Parental Psychopathology, Parenting Styles, and the Risk of Social Phobia in Offspring

A Prospective-Longitudinal Community Study

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Background: This article examines the associations between DSM-IV social phobia and parental psychopathology, parenting style, and characteristics of family functioning in a representative community sample of adolescents.

Methods: Findings are based on baseline and first follow-up data of 1047 adolescents aged 14 to 17 years at baseline (response rate, 74.3%), and independent diagnostic interviews with one of their parents. Diagnostic assessments in parents and adolescents were based on the DSM-IV algorithms of the Munich-Composite International Diagnostic Interview. Parenting style (rejection, emotional warmth, and overprotection) was assessed by the Questionnaire of Recalled Parental Rearing Behavior, and family functioning (problem solving, communication, roles, affective responsiveness, affective involvement, and behavioral control) was assessed by the McMaster Family Assessment Device.

Results: There was a strong association between parental social phobia and social phobia among offspring (odds ratio [OR], 4.7; 95% confidence interval [CI], 1.6-13.5). Other forms of parental psychopathology also were associated with social phobia in adolescents (depression: OR, 3.6; 95% CI, 1.4-9.1; any anxiety disorder other than social phobia: OR, 3.5; 95% CI, 1.4-8.8; and any alcohol use disorder: OR, 3.0; 95% CI, 1.1-7.8). Parenting style, specifically parental overprotection (OR, 1.4; 95% CI, 1.0-1.9) and rejection (OR, 1.4; 95% CI, 1.1-1.9), was found to be associated with social phobia in respondents. Family functioning was not associated with respondents' social phobia.

Conclusions: Data suggest that parental psychopathology, particularly social phobia and depression, and perceived parenting style (overprotection and rejection) are both associated with the development of social phobia in youth.

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Social phobia has become recognized as a prevalent mental disorder that typically starts in adolescence and is associated with significant impairment in work and social functioning.\(^1\)\(^{12}\) Despite the growing body of research on the risk factors, course, clinical characteristics, and treatment, the key etiological or pathogenetic mechanisms of social phobia are largely unknown. Several risk factors have been proposed, including biological,\(^13\)\(^{14}\) familial, and genetic,\(^10\)\(^{12}\)\(^{17}\)\(^{26}\); early temperament (eg, behavioral inhibition\(^21\)\(^{22}\)); socialization patterns\(^23\)\(^{24}\); and psychological factors, ranging from behavioral conditioning\(^25\)\(^{26}\) to cognitive variables.\(^27\)\(^{29}\) There is increasing evidence regarding the role of familial factors in the development of social phobia. Studies using both the family study and family history approach have found higher rates of social phobia in relatives of social phobic patients compared with relatives of controls.\(^30\)\(^{37}\) Two studies suggest that familial social phobia might be particularly important in the development of the “generalized” subtype, a more severe form of social phobia that is characterized by fears in a broad range of social situations.\(^34\)\(^{35}\) Since most family studies have focused primarily on the familial aggregation of social phobia among adult relatives, there is little research on specific links between social phobia in parents and offspring. High-risk studies of anxiety\(^36\) and social phobia\(^37\) have revealed increased rates of social phobia in offspring.

Although most studies indicate that the family may play an important role in the development of social phobia, there is little empirical evidence regarding the nature of the familial link in terms of ge-
SUBJECTS AND METHODS

DESIGN

The data presented come from the Early Developmental Stages of Psychopathology Study (EDSP). The EDSP is designed as a prospective-longitudinal survey to collect data on the prevalence and incidence, familial and other risk factors, comorbidity, and course of mental disorders in a representative sample of 3021 subjects aged 14 to 24 years at baseline. This article is restricted to adolescent respondents aged 14 to 17 years at baseline. Detailed descriptions of the EDSP design and field procedures are reported elsewhere.39-44

COMMUNITY RESPONDENTS AND PARENTS

The EDSP builds on a random population sample from the 1994 government population registers of residents in metropolitan Munich, including the surrounding counties. Details about the sampling and representativeness of the sample, along with its sociodemographic characteristics, have been reported elsewhere.45-48 The response rate for the study sample of the 14- to 17-year-olds at baseline was 74.3%. These subjects, who will be referred to as the “respondents” in this article, were reinvestigated approximately 20 months later (mean, 19.7 months; range, 15.0-25.6 months) (N=1228), with a response rate of 88%. At baseline, most of the respondents were attending school (89%) and living with their parents (97.8%). About 10% were in job training. The majority were classified as belonging to the middle class (61.4%). Noteworthy changes in sociodemographic characteristics from baseline to follow-up were only found for school (follow-up: 71% attended school) and employment status (follow-up: 21% were in job training).

