Comparison of Early Maladaptive Schemas in Obsessive-Compulsive Disorder Patients, Their Siblings, and Controls

ABSTRACT

Objective: The aim of this study was to determine the levels of early maladaptive schemas in obsessive-compulsive disorder patients, their siblings, and healthy controls to evaluate the association between genetic and environmental factors and early maladaptive schemas.

Methods: The study group included 42 obsessive-compulsive disorder patients who were admitted to and diagnosed with obsessive-compulsive disorder at the outpatient psychiatry clinic of Karadeniz Technical University Medical School between December 2017 and November 2018 and their 24 siblings who were born to and raised by the same parents and 42 volunteers. Diagnoses were based on the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria. The patients filled out the Young Schema Questionnaire Short Form-3 and the Yale-Brown Obsession-Compulsion Scale.

Results: The groups were similar in terms of age, sex, marital status, occupation, presence of comorbidity, and income level. The comparison of the scores of Young Schema Questionnaire Short Form-3 subscales revealed significant differences among the groups in failure, pessimism, social isolation/alienation, approval-seeking, enmeshment, abandonment, punishment, and defectiveness schemas. The post hoc analysis revealed that pessimism and defectiveness were significantly different between the patient and sibling groups, and approval-seeking, enmeshment, and abandonment were significantly different between the control and the sibling groups. The comparison of the Yale-Brown Obsession-Compulsion Scale and the Young Schema Questionnaire Short Form-3 results revealed that the subscales of enmeshment, failure, approval-seeking, and unrelenting standards were significantly correlated with the obsession and compulsion subscales and the total score in the Yale-Brown Obsession-Compulsion Scale.

Conclusion: We found similarities between early maladaptive schemas in the obsessive-compulsive disorder patients and their healthy siblings. We also found differences between the siblings and the healthy controls. These findings suggest a familial and genetic basis for the early maladaptive schemas in obsessive-compulsive disorder patients, which should be further evaluated in future studies with larger samples.

Keywords: Obsessive-compulsive disorder, Schema Therapy, Childhood Trauma, Siblings, Punishment

Introduction

The characteristics of obsessive-compulsive disorder (OCD) include obsessions (unwanted thoughts and images that have intrusive nature) and compulsions (repetitive, ritualized behaviors).1 Obsessive-compulsive disorder is a common disorder with a worldwide prevalence of 1-3%.2 Effective first-line treatments for OCD include pharmacological therapy and cognitive behavioral therapy techniques such as exposure and response prevention (ERP).3 However, despite

Cite this article as: Baz A, Özkorumak Karagüzel E. Comparison of early maladaptive schemas in obsessive-compulsive disorder patients, their siblings, and controls. Alpha Psychiatry. 2022;23(4):157-163.
these treatments, symptoms persist in many OCD cases, and standard treatment does not lead to complete remission. Obsessive-compulsive disorder patients have a great level of suffering which sometimes even lead to suicidal ideation and suicidal attempts the preclinical bases of which was explained by De Berardis et al. Deficits in emotional processing may be among the underlying factors that explain the relationship between psychiatric disorders including OCD and suicidal thoughts.

The term schema is used in many study fields. During cognitive development, a schema is imposed on reality or experience, and by using schemas, individuals explain it, mediate perception, and guide their responses. Schema therapy has been introduced by Young as an extension and modification to traditional cognitive therapy. The schema approach proposes that basic universal needs, including secure attachment, autonomy, competence, identity perception, freedom, spontaneity, and realistic limits, should be met in the early years of life for a psychologically healthy and harmonious life. When these basic needs are not met or prevented in an abusive way, strong and maladaptive thought patterns are formed, which are called early maladaptive schemas (EMSs).

According to Young, an EMS is a broad, pervasive theme regarding oneself and one’s relationship with others, developed during childhood and elaborated upon one’s lifetime, and dysfunctional to a significant degree. These schemas are built on past experiences, operate as templates for the processing of new experiences, and also may be reinforced by later experiences. Young proposed 18 specific schemas, such as emotional deprivation, mistrust, and abandonment, and grouped these into 5 broad schema domains, such as impaired autonomy, disconnection, etc. Although schemas may be latent and inactive in healthy situations, they are activated by situations relevant to that particular schema. According to Young’s theory, every psychopathology activates a specific schema. This specific schema activation may also be specific to a disorder. Possibly, this specificity is also valid for OCD because the OCD patients have dysfunctional core beliefs about self and others, which have been maintained for long periods.

