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# Family and Psychosocial Predictors of Obsessive Compulsive Disorder in a Community Sample of Young Adolescents

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*A two-stage epidemiologic study conducted between 1986 and 1988 in the southeastern United States investigated family and psychosocial predictors of obsessive compulsive disorder (OCD) and subclinical OCD in young adolescents. In the first stage, a life-event schedule and a family adaptability and cohesion scale were administered to a community sample of 3,283 adolescents. In stage two, the Schedule for Affective Disorders and Schizophrenia in School Age Children and the Children's Global Assessment Scale were administered to 488 mother-child pairs. In multivariable models family cohesion was the only significant correlate of OCD (odds ratio = 0.95, 95% confidence interval 0.91-0.98). Gender, race, age, socioeconomic status, guardian status, adaptability, undesirable life events and desirable life events*

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*were not found to be significant predictors of OCD in models adjusting for cohesion. None of the above variables were significantly associated with subclinical OCD. However, separate analyses of the 41 individual life events indicated seven specific events were significantly associated with OCD or subclinical OCD. These findings are at odds with the theory that overinvolvement of family members is a risk factor for OCD, though an association with overly rigid family structure cannot be eliminated based on these data. Further exploration of family characteristics is warranted.*

**KEY WORDS:** obsessive compulsive disorder; community sample; adolescent; cohesion; adaptability; life events.

Obsessive compulsive disorder, as defined by the DSM-III-R (American Psychiatric Association, 1987), includes recurrent obsessions or compulsions sufficiently severe to cause marked distress, be time-consuming, or significantly interfere with the person's normal routine, occupational functioning, or usual social activities or relationships with others. Few studies have reported on the familial and psychosocial characteristics of adolescents with OCD. The role family environment plays in the development of OCD remains unknown. Hibbs et al. (1991) found that both high expressed emotion (a measure of criticism or overinvolvement of patients' family members) and psychiatric disorders were frequent in parents of children and adolescents with OCD when compared to normal controls. Kanner (1962) suggests that children with OCD have been reared with an overdose of parental perfectionism and are taught what is "right" and to strictly avoid what is "wrong". Judd (1965) found that in 60% of OCD cases the discipline administered by parents was noticeably inconsistent and erratic, however diametrically opposite discipline was observed in the remaining 40% making theoretical explanations tenuous.

Hollingsworth, Tanquay, Grossman, & Pabst (1980) hypothesized that obsessive compulsive symptoms in children serve as a defense against anxiety generated by extremely stressful life situations. Swedo, Rapoport, Leonard, Lenane, & Cheslow (1989) found that in children and adolescents, stress of any sort invariably aggravated symptoms. Rasmussen and Tsuang (1986) reported that in adults, increases in responsibility such as the birth of a child, promotion to a new job, significant losses such as the death of a family member or loss of a job were the most common precipitants of OCD and that almost all of the 44 patients studied reported an increase in obsessive compulsive symptoms coincident with stressful life events. Judd (1965) found that an identifiable precipitating event appeared to be present but could identify no consistency as to the nature of the

event. A recent study on 79 children and adolescent patients indicated 38 percent of the family members or patients believed a specific event (most commonly stressful family events or fears developing from television shows) precipitated their obsessive compulsive behavior (Rettew, Swedo, Leonard, Lenane, & Rapoport, 1992).

Existing studies on OCD have often involved a small number of individuals, select populations, different diagnostic scales and a diverse range of ages, all of which make drawing conclusions difficult. The focus of this study was to describe the relationship between OCD and subclinical OCD on the one hand and various family and life event variables on the other in a community sample of young adolescents.

## METHODOLOGY

The data for this two-stage epidemiologic study of a community population of young adolescents were collected between 1986 and 1988 (Garrison, Jackson, Addy, McKeown, & Waller, 1992). Data were originally collected to investigate the frequency and correlates of major depressive disorder and suicidal behaviors, however the structure of the study sample and data collection allows valid inferences to be drawn to other disorders including OCD. The initial sample consisted of seventh and eighth graders enrolled in four public suburban middle schools in a single southeastern United States school district. Students were followed as they progressed into the ninth and tenth grades and the new seventh graders as well as new students moving into the school district as eighth or ninth graders were added to the sample during the following two years.