Independent diagnostic interviews were conducted with the parents of these respondents. Interested not only in familial psychopathology but also in respondents’ early development, we primarily interviewed the respondents’ mothers. Fathers were interviewed only if the mother was dead or not locatable. The parents of 1053 adolescents were interviewed directly (response rate: 86%; in 1026 cases the mother, in 27 cases the father). Nonresponse in parents was predominantly because of refusal to participate (12.9%), failure to contact parents (0.7%), and lack of time (0.5%).

Throughout the article, data were weighted by age, sex, geographic location, noncontact and nonresponse to match the distribution of the sampling frame.49 Table 1 summarizes the weighted and unweighted numbers and percentages at baseline, first follow-up, and the parent survey for the study sample.

DIAGNOSTIC ASSESSMENT

Assessment of Respondents

Diagnostic assessments in the baseline and first follow-up investigation were based on the computer-assisted version of the Munich-Composite International Diagnostic Interview (M-CIDI49), a modified version of the World Health Organization (WHO) CIDI, version 1.2, supplemented by questions to cover DSM-IV50 and International Classification of Diseases, 10th Revision (ICD-10)51 criteria. A detailed discussion of the M-CIDI, its social phobia module, and how it differs from the WHO-CIDI and findings of its reliability and validity have been presented elsewhere.52-54 The M-CIDI allows for the assessment of symptoms, syndromes, and diagnoses of 48 mental disorders, along with information about onset, duration, and clinical and psychosocial severity. It includes a separate family-history module to evaluate psychopathology in relatives of the respondents. In both assessments, interviews were administered by highly trained clinical interviewers. Most interviews were carried out in the homes of the respondents.

Assessment of Parents

Parents were independently assessed with the M-CIDI as well, thus providing direct diagnostic information (M-CIDI/DSM-IV criteria) for the interviewed parent. All interviews were conducted by clinical interviewers who were blind to the diagnostic findings of the respective respondents, and most interviews took place in the parents’ homes. The parent M-CIDI was supplemented with 2 additional modules that provided detailed information about the respondents’ perinatal, psychological, and somatic conditions in infancy and early childhood, and family history data for the noninterviewed parent and other family members of the respondent.55

ASSIGNMENT OF DIAGNOSES

For respondents, diagnostic findings are based exclusively on the M-CIDI/DSM-IV diagnostic algorithms.49 Diagnostic estimates for parents were obtained using all available diagnostic information from the 2 sources: the family history data obtained from the M-CIDI family-history module at baseline with the respondent as informant, and the M-CIDI of development of social phobia has yet been tested prospectively in a community sample.

Using data from a representative population sample, this article evaluates whether parental social phobia is associated with social phobia in offspring, examines whether such an association is specific to parental social phobia or whether the risk is also elevated among offspring with other parental psychopathology, explores whether the parent-offspring association is higher in the generalized subtype of social phobia, and evaluates whether specific parenting styles and family functioning dimensions increase the risk for social phobia in adolescents.
the parent investigation, which provided direct M-CIDI/DSM-IV diagnostic information for the interviewed parent and family-history data for the noninterviewed parent. Parental diagnostic estimates were derived by computer on the basis of a priori established diagnostic algorithms with 3 levels of diagnostic certainty: definite, probable, or no diagnosis. Parents met criteria for a definite diagnosis whenever diagnostic information for the respective disorder was reported by both sources of data (the respondent interview and the parent investigation). A probable diagnosis was assigned whenever diagnostic information was reported by only 1 source (respondent or parent), with 1 notable exception: if a directly interviewed parent met full M-CIDI/DSM-IV criteria for a disorder, a definite diagnosis was assigned irrespective of the adolescent’s report.