The familial nature of OCD is known for centuries, but the first formal evidence for a genetic contribution to OCD was demonstrated in 1965. Inouye found that monozygotic twins had a higher concordance rate for OCD than dizygotic twins. Later studies supported this pilot study, and a large study found a 0.52 concordance rate in monozygotic twins and a 0.21 concordance rate in dizygotic twins; the overall heritability of OCD was estimated to be 48%. Not only the OCD diagnosis but also OC symptom dimensions had higher concordance in monozygotic twins than in dizygotic twins. Family studies also demonstrated the familial aggregation of OCD in families of child and adolescent probands. Also, familiality for symptoms such as hoarding and contamination/cleaning was found to be higher than other symptoms.

The aim of this study was to determine the levels of EMSs in OCD patients, their siblings, and controls in order to evaluate the possible associations between EMSs and genetic and environmental factors. Our first hypothesis is that several EMSs are similar between the OCD patient group and the sibling group. Our second hypothesis is that several EMSs are different between the sibling and the control group. Positive results will support genetic and/or environmental factors associated with EMSs in OCD.

Methods

Sample

The OCD group included 42 patients who were admitted to the outpatient unit of the psychiatry clinic of Karadeniz Technical University Medical School between December 2017 and November 2018 and diagnosed with OCD according to the DSM-5 criteria. The sibling group included 24 siblings of the patients who were born to and raised by the same parents as the patients and were not found to have a psychiatric disorder in the psychiatric interview. The control group included 42 healthy volunteers who did not have a previous history of psychiatric disease and were not found to have a psychiatric disorder in the psychiatric interview. All of the participants were informed about the study and signed the informed consent forms. Ethical approval was obtained from Karadeniz Technical University Clinical Research Ethics Committee (2018/3).

Tools

Sociodemographic Data Form was prepared by the researchers and included questions about sex, age, date of birth, education level, marital status, occupation, the date of the first admission, the presence of inpatient treatment, psychotropic drugs used by the patient, the presence of a psychiatric illness in the family, and history of receiving cognitive behavioral therapy. Cognitive behavioral therapy may change EMSs. We compared healthy siblings and the OCD patients and healthy siblings and healthy controls to make some inferences about the possible genetic factors underlying EMSs in OCD patients. A history of cognitive behavioral therapy (CBT) may confuse the interpretation of possible genetic effects.

Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) was developed by First et al. to make diagnoses for DSM-IV Axis I disorders. This structured interview enables a standardized way for diagnostic evaluation and therefore increases the diagnostic validity. Validity and reliability study for SCID-I in Turkish was performed by Çorapçıoğlu et al. The Kappa value for the interrater reliability was 0.86.

Structured Clinical Interview for DSM-IV Axis II Disorders (SCID-II) was developed by First et al to evaluate personality disorders. It is a self-report scale including 120 items. Turkish translation of SCID-II was performed by Sorias et al in 1990, and its reliability study was performed by Coşkunol et al. The overall agreement level was 0.798. We used SCID-II to exclude patients with personality disorders. Personality disorders are known to be strongly associated with EMSs. Previous research on EMSs predominantly included
personality disorder patients and found such associations. We wanted to observe the relationship of EMSs with an axis I disorder, OCD, so we excluded patients with personality disorders to eliminate the effects of personality disorders on EMSs.

Yale-Brown Obsession-Compulsion Scale (YB-OCS) was developed by Goodman et al.\textsuperscript{24} to measure the type and severity of obsessive-compulsive symptoms. It includes 19 items, but 10 items are scored each from 0 to 4. This scale is scored after a semi-structured interview by an interviewer. The sum of the first 5 items gives the obsession score, the sum of the items 6-10 gives the compulsion score, and the sum of the first 10 items gives a total obsession-compulsion score. The Cronbach alpha correlations for all the items were above 0.85. Karamustafaloğlu et al.\textsuperscript{25} demonstrated the adaptation and the validity-reliability of the Turkish version. The Cronbach alpha coefficient for the reliability of the scale was 0.94.

