental behavior were dichotomized at the maladaptive end of the scale, facilitating identification of specific parental behaviors that were associated with parental and offspring emotional and behavioral problems. Dichotomies were established empirically to identify statistically deviant parental behaviors. Parental behavior was not defined as problematic unless the proportion of parents engaging in such behavior was 1 SD or greater from the sample mean. Research<sup>18,27-29,42,43,53-56</sup> has provided considerable support for the concurrent, construct, criterion-based, and predictive validity of the procedures used to assess maternal and paternal child-rearing behavior in this study. Problematic parental behavior in the home during the child-rearing years, which was assessed using these procedures, has been found to be associated with elevated risk for adverse offspring mental health outcomes, including Axis I disorders and suicidal behavior.<sup>18,27-29,53-56</sup>

### DATA ANALYSES

Analyses of contingency tables and correlational analyses were conducted to investigate associations between specific types of parental behavior in the home during the child-rearing years and offspring PD during adulthood. Logistic regression analyses were conducted to investigate whether problematic parental behavior in the home during the child-rearing years was associated with elevated risk for offspring PD at a mean age of 22 or 33 years after controlling for offspring age, sex, childhood behavioral or emotional problems, and parental psychiatric disorder. Multiple regression analyses were conducted to investigate whether problematic parental behavior in the home by a mean offspring age of 16 years was associated with the total offspring PD symptom level at mean ages of 22 and 33 years after controlling for the same covariates. Childhood behavioral or emotional problems were identified as being present if 1 or more behavioral or emotional problems were evident at a mean offspring age of 6 years. Parental psychiatric disorders were identified as being present during the child-rearing years if 1 or more maternal or paternal psychiatric disorders were evident by a mean offspring age of 16 years.

Generalized estimating equation analyses controlling for the covariates listed earlier were conducted to examine whether parental behavior in the home during the child-rearing years was

differentially associated with risk for offspring PD as a function of age. Logistic regression analyses were conducted to investigate whether aversive parental behaviors and low parental affection or nurturing were associated with offspring risk for specific types of PD during adulthood. Multiple regression analyses were conducted to investigate whether these 2 types of parental behavior were associated with the total offspring PD symptom level at mean ages of 22 and 33 years after controlling for the covariates listed earlier. Harsh punishment, inconsistent maternal enforcement of rules, frequent loud arguments between the parents, difficulty controlling anger toward the child, possessiveness, use of guilt to control the child, and verbal abuse were classified as aversive parental behaviors. The median correlations between these behaviors and the composite indices of aversive parental behavior and low parental affection or nurturing were  $r=0.528$  ( $P<.001$ ) and  $r=0.141$  ( $P=.001$ ), respectively. Low parental affection, low parental time spent with the child, poor parental communication with the child, poor home maintenance, low educational aspirations for the child, poor parental supervision, low paternal assistance to the child's mother, and poor paternal role fulfillment were classified as being indicative of low parental affection or nurturing. The median correlations between these behaviors and the composite indices of low parental affection or nurturing and aversive parental behavior were  $r=0.529$  ( $P<.001$ ) and  $r=0.177$  ( $P<.001$ ), respectively.

A series of logistic and multiple regression analyses were conducted to investigate whether parental behavior in the home during the child-rearing years mediated the associations of offspring behavioral or emotional problems during childhood and parental psychiatric disorders with risk for offspring PD at a mean age of 22 or 33 years. Three fundamental conditions are required for parental behavior to mediate these associations.<sup>57-59</sup> First, parental psychiatric disorders and childhood behavioral or emotional problems must predict subsequent offspring PD. Second, parental psychiatric disorders and childhood behavioral or emotional problems must be significantly associated with problematic parental behavior in the home during the child-rearing years. Third, problematic parental behavior in the home during the child-rearing years must predict subsequent offspring PD after parental psychiatric disorders and childhood behavioral and emotional problems are controlled statistically. Post hoc analyses were conducted to investigate whether the associations of parental psychiatric disorders and childhood behavioral or emotional problems with offspring PD were significantly reduced when problematic parental behavior in the home during the child-rearing years was controlled statistically.<sup>59</sup>