Because of the reliance on mothers’ reports, no sex-specific analyses were performed. Family history items in both the baseline respondent interview and the parent survey were designed taking the Family History Research Diagnostic Criteria8 as a basic model. To obtain family history information about the same DSM-IV Axis I disorders that are in the M-CIDI, we used the stem questions from the full M-CIDI to assess the key symptoms for the DSM-IV diagnoses. Questions were also asked to determine if the index subject sought professional help because of the respective symptoms. The validity of the family history information has been investigated by comparing the family history information gathered from the adolescents about their mothers with the diagnostic information obtained by the mothers themselves in the direct parent survey. Comparable with other studies,57-59 we found high specificity but rather low sensitivity of the family history information.

ASSESSMENT OF PARENTING STYLE AND FAMILY FUNCTIONING

Parenting style was assessed by the Questionnaire of Recalled Parental Rearing Behaviour (German version, FEE60), which assesses the subject’s (in our study, the adolescent’s) perceived parental rearing behavior. It is composed of the dimensions of rejection, emotional warmth, and overprotection. Each scale is answered by the subject separately for mother and father. Reliability and validity findings have been reported.60-62 To assess family functioning, interviewed parents completed the McMaster Family Assessment Device (FAD63), which is based on the McMaster Model of Family Functioning. The FAD assesses 6 dimensions of family functioning: problem solving, communication, roles, affective responsiveness, affective involvement, and behavior control. The scale ‘general functioning’ assesses the overall health/psychopathology of the family. The subject rates her or his agreement with how adequately the item describes her or his family. Psychometric properties of the FAD have been reported.64

STATISTICAL ANALYSES

The aim of this study was to assess the association of parental social phobia, other parental psychopathology, parenting style, and family functioning with social phobia in adolescent respondents. Respondents’ social phobia status was defined as the cumulative lifetime incidence of social phobia reported at baseline or first follow-up. For all family history analyses, the occurrence of a diagnosis in either mother or father was taken as the unit of the analyses. Parental diagnoses were organized so that parents with social phobia could also have other diagnoses, but parents with other psychopathology (other anxiety disorders, depression, alcohol use disorders) could not have social phobia. In the logistic regressions used to calculate odds ratios (ORs56), parental psychopathology, parenting styles, and family functioning were entered as independent variables, while respondents’ social phobia was the dependent variable. To investigate separate associations with generalized and nongeneralized social phobia, multinomial logistic regressions were used.65 The resulting ORs describe the association between the covariate and the respective subtype in the population in which the other subtype does not occur. Mean scores of all family environment scales were divided by their SDs to improve the comparability of associations. Because of the positively skewed shape of the distributions of these scores, differences between parental psychopathology groups were analyzed with gamma regressions56,66 with multiplicative effects. To apply the gamma distribution, scales were transformed so that the minimum score was 0. For 1 of the scales (emotional warmth), scores were negatively skewed; in this case, scores (x) were replaced with (maximum – x), so that gamma regressions could be applied. Calculations were made with the LOGISTIC, SVYMLOG, XTGEE, SVYTAB, and ST procedures of the software package Stata.67 For the examination of age of onset data, survival analyses were performed. The Kaplan-Meier method was used to estimate cumulative lifetime incidences; this method recognizes age-censoring for respondents younger than the maximum age (19 years).68 Differences in terms of hazard rates were tested with the Cox model for discrete time (year intervals of age)66 while testing the proportional hazards assumption (ie, hazard ratios [HR] independent of age).69 This assumption was not violated, and no cohort effects were found.

RESULTS

SOCIAL PHOBIA IN RESPONDENTS AND PARENTS

Of the respondents, 5.6% fulfilled criteria for DSM-IV social phobia; 4.4% met criteria for the nongeneralized subtype; and generalized social phobia was present in 1.1% (Table 2). Social phobia was slightly more frequent in women than in men (6.9% vs 4.2%; independence test: design-based F1,1052 = 3.40; P = .06). One hundred thirty-seven parents (unweighted numbers) fulfilled criteria for either probable or definite social phobia. In 134 cases the mother was affected, and in 3 cases the father was affected. In no case were both parents affected by social phobia. Diagnostic information about social phobia in 2 fathers and 5 mothers was reported solely from the respondent at baseline, whereas all other cases of parental social phobia were obtained directly from the parental interviews.