Young Schema Questionnaire Short Form-3 (YSQ-SF-3) was developed by Young et al.\textsuperscript{26} It has 18 subscales for each of the 18 EMSs and 5 dimensions. It includes 90 Likert-type questions, which are scored from 1 to 6. The internal validity of this scale was reported to be 0.76%-0.93%.\textsuperscript{27} The validity and reliability study of this scale was performed in a university sample. The 5 dimensions were named impaired autonomy, other-directedness, high standards, disconnectedness, and impaired limits. There were also 14 schema subdimensions: emotional deprivation, mistrust, dependency, defectiveness, social isolation, pessimism, failure, enmeshment, insufficient self-control, abandonment, unrelenting standards, entitlement, self-sacrifice, vulnerability, and suspiciousness.\textsuperscript{28} Each subsdimension consists of 6 items which can take a score between 0 and 30. Turkish validity and reliability study of the YSQ-3F was performed by Soygüt et al.\textsuperscript{29} In that study, the Cronbach alpha values for the internal consistency of the Turkish version of YSQ-SF-3 subscales were between 0.63 and 0.80.

**Statistical Analysis**

Statistical Package for the Social Sciences (SPSS) version 22.0 (IBM SPSS Corp.; Armonk, NY, USA) was used for the statistical analysis of the data. Descriptive statistics were given as frequency, percentage, median, and interquartile range (IQR) for categorical variables. Fisher’s chi-square test and Pearson’s exact chi-square tests were used to evaluate categorical variables. The Kruskal-Wallis test was used to compare numerical data of 3 independent variables. For binary comparison of variables that were found to be significantly different, the Mann–Whitney U test was used and Bonferroni correction was applied.

The Spearman correlation was used to evaluate the correlations between variables when at least one of them is not normally distributed or is ordinal. The statistical significance level was accepted as $\alpha = 0.05$.

**Results**

The OCD patients, siblings, and healthy control groups included 42, 24, and 43 participants, respectively. The median ages were similar in the OCD (25.50; IQR: 22.00-36.00 years), the sibling (28.50; IQR: 25.00-34.75 years), and the control (25.00; IQR: 23.00-36.50 years) groups ($P = .788$). Female gender constituted 54.8% (23/42) of the participants in the OCD group, 57.7% (15/26) in the sibling group, and 57.1% (24/42) in the control group ($P = .965$). The average years of education were different between the groups ($P = .005$); average education was higher in the sibling group (16.00; IQR: 14.00-16.00 years) than the OCD (14.00; IQR: 9.00-15.00 years) and the control (12.00; IQR: 9.00-15.50 years) groups ($P = .017$ and $P = .005$; respectively). The percentage of employed people was higher in the sibling group (n=23/26; 88.5%) compared with the OCD (n=23/42; 54.8%) and the control (n=23/42; 54.8%) groups ($P = .008$). The groups were similar in terms of marital status ($P = .316$), place of residence ($P = .848$), occupation ($P = .056$), the presence of comorbidity, and income level ($P = .067$) (Table 1).

A comparison of the groups in terms of YSQ subscales revealed significant differences among the groups in failure ($P < .001$), pessimism ($P < .001$), social isolation/alienation ($P = .029$), approval-seeking ($P = .030$), enmeshment ($P < .001$), abandonment ($P < .001$), punishment ($P = .008$), and defectiveness ($P < .001$) schemas. Post hoc analysis revealed that pessimism ($P < .01$) and defectiveness ($P = .013$) were significantly different between the patient and sibling groups; approval-seeking ($P = .031$), enmeshment ($P = .001$), and abandonment ($P = .015$) were significantly different between the control and sibling groups (Table 2).