Data collection occurred in two phases: school screening and diagnostic evaluation. Only the baseline data for the study are considered here. They consist of the first year of data from three successive cohorts: the first cohort entered the study in 1986 ($n = 1{,}540$ for the school screening sample and $n = 226$ for the diagnostic sample); the second cohort entered the study in 1987 ($n = 948$ for the school screening sample and $n = 122$ for the diagnostic sample); and the third cohort entered the study in 1988 ($n = 795$ for the school screening sample and $n = 140$ for the diagnostic sample). Subjects who were in the "other" race category were excluded from all analyses (35 in the screening sample and eight in the diagnostic sample).

Ninety-eight percent of enrolled students completed a self-administered questionnaire during the screening phase. General demographic information was collected on age, gender, race, grade, whether or not the parents were alive, and with whom the adolescent lived. Since the study

was originally designed to investigate depression and suicidal behaviors, the Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977) was used to measure the amount of depressive symptomatology present during the preceding week. The CES-D score had a possible range of 0 to 60. Three suicide items were added to the CES-D and scored separately with a total possible suicide score ranging from 0 to 9. Subsequent validation of the CES-D in adolescents has suggested that the CES-D performs comparably as a screen for probable cases of any psychiatric disorder as it does for major depression (Garrison, Addy, Jackson, McKeown & Waller, 1991a). Thus, use of the CES-D in the screening phase of this project should not have biased the ascertainment of other disorders. Although the use of a screen not designed specifically for OCD might decrease the number of cases of OCD selected for interview and decrease the precision of the point estimates obtained, incorporating the weighting scheme into the statistical analyses provides unbiased estimators for all disorders.

Life events were measured using a modified version of the Coddington Life Events Scale for Adolescents (LES-A) (Coddington, 1972). When completing the instrument, the adolescent was asked to report the number of times within the past 12 months that he or she had experienced certain relevant life events such as divorce of parents, failing a grade in school, and outstanding personal achievement. There were a total of 41 events; 22 were classified as undesirable and 19 as desirable. Life event scores were calculated for undesirable and desirable events as unweighted sums of the number of items of the respective type. The total maximum possible scores were 90 for undesirable life events and 56 for desirable life events.

Family environment was measured using the Family Adaptability and Cohesion Evaluation Scales (FACES-II) (Olson, Bell, & Portner, 1982). FACES-II is a 30-item, self-report, written questionnaire. Sixteen cohesion items measured the emotional bonding which family members have towards one another, as well as the individual autonomy experienced within the family system. Cohesion exists on a continuum with the low end indicating more disengaged families (Green, Harris, Forte, & Robinson, 1991). Fourteen adaptability items measured the ability of the family system to change its power structure, role relationships and rules in response to situational and developmental stress. Adaptability exists on a continuum with the low end indicating more rigid families (Green et al., 1991). There is considerable evidence that FACES is a linear measure with high scores on cohesion and adaptability being related to more functional family relationships and low scores being related to less functional families (Green et al., 1991; Olson, 1991).

Individuals responded to questions on the FACES describing their family by scoring items on a five-point scale ranging from one (indicating occurs

"almost never") to five (indicating occurs "almost always"). Possible scores for the family cohesion dimension ranged from 16 to 80. Possible scores for the family adaptability dimension ranged from 14 to 70. FACES-II evidences acceptable internal consistency, with alpha reliabilities for cohesion and adaptability of 0.88 and 0.78, respectively (Garrison, Addy, Jackson, McKeown, & Waller, 1991b).

The following types of subjects were selected for the diagnostic evaluation phase: 1) subjects with CES-D scores in the top decile ($\geq 30$, $n = 173$); 2) subjects with missing and therefore possibly high CES-D scores ($n = 18$); 3) subjects without a high CES-D score but whose CES-D responses indicated probable cases of depression according to a classification scheme based on the research diagnostic criteria (Schoenbach, Kaplan, Grimson, & Wagner, 1982) ($n = 36$); 4) subjects not meeting the first three criteria but having a high suicide score ($\geq 6$, $n = 23$); and 5) a 12 percent random sample of the remaining students ($n = 238$). Seventy-three percent of the students selected completed the interviews. Subjects were selected to maximize the expected number of cases of depression while allowing valid statistical estimation and inference for all other disorders as long as the sampling scheme is taken into account.