## RESULTS

### PREVALENCE OF OFFSPRING PD AT MEAN AGES OF 22 AND 33 YEARS

One hundred twenty-two respondents met the *DSM-IV* diagnostic criteria for 1 or more PDs at a mean age of 22 or 33 years (cumulative PD prevalence, 20.6%). The point prevalence of 1 or more PDs at a mean age of 22 years was 12.5%, and the point prevalence of 1 or more PDs at a mean age of 33 years was 15.2%.

### ASSOCIATION OF PARENTAL BEHAVIOR WITH RISK FOR OFFSPRING PD

The overall association between the composite index of the total number of different kinds of problematic parent-

ing behavior that were evident during the child-rearing years and offspring risk for PD was statistically significant when age, sex, childhood behavioral or emotional problems, and lifetime parental psychiatric disorders were controlled (adjusted odds ratio [OR], 1.24; 95% confidence interval [CI], 1.14-1.35). This association was also significant when problematic parental behavior in the home during the child-rearing years was treated as a categorical variable (ie, 0-1, 2-5, and  $\geq 6$  types of parental behavior) (adjusted OR, 1.96; 95% CI, 1.43-2.68). The composite index of problematic parental behavior was significantly associated with the aggregate PD symptom total at mean ages of 22 and 33 years when the covariates were controlled (partial  $r=0.28$ ;  $P<.001$ ). All of the significant associations reported in this article were linear. There were no statistically significant nonlinear (eg, quadratic, cubic) effects.

Ten types of parental behavior in the home by a mean offspring age of 16 years were significantly associated with elevated offspring risk for PD at a mean age of 22 or 33 years when the covariates were controlled (**Table**). The median correlation between these 10 types of parental behavior was  $r=0.12$  ( $P=.003$ ). Maternal possessiveness (OR, 2.32; 95% CI, 1.14-4.73), verbal abuse (OR, 2.11; 95% CI, 1.18-3.76), and low paternal assistance to the child's mother (OR, 1.89; 95% CI, 1.19-3.00) were associated with offspring risk for PD before but not after the covariates were controlled.

### STABILITY OF THE ASSOCIATION OF PARENTAL BEHAVIOR WITH RISK FOR OFFSPRING PD

Risk for offspring PD increased steadily as a function of the number of problematic parental behaviors in the home by a mean offspring age of 16 years (**Figure 1**). This association was significant at mean offspring ages of 22 years ( $\chi^2=28.71$ ;  $P<.001$ ) and 33 years ( $\chi^2=20.88$ ;  $P<.001$ ). Generalized estimating equation analyses indicated that the association of the total number of problematic parental behaviors during the child-rearing years with risk for offspring PD at mean ages of 22 and 33 years was significant after the covariates were controlled (adjusted OR, 1.22; 95% CI, 1.13-1.31). The magnitude of this association did not diminish significantly with offspring age, and neither the main effect for offspring age nor the interaction of age with problematic parental behavior were statistically significant.

The offspring who experienced 6 or more types of problematic parental behavior were significantly more likely than the offspring who experienced 5 or fewer types of problematic parental behavior to have PD at mean ages of 22 years (adjusted OR, 2.86; 95% CI, 1.51-5.42) and 33 years (adjusted OR, 3.08; 95% CI, 1.64-5.78) after the covariates were controlled. The offspring who experienced 2 to 5 types of problematic parental behavior were significantly more likely than the offspring who experienced 1 or fewer types of problematic parental behavior to have PD at mean ages of 22 years (adjusted OR, 2.89; 95% CI, 1.50-5.58) and 33 years (adjusted OR, 2.34; 95% CI, 1.30-4.20).