Comparisons of the OCD, control, and sibling groups for the YSQ-SF-3 dimensions revealed significant differences among these groups in impaired autonomy ($P < .001$), disconnectedness ($P = .01$), and unrelenting standards ($P = .032$) dimensions. There was no significant difference between the patient and sibling groups; impaired autonomy ($P < .001$), disconnectedness ($P = .002$), and unrelenting standards ($P = .011$) were different between the patient and control groups, and only the impaired autonomy ($P = .016$) dimension was different between the control and sibling groups (Table 3).

Correlation analysis was used to evaluate the correlations among the subdimensions of YSQ-SF-3 and YB-OCS (Table 4). Significant positive correlations were found between the failure subscale and obsession ($r = .426$; $P = .005$) and compulsion ($r = .485$; $P = .005$) subscales and the total score ($r = .475$; $P = .001$) of YB-OCS. Significant positive correlations were also found between the pessimism subscale and the obsession ($r = .388$; $P = .011$), compulsion ($r = .365$; $P = .017$) subscales and the total score ($r = .365$; $P = .017$) of YB-OCS. There were also significant positive correlations between the approval-seeking subscale and the obsession ($r = .402$; $P = .008$) and compulsion ($r = .368$; $P = .016$) subscales and the total score ($r = .402$; $P = .008$) of YB-OCS. There were significant positive correlations between the enmeshment subscale and the obsession ($r = .382$; $P = .012$) and compulsion ($r = .511$; $P = .001$) subscales and the total score ($r = .445$; $P = .003$) of YB-OCS. There was a significant positive correlation between the abandonment subscale and the compulsion ($r = .346$; $P = .025$) subscale of YB-OCS. There were significant positive correlations between the defectiveness subscale and the compulsion subscale ($r = .400$; $P = .009$) and the total score ($r = .336$; $P = .029$) of YB-OCS. There was a significant correlation between the unrelenting standards subscale and the obsession subscale ($r = .324$; $P = .036$) of YB-OCS. There were significant correlations between the impaired autonomy dimension and the obsession ($r = .363$; $P = .018$) and compulsion ($r = .436$; $P = .004$) subscales and the total score ($r = .395$; $P = .01$) of YB-OCS. There were significant positive correlations between the disconnectedness dimension and the compulsion subscale ($r = .369$; $P = .016$) and the total score ($r = .327$; $P = .035$) of YB-OCS.
Table 1. Sociodemographic Features of the Participants

| Groups          | OCD (n = 42) | Sibling (n = 26) | Control (n = 42) | P     |
|-----------------|--------------|------------------|-----------------|-------|
| Age             | 25.50 [22.00-36.00] | 28.50 [25.00-34.75] | 25.00 [23.00-36.50] | .788** |
| Years of education | 14.00 [9.00-15.00] | 16.00 [14.00-16.00] | 12.00 [9.00-15.50] | .005* |
| Sex, n (%)      |              |                  |                 |       |
| Male            | 19 (45.2)    | 11 (42.3)        | 18 (42.9)       | .964** |
| Female          | 23 (54.8)    | 15 (57.7)        | 24 (57.1)       |       |
| Marital status, n (%) |          |                  |                 |       |
| Married         | 24 (57.1)    | 10 (38.5)        | 20 (47.6)       | .316** |
| Single          | 18 (42.9)    | 16 (61.5)        | 22 (52.4)       |       |
| Place of residence, n (%) |          |                  |                 |       |
| City center     | 33 (78.6)    | 23 (88.5)        | 32 (76.2)       | .450  |
| Smaller than city center | 9 (21.4) | 3 (11.5)        | 10 (23.8)       |       |
| Employment status, n (%) |          |                  |                 |       |
| Employed        | 23 (54.8)    | 23 (88.5)        | 23 (54.8)       | .008  |
| Unemployed      | 19 (45.2)    | 3 (11.5)         | 19 (45.2)       |       |
| Comorbidity, n (%) |          |                  |                 |       |
| No              | 35 (84)      | 16 (100)         | 42 (100)        |       |
| Yes             | 7 (16)       | -                | -               |       |
| Income level, n (%) |          |                  |                 |       |
| ≤1500 TL        | 25 (59.5)    | 10 (35.5)        | 23 (54.8)       | .067** |
| 1500-3000 TL    | 10 (23.8)    | 4 (15.4)         | 11 (26.6)       |       |
| ≥3000 TL        | 7 (16.7)     | 12 (46.2)        | 8 (19)          |       |

Descriptive statistics for numerical variables were given as mean, minimum, and maximum; categorical variables were given as frequency (%). OCD, obsessive-compulsive disorder.