The diagnostic evaluation phase of the study utilized the Schedule for Affective Disorders and Schizophrenia in School Age Children (K-SADS) (Chambers et al., 1985), the Children's Global Assessment Scale (CGAS) (Shaffer et al., 1983) and the Hollingshead's two factor index of social position (Hollingshead & Redlich, 1958). Semistructured interviews were conducted with the adolescent and one parent (most often the mother). The interviews were conducted by psychiatric nurses who participated in a 3-month training and standardization period. The nurses were blinded to the adolescents' status on the screening CES-D and suicide questions. Ten percent of the interviews were randomly selected for audiotaping and reliability ratings by experienced senior interviewers. Interrater reliability exceeded 0.90.

The K-SADS focuses on psychiatric disorders during the past year in children and adolescents aged 6-17 years (Chambers et al., 1985). The items covered in the K-SADS permit the diagnosis of affective, psychotic, anxiety (including OCD), phobic, conduct and eating disorders during the past 12 months. Computer algorithms were applied to responses on the K-SADS to assign diagnoses of OCD based on the DSM-III-R (American Psychiatric Association, 1987). Symptoms were counted as being present if reported by either informant. The adolescent was categorized into one of the seven K-SADS categories regarding obsessions and compulsions: 0 — No information; 1 — Not at all; 2 — Slight: Occasional obsessive thoughts or ritualistic act, but unclear if clinically significant; 3 — Mild: Definite ob-

sessions or compulsions but not very frequent and little significant effect on functioning; 4 — Moderate: Frequent obsessions or compulsions with some impairment in social or occupational functioning or daily routine; 5 — Severe: Frequent obsessions or compulsions with considerable impairment; 6 — Extreme: Very frequent obsessions or compulsions with marked impairment.

Scores on the Children's Global Assessment Scale (CGAS) signified the most severe level of impairment experienced by the child in the past year with lower scores indicating greater impairment. The CGAS has been found to be reliable between raters and across time. It has also demonstrated both discriminant and concurrent validity (Shaffer et al., 1983). Raters scored the adolescent from 0 to 100 according to level of impairment. Previous reports suggest that scores below 61 are associated with definite maladjustment (Bird et al., 1988).

Cases had to meet both the DSM-III-R criteria for OCD (a score of 4 or greater on the K-SADS) and receive a CGAS score below 61. Subclinical OCD was defined as an OCD score of 3 on the K-SADS or an OCD score of 4 or more but without impairment (i.e. CGAS $\geq$ 61).

## Analyses

The stratified sampling scheme was incorporated into all statistical analyses. The number in each stratum in the screening sample divided by the corresponding number in each stratum in the clinical sample was applied as a weight to every individual in the corresponding stratum in the clinical sample. The weighting strategy used was designed so that the results from the interview sample could be generalized to the original screening population for all disorders, including OCD (Addy, Jackson, McKeown, Waller, & Garrison, 1994; Waller, Addy, Jackson, & Garrison, 1994).

Two series of weighted logistic regressions were run using OCD and subclinical OCD as the outcomes with the reference group having neither. Race and gender (black and female as risk levels) were controlled in all analyses based on a priori knowledge that race and gender are common risk factors for psychiatric disorders. Only those variables found to be significantly associated with OCD or subclinical OCD in simple weighted logistic models which adjusted for race and gender were considered for entry into more comprehensive multivariable models. After following a backward stepwise elimination procedure, the final multivariable model included race, gender, and all variables retaining significance at the 0.05 level for OCD or for subclinical OCD. The weighted logistic regression analyses

utilized SAS PROC LOGIST (Harrell, 1983) and RTILOGIT (Shah, Folsom, Harrell, & Dillard, 1984) to incorporate the sampling design.