PARENTAL PSYCHOPATHOLOGY AND SOCIAL PHOBIA IN OFFSPRING

Offspring of parents with DSM-IV social phobia had higher rates of social phobia than offspring of parents without
psychopathology (9.6% vs 2.1%) (Table 3). Rates of social phobia were also elevated in adolescents whose parents met criteria for other anxiety, depressive, or alcohol use disorders. Logistic regression analyses revealed the highest sample OR when parents were affected by social phobia. There was no notable difference in whether parental social phobia was diagnosed at the probable (OR, 3.3; 95% CI, 1.0-14.8; P = .04) or the definite (OR, 4.0, 95% CI, 1.0-14.8; P = .04) level. Slightly lower associations were found for the other mental disorders in parents. Respondents whose parents suffer from social phobia and multiple comorbid other disorders seem to have a greater risk to meet criteria for DSM-IV social phobia. No significant interactions between any form of parental psychopathology and sex of the respondent were found.

The same pattern of results emerged when all the associations were adjusted for the effects of respondents’ comorbidity. Controlling for the presence of other anxiety, depressive, and alcohol use disorders did not substantially alter the significance and strengths of the associations shown in Table 3. Subsetting the analyses to only directly interviewed parents yielded qualitatively the same associations, but all but one failed to reach significance.

ASSOCIATIONS WITH SUBTYPES

When nongeneralized social phobia in respondents was considered separately as the outcome, associations were found for parental social phobia (OR, 3.3; 95% CI, 1.0-10.3; P = .04), for other parental anxiety disorders (OR, 2.9, 95% CI, 1.1-7.4; P = .02), and parental depression (OR, 3.0, 95% CI, 1.1-7.7; P = .02). Because of the fact that there were no cases of generalized social phobia in offspring without parental psychopathology, no separate ORs could be calculated for the generalized subtype. However, it is remarkable that 4 of the 13 adolescents with social phobia with parental social phobia met criteria for the generalized subtype. Lower percentages of generalized social phobia were found among respondents whose parents are affected by other mental disorders.

PARENTAL PSYCHOPATHOLOGY AND AGE OF ONSET

For respondents with parental social phobia, the survival curve decreases most steeply, while the curve for respondents without parental psychopathology decreases only slightly (Figure). Statistical analyses showed that these 2 curves were significantly different (HR, 4.4; 95% CI, 1.5-12.2; P = .048), indicating a higher incidence rate of social phobia in nearly every year in respondents whose parents are affected by social phobia. A comparison of the cumulative incidence age-of-onset curves of nongeneralized and generalized social phobias with parental social phobia revealed an earlier onset of the generalized subtype (6 vs 11 years) in adolescents affected by parental social phobia.

PARENTING STYLE AND FAMILY FUNCTIONING

Higher parental overprotection and higher parental rejection were significantly associated with increased rates of social phobia in offspring. Concerning emotional warmth, the negative association just failed to reach significance. The analyses of the FAD family functioning scales revealed no associations between any specific scale and offsprings’ social phobia. Therefore, only the overall general functioning scale score is reported (Table 4).

With regard to associations between parenting style and parental mental disorders, parental alcohol use disorder was found to be slightly associated with emotional warmth (mean ratio [MR], 1.1; 95% CI, 1.0-1.2; P = .048), and parental anxiety disorder other than social phobia was found to be positively associated with parental rejection (MR, 1.3; 95% CI, 1.0-1.6; P = .02).

Table 1. Response Rates and Demographic Distribution of Adolescents Aged 14 to 17 Years at Baseline

<table>
<thead>
<tr>
<th>Total</th>
<th>Men</th>
<th>Women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total eligible baseline sample, No. (% of the sample) 1877 (100.0)</td>
<td>963 (51.3)</td>
<td>914 (48.7)</td>
</tr>
<tr>
<td>Baseline (1995) Subjects, No. 1395</td>
<td>714</td>
<td>681</td>
</tr>
<tr>
<td>Response rate, % 74.3</td>
<td>74.1</td>
<td>74.5</td>
</tr>
<tr>
<td>First follow-up (1996/1997)†Subjects, No. (Nw) 1228 (1228)</td>
<td>637 (619)</td>
<td>591 (609)</td>
</tr>
<tr>
<td>Response rate, % 88.0</td>
<td>89.2</td>
<td>86.8</td>
</tr>
<tr>
<td>Parent survey (1997)‡Subjects, No. (Nw) 1053 (1047)</td>
<td>541 (521)</td>
<td>512 (526)</td>
</tr>
<tr>
<td>Response rate, % 85.7</td>
<td>84.9</td>
<td>86.6</td>
</tr>
</tbody>
</table>