*Kruskal–Wallis test.

**The Pearson chi-square test or the Fisher's exact test.

Table 2. Schema Subscales of the Young Schema Questionnaire-Short Form-3 (YSQ-SF-3)

| Groups          | OCD | Control | Sibling | Patient-Control | Patient-Sibling | Control-Sibling |
|-----------------|-----|---------|---------|-----------------|-----------------|-----------------|
| Emotional deprivation | 8.50 [5.00-13.00] | 7.00 [6.00-10.00] | 6.00 [5.00-7.75] | .064            |                  |                 |
| Failure         | 13.00 [9.00-23.75] | 12.00 [8.25-15.25] | 7.00 [6.00-11.00] | <.001           | <.001           | .168            |
| Pessimism       | 13.00 [9.00-24.00] | 9.50 [6.00-13.00]  | 8.00 [5.25-11.75] | <.001           | <.001           | .101            |
| Social isolation/alienation | 16.50 [10.00-26.75] | 14.00 [11.25-17.50] | 11.00 [9.00-17.00] | .029            | .009            | .448            |
| Emotional inhibition | 10.00 [7.00-14.00] | 9.00 [8.00-11.00]  | 8.00 [5.25-14.75] | .219            |                  |                 |
| Approval seeking | 18.00 [15.00-24.75] | 17.50 [16.00-22.00] | 15.00 [11.00-21.75] | .030            | .020            | .903            |
| Enmeshment      | 15.50 [11.00-25.50] | 16.00 [11.00-20.00] | 10.00 [9.00-13.00] | <.001           | <.001           | .811            |
| Insufficient self-control | 21.00 [15.00-27.50] | 19.50 [14.50-22.50] | 19.50 [14.00-23.75] | .372            |                  |                 |
| Self-sacrifice  | 11.00 [8.25-16.00] | 13.00 [10.00-14.75] | 12.00 [7.50-17.00] | .906            |                  |                 |
| Abandonment     | 8.00 [5.00-12.75]  | 6.00 [6.00-9.00]   | 6.00 [5.00-7.00]  | <.001           | <.001           | .464            |
| Punishment      | 21.00 [15.25-26.00] | 18.00 [16.00-21.00] | 14.50 [13.25-20.75] | .008            | .002            | .397            |
| Defectiveness   | 11.00 [7.00-18.75] | 7.00 [6.00-11.00]  | 6.00 [6.00-7.00]  | <.001           | <.001           | .013            |
| Vulnerability   | 10.50 [6.00-15.75] | 10.00 [7.00-12.00] | 8.00 [6.00-11.00] | .128            |                  |                 |
| Unrelenting standards | 9.00 [4.00-12.75]  | 7.00 [7.00-9.75]   | 6.00 [4.25-10.75] | .331            |                  |                 |

OCD, obsessive-compulsive disorder.

Descriptive statistics for numerical variables were given as mean, minimum, and maximum. The Kruskal–Wallis test was used for the comparison of the 3 groups. The Mann–Whitney U test was used for binary post hoc comparisons, and Bonferroni correction was performed. P < .017 (0.05/3) was accepted to be significant. Undeviated numbers are signed as italic.
The most important finding of this study was that EMSs including the failure, pessimism, social isolation, approval-seeking, enmeshment, abandonment, punishment, and defectiveness schema subscales and the impaired autonomy, disconnectedness, and unrelenting standards schema dimensions were more frequent in the OCD patients compared with controls. Our findings are in line with previous research findings. Atalay et al found higher social isolation, vulnerability, and pessimism schemas in OCD patients compared with controls. Yoosefi et al used the YSQ-SF to compare EMSs in OCD patients, anxiety disorder patients, and controls who were diagnosed according to DSM-5 criteria and found higher results in all of the schema subscales. They also found that OCD patients had higher scores than anxiety disorder patients in emotional deprivation, mistrust, and defectiveness schemas. Our finding suggests an association between EMSs and OCD. This cross-sectional study type cannot say anything about causality, so EMSs may produce a vulnerability for OCD, or OCD may augment some EMSs. Anyhow, an association between EMSs and OCD is evident which should be kept in mind during OCD therapy.