## RESULTS

### Description of Sample

General demographic characteristics, family status and psychosocial variables are presented by diagnostic status in Table 1. Using the weighted percentages, approximately 83 percent of the adolescents were white and approximately 72 percent were in the seventh grade (due to interviewing seventh and eighth graders during the first year and adding only new seventh, eighth and ninth graders during the second and third years). There

**Table 1.** Demographic Characteristics of Those with Obsessive Compulsive Disorder (n = 26), Subclinical Obsessive Compulsive Disorder (n = 99) and the Referent Group (n = 363)

| | Obsessive Compulsive Disorder | | Subclinical Obsessive Compulsive Disorder | | Referent | |
|---|---|---|---|---|---|---|
| Variable | Observed N | Weighted % | Observed N | Weighted % | Observed N | Weighted % |
| Race and Gender | | | | | | |
| White males | 9 | 56 | 36 | 42 | 122 | 42 |
| White females | 10 | 31 | 42 | 42 | 154 | 41 |
| Black males | 0 | 0 | 9 | 7 | 43 | 8 |
| Black females | 7 | 13 | 12 | 9 | 44 | 8 |
| Grade | | | | | | |
| Seventh | 16 | 69 | 63 | 66 | 244 | 73 |
| Eighth | 8 | 28 | 31 | 31 | 102 | 24 |
| Ninth | 2 | 4 | 5 | 3 | 17 | 3 |
| Age | | | | | | |
| ≤12 | 8 | 28 | 46 | 49 | 176 | 57 |
| 13 | 10 | 44 | 37 | 40 | 115 | 28 |
| 14 | 8 | 28 | 9 | 9 | 52 | 11 |
| ≥15 | 0 | 0 | 7 | 2 | 20 | 4 |
| SES | | | | | | |
| Low | 12 | 35 | 31 | 26 | 130 | 33 |
| Middle to high | 14 | 65 | 68 | 74 | 233 | 67 |
| Guardian Status | | | | | | |
| 2 parents* | 9 | 30 | 45 | 52 | 182 | 56 |
| <2 parents | 17 | 70 | 54 | 48 | 181 | 44 |

*Both natural parents in the home.

was almost no difference in the percentage of males in the subclinical (49%) and referent (50%) groups as compared to the OCD group (56%). Those with clinical OCD tended to be older in age. A higher percentage of those in the OCD group were from low socioeconomic status (35%) as compared to the subclinical OCD (26%) and referent (33%) groups. The lowest percentage of students living with both natural parents was in the OCD group (30%), followed by those in the subclinical (52%), and referent (56%) group.

Patterns suggest that those with OCD had higher CES-D scores, lower adaptability scores, lower cohesion scores, more undesirable life events and more desirable life events than those in the subclinical OCD and referent groups (Table 2). Adolescents in the subclinical and referent groups had similar values for these variables.

When the weights of the sampling design were considered the prevalence of obsessive compulsive disorder was found to be 2.95 percent (95% confidence interval (CI) = 1.71-5.81). The-prevalence of subclinical obsessive compulsive disorder was found to be 19.28 percent (95% CI = 14.96-24.55). Prevalence estimates of OCD were similar for males (3.26%, 95% CI = 1.44-8.34) and females (2.64%, 95% CI = 1.50-7. 12), as were the estimates of subclinical disorder (18.83%, 95% CI = 12.92-26.73 for males and 19.72%, 95% CI = 13.82-27.48 for females).

**Table 2.** Psychosocial Characteristics of Those with Obsessive Compulsive Disorder (n = 26) of Those with Subclinical Obsessive Compulsive Disorder (n = 99) and of the Reference Group (n = 363)

| | Obsessive Compulsive Disorder | | Subclinical Obsessive Compulsive Disorder | | Referent | |
|---|---|---|---|---|---|---|
| Variable | Weighted Mean | SD | Weighted Mean | SD | Weighted Mean | SD |
| CES-D* Score | 22.91 | ± 20.86 | 16.22 | ± 24.05 | 14.87 | ± 26.21 |
| Adaptability | 36.96 | ± 17.46 | 45.11 | ± 28.71 | 44.32 | ± 29.24 |
| Cohesion | 46.56 | ± 20.80 | 57.12 | ± 30.61 | 56.25 | ± 34.00 |
| Undesirable life events | 10.96 | ± 17.18 | 8.38 | ± 18.00 | 7.99 | ± 17.71 |
| Desirable life events | 16.26 | ± 20.46 | 14.67 | ± 18.49 | 14.03 | ± 20.13 |

*Center for Epidemiologic Studies Depression Scale.