*Nw indicates weighted N.
†First follow-up investigation was conducted on average 19.7 months after baseline (range, 15-26.6 months).
‡For 1026 adolescents, the mother was interviewed, and for 27 adolescents, the father was interviewed.
§Weights of the follow-up study were used for adjusting the data of the parent survey.

Table 2. Social Phobia in Respondents and Their Parents (Weighted Data)

<table>
<thead>
<tr>
<th>Frequency of Social Phobia</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. (Nw)</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>DSM-IV/social phobia</td>
</tr>
<tr>
<td>Generalized subtype</td>
</tr>
<tr>
<td>Nongeneralized subtype</td>
</tr>
</tbody>
</table>

*CI indicates confidence interval; Nw, weighted N.
†This column indicates weighted percentages.
‡There was a weighted total of 1047 subjects (521 males and 526 females).
§Social phobia was present in either mother or father.
||In 134 cases, the mother was affected; in 3 cases, the father was affected.
The key finding that children of social phobic parents are more likely to develop social phobia than children of healthy parents suggests that parental social phobia is a risk factor for social phobia in offspring. This finding is in line with the results of prior family studies in patient samples, but it extends those findings to a community sample. Providing the first study in an epidemiological sample, unaffected by potential clinical selection and help-seeking bias likely to occur in patient samples, we demonstrated that offspring of parents with social phobia are significantly more likely to have DSM-IV social phobia than offspring of healthy parents, and the parent-offspring association can be found even in adolescents who have not yet completed the full risk period for on-

The examination of the interactions between parenting behavior and parental psychopathology with regard to respondents' social phobia status revealed that the association between parental rejection and adolescents’ social phobia is significantly greater when parents are affected by psychopathology, irrespective of the specific parental disorders (association difference in comparison with no mental disorder: for social phobia [OR, 2.3; 95% CI, 1.1-4.6; P = .02]; any other anxiety disorder [OR, 1.8; 95% CI, 0.9-3.5; P = .09]; any depressive disorder [OR, 2.1; 95% CI, 1.0-4.1; P = .03]; any alcohol use disorder [OR, 2.1; 95% CI, 1.0-4.3; P = .04]; comorbid social phobia [OR, 2.4; 95% CI, 1.1-4.8; P = .02]). The findings for parental overprotection were similar, but failed to reach significance.

An examination of the conditional effects of parental psychopathology and parenting styles on adolescents’ social phobia ([Table 5]) revealed that when controlling for parenting style, all associations between parental psychopathology and parenting styles on adolescents’ social phobia resulted in only slightly lower, but still significant, associations between parental overprotection and parental rejection and respondents’ social phobia.

### Table 3. Association Between Parental Psychopathology and DSM-IV Social Phobia in Adolescents

<table>
<thead>
<tr>
<th>Parental Diagnosis†</th>
<th>No DSM-IV Social Phobia (Nw = 989)</th>
<th>DSM-IV Social Phobia (Nw = 8)</th>
<th>Adjusted Odds Ratios§ (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nw (%)‡</td>
<td>95% CI</td>
<td>Nw (%)</td>
</tr>
<tr>
<td>Social phobia (Nw = 134)</td>
<td>121 (90.4)</td>
<td>82.7-94.9</td>
<td>13 (9.6)</td>
</tr>
<tr>
<td>Any other anxiety disorder (Nw = 387)¶</td>
<td>358 (92.7)</td>
<td>89.4-95.1</td>
<td>28 (7.3)</td>
</tr>
<tr>
<td>Any depressive disorder (Nw = 381) ††</td>
<td>352 (92.5)</td>
<td>88.9-95.0</td>
<td>29 (7.5)</td>
</tr>
<tr>
<td>Any alcohol use disorder (Nw = 301) ‡‡</td>
<td>282 (93.8)</td>
<td>89.9-96.2</td>
<td>19 (6.3)</td>
</tr>
<tr>
<td>No anxiety, depressive, or alcohol use disorder (Nw = 259) §§</td>
<td>254 (97.9)</td>
<td>95.3-99.1</td>
<td>5 (2.1)</td>
</tr>
</tbody>
</table>