In the association of EMSs and OCD, it is important to determine the cause and effect. We added a sibling group in addition to a control group to discriminate between the effects of the disorder and the effects of genetic and familial factors on EMSs. The results revealed that pessimism and defectiveness were higher in the OCD patients compared with their siblings who were raised by the same parents. Pessimism can be defined as a pervasive, lifelong focus on the negative aspects of life (disappointment, resentment, betrayal, loss, death, Table 3. Schema Dimensions of the Young Schema Questionnaire Short Form-3 (YSQ-SF-3)

| Proposed Strategy | OCD | Control | Sibling | P  | Patient-control | Patient-sibling | Control-sibling |
|-------------------|-----|---------|---------|----|----------------|----------------|----------------|
| Impaired autonomy | 72.00 [43.25-100.25] | 57.50 [43.25-69.00] | 40.00 [34.00-55.25] | <.001 | <.001 | .079 | .016 |
| Disconnectedness  | 47.50 [34.25-72.25] | 39.00 [35.25-47.25] | 33.50 [28.00-43.75] | .010 | .002 | .191 | .175 |
| Unrelenting standards | 28.00 [20.25-36.00] | 25.50 [24.00-30.75] | 20.00 [16.00-32.75] | .032 | .011 | .589 | .930 |
| Impaired borders  | 21.00 [15.00-27.50] | 19.50 [14.50-22.50] | 19.50 [14.25-23.75] | .426 |        |        |        |
| Others orientedness | 35.00 [26.25-43.00] | 30.00 [28.00-35.00] | 27.50 [20.75-36.50] | .059 |        |        |        |

OCD, obsessive-compulsive disorder.
Descriptive statistics for numerical variables were given as mean, minimum, and maximum.
The Kruskal–Wallis test was used for the comparison of the 3 groups. The Mann–Whitney U test was used for binary post hoc comparisons, and Bonferroni correction was performed. P < .017 (0.05/3) was accepted to be significant.

Table 4. Correlations Among the Schema Subscales and Dimensions of the Young Schema Questionnaire Short Form-3 and the Yale-Brown Obsessive-Compulsive Scale

| Proposed Strategy | YB Obsession | YB Compulsion | YB Total |
|-------------------|--------------|---------------|----------|
| Emotional deprivation | r = 0.221 | P = .159 | r = 0.244 | P = .119 | r = 0.234 | P = .135 |
| Failure | r = 0.426 | P = .005 | r = 0.485 | P = .005 | r = 0.475 | P = .001 |
| Pessimism | r = 0.388 | P = .011 | r = 0.365 | P = .017 | r = 0.365 | P = .017 |
| Social isolation/alienation | r = 0.280 | P = .072 | r = 0.345 | P = .025 | r = 0.512 | P < .001 |
| Emotional inhibition | r = 0.233 | P = .138 | r = 0.266 | P = .089 | r = 0.257 | P = .100 |
| Approval seeking | r = 0.402 | P = .008 | r = 0.368 | P = .016 | r = 0.402 | P = .008 |
| Enmeshment | r = 0.382 | P = .012 | r = 0.511 | P = .001 | r = 0.445 | P = .003 |
| Impaired self-control | r = 0.169 | P = .285 | r = 0.189 | P = .231 | r = 0.179 | P = .256 |
| Self-sacrifice | r = 0.324 | P = .036 | r = 0.267 | P = .088 | r = 0.296 | P = .057 |
| Abandonment | r = 0.363 | P = .018 | r = 0.436 | P = .004 | r = 0.395 | P = .010 |
| Punishment | r = 0.282 | P = .071 | r = 0.369 | P = .016 | r = 0.327 | P = .035 |
| Defectiveness | r = 0.234 | P = .036 | r = 0.267 | P = .088 | r = 0.296 | P = .057 |
| Vulnerability | r = 0.363 | P = .018 | r = 0.436 | P = .004 | r = 0.395 | P = .010 |
| Unrelenting standards | r = 0.282 | P = .071 | r = 0.369 | P = .016 | r = 0.327 | P = .035 |
| Impaired borders  | r = 0.169 | P = .285 | r = 0.189 | P = .231 | r = 0.179 | P = .256 |
| Others orientedness | r = 0.189 | P = .231 | r = 0.230 | P = .143 | r = 0.215 | P = .171 |