## Correlates of Obsessive Compulsive Disorder and Subclinical Obsessive Compulsive Disorder

Weighted logistic regression analyses explored the relation of cohesion, adaptability, life events, and demographic variables with OCD and subclini-

**Table 3.** Logistic Regression Analyses of Obsessive Compulsive Disorder and of Subclinical Obsessive Compulsive Disorder with Life Event, Family and Sociodemographic Variables

| | Odds Ratio | 95% Confidence Interval |
|---|---|---|
| Models adjusting for race and gender* | | |
| Obsessive compulsive disorder | | |
| Cohension** | 0.94 | 0.91–0.98 |
| Adaptability** | 0.93 | 0.90–0.97 |
| Desirable life events** | 1.05 | 0.95–1.16 |
| Undesirable life events** | 1.06 | 1.00–1.13 |
| Age | 1.52 | 1.09–2.12 |
| Socioeconomic status | 0.84 | 0.25–2.84 |
| Guardian status | 3.16 | 0.97–10.24 |
| Race | 0.75 | 0.33–1.70 |
| Gender | 0.81 | 0.26–2.53 |
| Subclinical disorder | | |
| Cohesion** | 1.01 | 0.99–1.03 |
| Adaptability** | 1.01 | 0.99–1.03 |
| Desirable life events** | 1.01 | 0.97–1.05 |
| Undesirable life events** | 1.01 | 0.97–1.05 |
| Age | 1.03 | 0.78–1.36 |
| Socioeconomic status | 1.42 | 0.77–2.61 |
| Guardian status | 1.19 | 0.67–2.09 |
| Race | 0.98 | 0.56–1.73 |
| Gender | 1.05 | 0.60–1.86 |
| Comprehensive multivariable models | | |
| Obsessive compulsive disorder | | |
| Race | 0.69 | 0.30–1.60 |
| Gender | 0.70 | 0.21–2.35 |
| Cohesion** | 0.94 | 0.91–0.98 |
| Subclinical disorder | | |
| Race | 1.07 | 0.60–1.93 |
| Gender | 1.07 | 0.61–1.89 |
| Cohesion** | 1.01 | 0.99–1.03 |

*Simple models for variable other than race and gender adjust for race and gender. The race models adjust for gender. The gender models adjust for race.
**Continuous variables. Odds ratios are reported for a one unit change in the independent variables.

cal OCD (Table 3). Cohesion (OR = 0.94), adaptability (OR = 0.93), and age (OR = 1.52) were found to be significant correlates of OCD in the simple models. The odds of OCD were greater in older adolescents and those with lower cohesion and adaptability scores. None of these variables was found to be significant for subclinical OCD in the simple models. The final multiple weighted logistic model indicated that cohesion (OR = 0.94) alone was a significant correlate of OCD, with a disengaged family being associated with increased prevalence of obsessive compulsive disorder. Cohesion was not significantly associated with subclinical OCD. No other variables retained significance at the 0.05 level when controlling for cohesion, race and gender.

The association of OCD and subclinical OCD with the 41 specific life events rather than overall amount of life change experienced was also investigated. Six specific events, hospitalization of a sibling (OR = 0.57, p = 0.04), new adult moves into home (OR = 2.92, p = 0.01), moving to a new school district (OR = 1.99, p = 0.05), failing a grade in school (OR = 5.70, p = 0.01), excelling in a sport or activity (OR = 0.75, p = 0.03) and problems with physical appearance (OR = 1.43, p = 0.02), were significantly associated with OCD when controlling for race and gender. Six events, death of a parent (OR = 2.61, p = 0.05), end of a problem between subject and parents (OR = 1.30, p = 0.03), juvenile court (OR = 0.48, p = 0.00), failure to achieve a wanted goal (OR = 1.25, p = 0.01), joining a social organization (OR = 1.26, p = 0.05) and winning a special prize (OR = 1.43, p = 0.04), were significantly associated with subclinical disorder when controlling for race and gender.

To be certain that results represent correlates of OCD, rather than correlates of depression, a second set of analyses that included only individuals without depression were performed (results not shown). The magnitude and direction of the odds ratios obtained indicated that the observed relationships were not a result of comorbid depression.