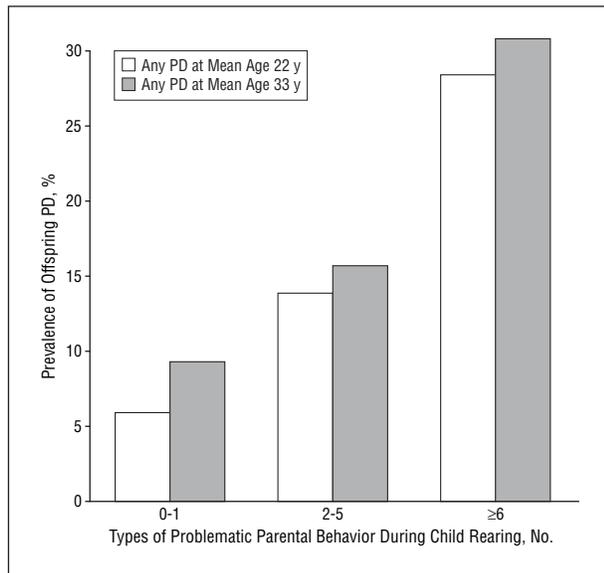
The same pattern of findings was obtained in analyses that were conducted using the total PD symptom lev-

**Table. Parenting Behaviors Evident by a Mean Offspring Age of 16 Years That Were Significantly Associated With Offspring Personality Disorder During Adulthood in 593 Families**

Parenting Behavior Evident by Mean Offspring Age 16 y	Prevalence of Offspring PD at Mean Age Either 22 y or 33 y		AOR (95% CI)*
	Individuals Who Did Not Experience Parental Behavior During Childhood, % (No./Population Size, No.)	Individuals Who Experienced Parental Behavior During Childhood, % (No./Population Size, No.)	
Harsh maternal punishment	18.3 (97/530)	39.7 (25/63)	2.13 (1.17-3.88)
Inconsistent maternal enforcement of rules	18.6 (94/506)	32.2 (28/87)	1.91 (1.14-3.20)
Low expression of maternal affection	18.9 (102/539)	37.0 (20/54)	2.58 (1.29-4.99)
Low maternal educational aspirations	17.4 (81/465)	32.0 (41/128)	1.93 (1.22-3.05)
Low maternal time spent with child	19.2 (106/551)	38.1 (16/42)	2.54 (1.40-4.76)
Low paternal time spent with child	18.8 (91/484)	28.4 (31/109)	1.67 (1.23-3.95)
Maternal use of guilt to control child's behavior	18.5 (98/531)	38.7 (24/62)	2.20 (1.27-3.20)
Poor maternal and paternal supervision of the child	19.3 (109/564)	44.8 (13/29)	3.11 (1.39-6.97)
Poor maternal communication with the child	17.8 (83/65)	30.5 (39/128)	2.01 (1.01-2.77)
Poor paternal communication with the child	17.8 (85/477)	31.9 (37/116)	2.19 (1.35-3.55)

Abbreviations: AOR, adjusted odds ratio; CI, confidence interval; PD, personality disorder.

\*Values control for offspring age, sex, childhood behavioral or emotional problems, and parental psychiatric disorder evident by a mean offspring age of 16 years.