YB, Yale-Brown.
Spearman’s rho correlation coefficient was used.
pain, etc.) while minimizing or neglecting the positive or optimistic aspects. Defectiveness is the feeling that one is bad, unwanted, inferior, or invalid in important aspects, or that one would be unlovable to significant others. The other schema subscale scores were similar. The explanation for this association may be 2-sided. First, these schemas might have predisposed the individual to OCD. Second, having a chronic disorder like OCD might have activated the schemas of pessimism and defectiveness. Also, these schemas might have been present both in the sibling and the patient groups, but their intensity might be different in these groups and might have caused the emergence of the OCD symptoms. At least 3 previous studies have also demonstrated the association between EMSs and OCD. To make a distinction between these 2 hypotheses, longitudinal studies are required, which should include the period before the onset of OCD. There are several twin studies that investigated the heritability of OCD in monozygotic and dizygotic twins. Bolton et al found that familial aggregation of OCD symptoms due to combined genetic and common environmental effects was 47% in the multivariate model. The authors stated that they could not distinguish between the genetic and common environmental effects. Similarities in most of the schemas in our study may also be the result of common genetic and environmental effects on siblings.

We found a higher impaired autonomy dimension and approval-seeking, enmeshment, and abandonment in the siblings of the OCD patients compared with the healthy controls. This may indicate the effects of shared genetic and environmental factors on healthy family members of OCD patients. Previous studies consistently revealed familial aggregation of OCD diagnosis and OCD symptoms. Wright et al found that EMSs mediate the relationship between childhood emotional maltreatment and later psychopathology in non-clinical samples. Also, EMSs may be related to perceived adverse parental rearing behavior such as rejection, lack of emotional warmth, and anxious rearing. Therefore, a reason for the development of EMSs in healthy siblings of OCD patients may be the presence of EMSs in parents, and thereby EMSs may be passed on from the parent to the offspring.

The highest correlating EMS subscales and dimensions with YB-OCS obsession and compulsion subscales and total scale were the subscales of failure, approval-seeking, and unrelenting standards. Fear from failure and seeking approval to own behaviors are common themes in OCD patients. They are doubtful from their behaviors and seek approval from external sources. These schemas reflect the perfectionist and controlling personality features of OCD patients and should be managed with therapeutic approaches.

There are a few limitations of our study. First of all, some of the patients were evaluated while they were receiving treatments for OCD, and some were evaluated during the active phase of the disease when they have not received any treatments. This might have affected the schemas or their severity. The second limitation was the use of self-report scales, which might have reliability problems. The third limitation was the small samples, especially the sibling group involving only 24 subjects, despite the high number of subscales in the scales used. The main strength of this study is the inclusion of healthy siblings, which enabled the comparison between the OCD group and a group of healthy subjects that have a similar genetic and environmental background.

We found differences and similarities among the EMSs of OCD patients, their healthy siblings, and healthy controls. The main differences between the OCD patients and their healthy siblings are higher scores from pessimism and defectiveness schemas. These schemas may predispose individuals to OCD, or OCD might have activated these schemas despite shared genetic and environmental background between the siblings and OCD patients. Long-term follow-up studies that assess EMSs before and after the onset of OCD are needed to provide more data on this question. Higher abandonment, enmeshment, and approval-seeking in the healthy siblings of OCD patients compared with controls may reflect “soft” signs which may be due to the genetic involvement as their OCD siblings did not exceed the threshold level to become an overt disease. Our findings suggest a familial and genetic basis for the EMSs in OCD patients, which should be further evaluated in future studies with larger samples.

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