## DISCUSSION

Cohesion was the only variable that retained significant effects and then only for OCD, not for the subclinical disorder. The inverse association of cohesion with OCD suggests that decreased cohesion (disengagement) in the family may be associated with an increased prevalence of OCD. This at first appears in contrast to Hibbs et al. (1991), who reported that overinvolvement of a patient's family members was frequent in parents of children and adolescents with OCD. Kanner (1962) also asserted that children with OCD have been reared with an overdose of parental

perfectionism; though Judd (1965) found no substantial effect of adaptability as measured by parental discipline practices. However, the cohesion scale of FACES reflects the perception of emotional support and closeness in the family, rather than parental styles. Kashani et al. (1987), using the Parental Bonding Instrument, found that the "adolescent's perception ... [of] degree of affection, emotional warmth, empathy, and closeness at one pole, and emotional coldness, indifference, rejection, and neglect at the other, significantly distinguished adolescents with and without psychiatric disorders... Therefore, the data provide further evidence for the importance of parental care and its relationship to the existence or absence of psychiatric disorders."

It may be that the adaptability scale of FACES is a more appropriate comparison for the studies by Hibbs et al. (1991), Kanner (1962), and Judd (1965). While the direction of the odds ratio is compatible with the view that there is greater risk of OCD in more rigid, authoritarian families, the association was statistically significant only in simple models which did not include cohesion. Green et al. (1991) noted that cohesion is a stronger predictor of family functioning than adaptability, a finding confirmed by Olson (1991). They also corroborate the monotonic relation between the cohesion scale and family functioning. Other prior research has found that close emotional ties are protective against childhood psychiatric disorder (Garrison et al., 1992; Kashani et al., 1987; McGee et al., 1990).

Marti and Gehring (1992) report that children's ideal or "wished for" family constructs are related to psychiatric clinical status, with clinical subjects representing an ideal family with low cohesion more frequently. This raises the question whether the association with cohesion observed in the present analysis is cause or consequence of OCD. Given the cross-sectional nature of the data presented here it is not possible to determine whether low family cohesion (or any other mutable potential risk factors described) puts individuals at higher risk of developing OCD or whether, once the disorder develops, the disordered individual adversely impacts or negatively assesses family functioning. Longitudinal follow-up is necessary to distinguish the temporal sequence.

The prevalence of OCD was not significantly different in adolescents living with both natural parents as compared to adolescents not living with both natural parents. However, the point estimates did vary considerably (1.61% for adolescents living with both natural parents vs. 4.59% for adolescents not living with both natural parents). Adolescents not living with both natural parents may lack parental supervision or emotional support when compared to adolescents who live with both parents. This is consistent with findings that decreased cohesion (disengagement/lower

emotional bonding) in the family was found to be significantly associated with OCD.

Others (Judd, 1965; Rettew et al., 1992; Swedo et al., 1989) have found a strong relationship between precipitating events and the onset of obsessive-compulsive disorder. The lack of a significant association in the current study might be explained by the time period covered by both the interview and the self-administered life events survey. Subjects were queried only about current disorder, not onset, and only about life events which had occurred in the past 12 months. Precipitating events and onset of the disorder may have occurred much earlier. Both Judd (1965) and Rettew et al. (1992) suggest that specific events occurring as early as age two may precipitate the disorder. In contrast, Swedo et al., (1989) has suggested that individuals may retrospectively devise explanations for their behavior. Investigating specific life events rather than the overall amount of life change experienced provided little additional information, especially after taking into account the large number (n = 82) of comparisons made and the lack of consistent findings across groups.

The pattern of predictors for subclinical disorder is very different from that of OCD with odds ratios being both nonsignificant and relatively close to one. These findings suggest that the subclinical group may, in fact, be more similar to the noncase group than to the clinical OCD group. However, subclinical disorder could be a precursor to the clinical disorder. An alternative explanation is that the subclinical disorder has not yet affected family functioning to the degree that the clinical disorder has. Further longitudinal studies will be necessary to investigate this issue.

Longitudinal studies that use heterogeneous populations and larger sample sizes where a greater number of cases can be identified are needed to more accurately define the frequency and correlates of OCD and of subclinical OCD. A wide array of potential risk factors, including family functioning, genetic history, specific life events, drug and alcohol abuse, and sleep patterns need to be investigated. Future research should attempt to study the impact OCD has on adolescents both socially and academically. It should also collect data on the many potential predictors of OCD so that the specific nature of the relationships involved can be explored and their contribution to the development of OCD can be studied simultaneously.

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