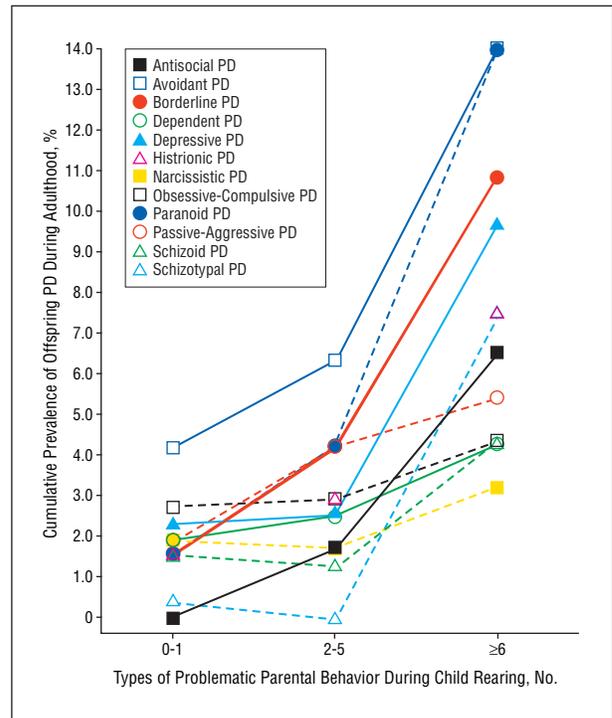


**Figure 1.** Association of problematic parental behavior in the home by a mean offspring age of 16 years with risk for any offspring personality disorder (PD) at a mean age of 22 or 33 years.

els at mean ages of 22 and 33 years as the dependent variables. The associations between the composite index of problematic parental behaviors in the home by a mean offspring age of 16 years and total PD symptom levels at mean ages of 22 years (partial  $r=0.22$ ;  $P<.001$ ) and 33 years (partial  $r=0.31$ ;  $P<.001$ ) were statistically significant after the covariates were controlled.

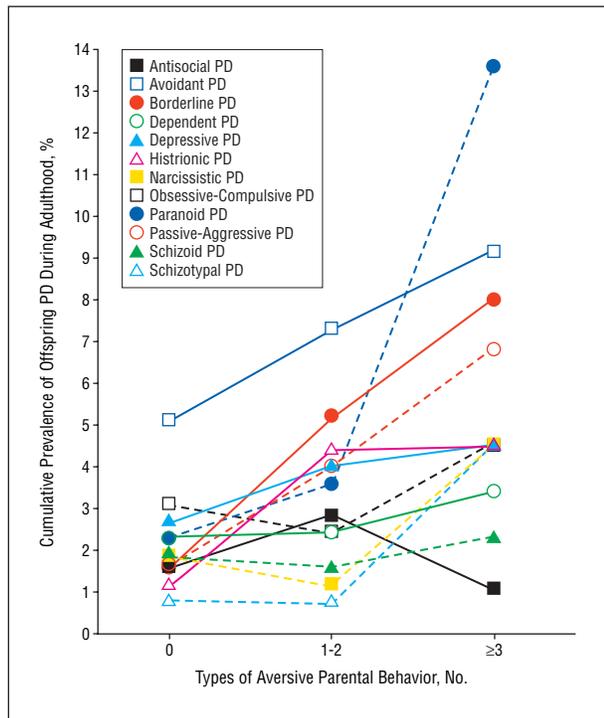
#### OVERALL ASSOCIATION OF PARENTAL BEHAVIOR WITH RISK FOR SPECIFIC OFFSPRING PD

There was considerable variability in the magnitude of the association between problematic parental behavior and risk for specific types of offspring PDs (**Figure 2**).