† Indicates weighted N; CI, confidence interval.
‡ Includes both probable and definite cases; the unit is “either in mother or father.”
§ Adjusted for age and sex of respondent; no significant interaction effects were found for sex of respondent. Odds ratios for directly interviewed parents were as follows: parental social phobia: OR, 2.0 (95% CI, 0.7-5.2; P = .15); parental anxiety disorder, excluding social phobia: OR, 2.0 (95% CI, 1.0-4.0; P = .04); parental depressive disorder excluding social phobia: OR, 2.0 (95% CI, 0.9-4.2; P = .06); and parental alcohol use disorder excluding social phobia: OR, 1.3 (95% CI, 0.4-3.8; P = .59).
¶ p < .05 by Wald test.
** Includes panic, agoraphobia, generalized anxiety disorder, specific phobia, and obsessive-compulsive disorder. Parents with social phobia were excluded.
†† Includes major depressive disorder and dysthymia. Parents with social phobia were excluded.
‡‡ Includes alcohol abuse and dependence. Parents with social phobia were excluded.
§§ Reference group for all comparisons.
opportunities to learn social skills.23,24

Genetic and/or environmental factors might be responsible for the parent-offspring association since twin and adoption studies are needed to discriminate heritable sources of variance. A twin study of social phobia by Kendler et al17,18 reveals that both genetic and non-genetic factors influence the liability to social phobia. Environmental models of the development of social phobia in offspring could include modeling or restricted opportunities to learn social skills.23,24

In accordance with reports from the National Comorbidity Survey,19 increased rates of DSM-IV social phobia were also found in respondents whose parents suffer from other anxiety disorders, depression, or alcohol use disorders; these associations remained stable when controlled for adolescents' comorbidity. Although this finding confirms the results of previous family studies that demonstrate common familial influences for social phobia and depression (M.B.S., M.F., N. Mueller, MD, M.H., H.-U.W., unpublished data, 2000),18 the finding that parental alcoholism and other anxiety disorders increase the risk for social phobia in offspring seem to differ somewhat from the findings of 3 patient-based family studies30,32,33 and the Yale Family Study of Comorbidity of Substance Use and Anxiety, where half of the sample of anxiety probands was community-based.22 These studies argue for a lack of a familial link between social phobia and these disorders. We can only speculate that the contradictory findings may be attributable to different design features.

Similar to previous studies,30 none of the family characteristics assessed with the FAD was associated with respondents' social phobia. However, there were associations with parenting style as perceived by the respondent regarding parental overprotection and rejection. This result is in accordance with the findings in clinical samples,30-32 but provides stronger evidence because information about parenting style was obtained directly from adolescents still living at home (94%), suggesting that the associations are not merely the result of recall bias. All associations between parenting styles and adolescents' social phobia remained stable when controlled for parental psychopathology, suggesting that parental rejection and overprotection may be additional family-environment risk factors for social phobia independent of parental psychopathology. Previous studies29,30 suggest potential explanations for how parental characteristics may contribute to social phobia: overprotection may restrict the offsprings' development of autonomy and social competence; the combination of rejection and overprotection may lead to a dysfunctional parent-child bond, which may result in difficulties and anxieties in social situations; in addition, overprotection may keep the offspring from engaging in social situations, thereby restricting the opportunities to learn social skills.23,24
CONCLUSIONS

The data suggest that multiple familial factors are involved in the development of social phobia. Our findings indicate that not only parental social phobia, but also other parental psychopathology, particularly parental depression and parenting style (individually and in combination), may contribute to the development of social phobia.

Limitations of the study include the lack of direct interviews with fathers regarding social phobia and depression; this was likely to yield underestimates of paternal psychopathology. In addition, because youth have not passed through the entire risk period for onset of social phobia, the findings are still not conclusive; future analyses that include cases of later-onset findings will most likely lead to even stronger parent-offspring associations.

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