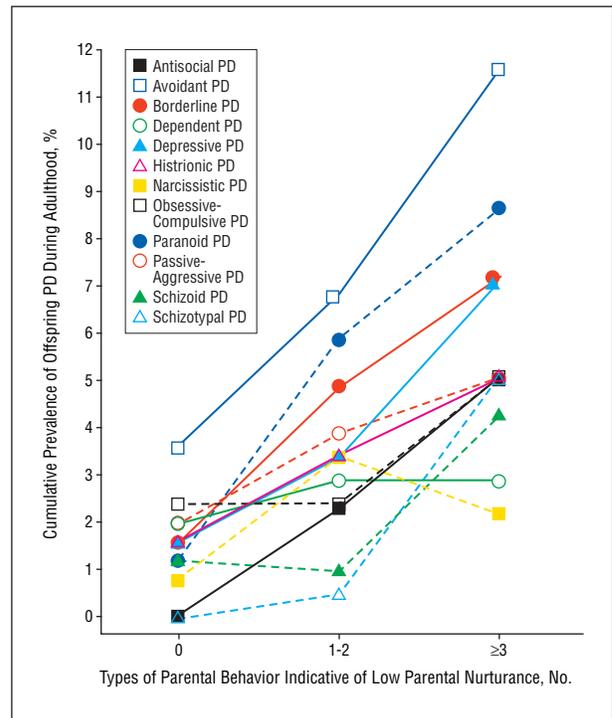


**Figure 2.** Association of problematic parenting behavior in the home by a mean offspring age of 16 years with risk for specific types of offspring personality disorders (PDs) at a mean age of 22 or 33 years. The composite index of problematic parental behavior was significantly associated with risk for offspring antisocial ( $P=.003$ ), avoidant ( $P=.005$ ), borderline ( $P<.001$ ), depressive ( $P=.002$ ), histrionic ( $P=.02$ ), paranoid ( $P<.001$ ), and schizotypal ( $P<.001$ ) PDs at a mean offspring age of 22 or 33 years.

There were significant associations between the number of problematic parental behaviors in the home by a mean offspring age of 16 years and offspring risk for antisocial ( $\chi^2=11.41$ ;  $P=.003$ ), avoidant ( $\chi^2=10.66$ ;  $P=.005$ ), borderline ( $\chi^2=14.99$ ;  $P<.001$ ), depressive ( $\chi^2=12.17$ ;  $P=.002$ ), histrionic ( $\chi^2=8.37$ ;  $P=.02$ ), paranoid ( $\chi^2=24.53$ ;  $P<.001$ ), and schizotypal ( $\chi^2=31.77$ ;



**Figure 3.** Association of aversive parenting behavior evident by a mean offspring age of 16 years with risk for specific offspring personality disorders (PDs) at a mean age of 22 or 33 years. The composite index of aversive parental behaviors was significantly associated with risk for offspring borderline ( $P=.001$ ), paranoid ( $P=.004$ ), passive-aggressive ( $P=.046$ ), and schizotypal ( $P=.02$ ) PDs at a mean offspring age of 22 or 33 years.



**Figure 4.** Association of low parental affection or nurturing evident by a mean offspring age of 16 years with risk for specific offspring personality disorders (PDs) at a mean age of 22 or 33 years. The composite index of low parental affection or nurturing was significantly associated with risk for offspring antisocial ( $P=.003$ ), avoidant ( $P=.01$ ), borderline ( $P=.002$ ), depressive ( $P=.02$ ), paranoid ( $P=.002$ ), schizoid ( $P=.046$ ), and schizotypal ( $P<.001$ ) PDs at a mean offspring age of 22 or 33 years.

$P<.001$ ) PDs at a mean offspring age of 22 or 33 years. After the covariates were controlled, the composite index of problematic parental behavior was significantly associated with aggregate antisocial, avoidant, borderline, dependent, histrionic, narcissistic, obsessive-compulsive, paranoid, passive-aggressive, schizoid, and schizotypal PD symptom levels across the assessments at mean ages of 22 and 33 years. The median correlation between the 12 specific types of PD symptoms was  $r=0.39$  ( $P<.001$ ).

#### SPECIFIC TYPES OF PARENTAL BEHAVIOR AND RISK FOR SPECIFIC OFFSPRING PD

Aversive parental behavior was associated with elevated risk for offspring borderline ( $\chi^2_2=8.48$ ;  $P=.001$ ), paranoid ( $\chi^2_2=20.10$ ;  $P=.004$ ), passive-aggressive ( $\chi^2_2=6.14$ ;  $P=.046$ ), and schizotypal ( $\chi^2_2=7.93$ ;  $P=.02$ ) PDs (**Figure 3**). After the covariates were controlled, aversive parental behavior was significantly associated with aggregate borderline, narcissistic, paranoid, schizoid, and schizotypal PD symptom levels across the assessments at mean ages of 22 and 33 years. Low parental affection or nurturing was associated with elevated risk for offspring antisocial ( $\chi^2_2=11.81$ ;  $P=.003$ ), avoidant ( $\chi^2_2=9.28$ ;  $P=.01$ ), borderline ( $\chi^2_2=7.86$ ;  $P=.002$ ), depressive ( $\chi^2_2=8.31$ ;  $P=.02$ ), paranoid ( $\chi^2_2=12.72$ ;  $P=.002$ ), schizoid ( $\chi^2_2=6.17$ ;  $P=.046$ ), and schizotypal ( $\chi^2_2=18.94$ ;  $P<.001$ ) PDs (**Figure 4**). After the covariates were controlled, low parental affection or nurturing was signifi-

cantly associated with aggregate antisocial, avoidant, borderline, dependent, histrionic, narcissistic, paranoid, passive-aggressive, schizoid, and schizotypal PD symptom levels across the assessments at mean ages of 22 and 33 years.

#### PARENTAL BEHAVIOR AS A MEDIATOR OF RISK FOR OFFSPRING PD

Problematic parental behavior during the child-rearing years partially mediated the associations of childhood behavioral or emotional problems and parental psychiatric disorders with risk for offspring PD at a mean age of 22 or 33 years. All of the statistical criteria for mediation were met.<sup>57-59</sup> Offspring behavioral or emotional problems during childhood and parental psychiatric disorders both predicted the number of types of problematic parental behavior that were evident during the child-rearing years (**Figure 5**). Problematic parental behavior in the home was associated with elevated risk for offspring PD when offspring behavioral or emotional problems and parental psychiatric disorders were controlled statistically as described earlier and in Figure 5. Offspring behavioral or emotional problems during childhood (OR, 1.99; 95% CI, 1.11-3.57) and parental psychiatric disorders (OR, 1.83; 95% CI, 1.22-2.73) were associated with risk for subsequent offspring PD in zero-order analyses that did not control for the effects of covariates. Neither of these associations remained significant when the composite index of problematic pa-

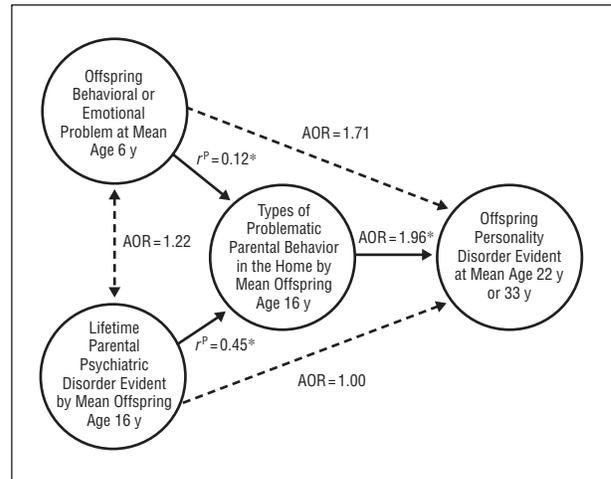
rental behavior was controlled ( $P = .01$  and  $.96$ , respectively). The magnitudes of the associations of childhood behavioral or emotional problems (adjusted OR, 1.61; 95% CI, 0.87-2.96) and parental psychiatric disorder (adjusted OR, 1.05; 95% CI, 0.66-1.68) with offspring PD at a mean age of 22 or 33 years were both notably reduced when the composite index of problematic parental behavior in the home during the child-rearing years was controlled. Calculations based on statistical procedures described by Holmbeck<sup>59</sup> indicated that the composite index of problematic parental behavior in the home accounted for 35.2% of the association of offspring behavioral or emotional problems with risk for offspring PD and for 94.9% of the association of parental psychiatric disorder with risk for offspring PD during adulthood. Both of these associations were statistically significant ( $P < .05$ ).

## COMMENT

Our findings suggest that some types of parenting practices, such as harsh punishment and a lack of parental affection or nurturing, may be associated with risk for offspring PDs that endure into adulthood. The association between problematic parenting and risk for offspring PD may be evident during both emerging adulthood (ie, the transitional years between late adolescence and early adulthood)<sup>60</sup> and adulthood, and the magnitude of this association may not diminish between emerging and full adulthood. The findings of the logistic regression analyses described earlier suggest that problematic parenting may contribute to elevated risk for offspring PD, above and beyond the effects of behavioral or emotional problems during childhood and parental psychiatric disorders.

The findings of this study suggest that problematic parenting may be associated with elevated risk for a wide range of offspring PDs. The overall likelihood of the development of any offspring PD may tend to increase as the number of different types of problematic parenting behaviors increases. However, although most types of PDs were more prevalent among the offspring who experienced high levels of problematic parenting, not all of these associations were statistically significant. Problematic parenting may be particularly associated with elevated risk for antisocial, avoidant, borderline, depressive, histrionic, paranoid, and schizotypal PDs.

Our findings suggest that aversive parental behavior and low parental affection or nurturing during the child-rearing years may each be associated with elevated offspring risk for PD during adulthood. Aversive parental behavior may be associated with elevated offspring risk for borderline, paranoid, passive-aggressive, and schizotypal PDs, and low parental affection or nurturing may be associated with elevated risk for offspring antisocial, avoidant, borderline, depressive, paranoid, passive-aggressive, schizoid, and schizotypal PDs. It will be of interest for future research to investigate, in greater detail, the specificity of the associations between particular types of parenting behavior and offspring PDs.



**Figure 5.** Association of offspring behavioral or emotional problems during childhood, parental psychiatric disorders, and problematic parental behavior in the home by a mean age of 16 years with risk for offspring personality disorder at a mean age of 22 or 33 years. The covariates were age, sex, parental psychiatric disorders evident by a mean offspring age of 16 years, and the presence of 1 or more offspring behavioral or emotional problems at a mean offspring age of 6 years. AOR indicates adjusted odds ratio;  $r^P$ , partial correlation coefficient. \* $P < .05$ .

The findings of our study are also of considerable interest because they suggest that parenting behavior may mediate the associations of childhood behavioral and emotional problems and parental psychiatric disorder with risk for the development of offspring PD. These findings support the hypothesis that parenting may play a significant role in the intergenerational transmission of risk for some types of psychiatric disorders,<sup>11,23,61</sup> and they are consistent with the proposition that environmental factors such as parenting help to determine whether biological risk factors or diatheses lead to the development of psychiatric disorders.<sup>22</sup>

The findings may have useful clinical and public health implications insofar as it may be possible to reduce risk for the development of offspring psychiatric symptoms by modifying the child-rearing behavior of parents of at-risk youths, such as children with behavioral or emotional problems and the offspring of parents with psychiatric disorders. In particular, they suggest that interventions that promote improved parental communication, warmth, and nurturing as well as interventions that assist parents in developing less aversive patterns of behavior toward their children may help to minimize the likelihood that their children will develop PDs that endure into adulthood. Previous research has suggested that it may be possible to reduce the likelihood that children will develop psychiatric disorders by helping parents to modify their child-rearing behavior.<sup>62</sup>

The limitations of our study require consideration. Because the fathers were not directly interviewed, data from the maternal and offspring interviews were used to assess paternal behavior and psychiatric symptoms. However, research has provided considerable support for the reliability and concurrent, criterion, and construct validity of the instruments used to assess parental disorders in this study.<sup>27-29,37-39,41</sup> Our findings have

indicated that both problematic maternal behavior and problematic paternal behavior were associated with elevated risk for offspring psychiatric disorders,<sup>18,42,43</sup> and the prevalence of maternal and paternal disorders in this study is similar to that found in major epidemiological studies.<sup>18,44,45</sup> Our study also has a number of unique methodological strengths, and it is the first community-based prospective longitudinal study, to our knowledge, to investigate the association of parental behavior in the home during the child-rearing years with risk for offspring PD that endures into adulthood.

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