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Personality dimensions in obsessive–compulsive disorder: Relation to clinical variables[☆]

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Abstract

Research on the relationship between personality factors and obsessive–compulsive disorder (OCD) has proved difficult to interpret due to conceptual problems including a lack of consensus on the model of personality employed as a framework as well as a failure to consider the clinical heterogeneity of the disorder. The aim of this study was to examine the dimensional personality profile associated with OCD and to determine whether any relationship exists between personality factors and clinical variables in a sample of 60 OCD outpatients who were administered Cloninger's Temperament and Character Inventory (TCI). The Yale–Brown Obsessive–Compulsive Scale (Y-BOCS), the Hamilton Depression Rating Scale (HDRS) and the Y-BOCS symptom checklist were used to assess the severity of obsessive–compulsive and depressive symptoms and the presence of the main OCD symptom dimensions. OCD patients showed significantly higher scores in harm avoidance and lower scores in novelty-seeking, self-directedness and cooperativeness than healthy subjects. These results remained unchanged when only pure OCD patients without comorbid psychiatric conditions were considered. Comorbid depressive symptoms and hoarding obsessions and compulsions were significantly associated with high harm avoidance scores. These results support the existence of a dimensional personality profile associated with OCD and characterized by high harm avoidance and low novelty-seeking, self-directedness and cooperativeness scores, but also emphasize the importance of considering the influence of comorbid clinical conditions or symptom subtypes in addressing the role of personality factors in OCD.

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1. Introduction

Although personality factors such as indecisiveness or orderliness were postulated to play a fundamental role in the development of obsessive–compulsive disorder (OCD) by Janet (1903) and Freud (1908) one century ago, a unanimous view on the relationship between

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personality and OCD remains elusive. Results from studies on categorically defined personality disorders are quite heterogeneous, with comorbid Axis II diagnoses ranging from 33% to 83% and involving such different personality disorders as dependent, histrionic and schizotypal (see Summerfeldt et al., 1998, for a review). A dimensional perspective may be a more useful approach in describing personality functioning and may better reveal meaningful relationships between personality and OCD. A psychobiological model of personality, which includes four temperament dimensions, termed novelty-seeking (NS), harm avoidance (HA), reward dependence (RD) and persistence (P), and three character dimensions labelled self-directedness (SD), cooperativeness (C) and self-transcendence (ST), has been proposed by Cloninger and associates (Cloninger, 1987; Cloninger et al., 1993). Temperament dimensions are defined by individual differences in associative learning in response to novelty, danger and reward. They are independently heritable, manifest early in life and are hypothesized to be related to specific neurotransmitter systems. Character dimensions are described in terms of response biases related to different concepts of the self and mature in adulthood.

Few studies concerning Cloninger's biogenetic theory of personality have been conducted hitherto in OCD patients. All of them have reported higher scores on the harm avoidance dimension in obsessive subjects compared with healthy volunteers (Pfohl et al., 1990; Richter et al., 1996; Bejerot et al., 1998; Kusunoki et al., 2000; Lyoo et al., 2001). Other reported temperament deviations include low novelty-seeking (Kusunoki et al., 2000; Lyoo et al., 2001) and high reward dependence (Pfohl et al., 1990). Regarding patterns of character, low scores on the self-directedness (Bejerot et al., 1998; Kusunoki et al., 2000; Lyoo et al., 2001) and cooperativeness (Bejerot et al., 1998; Kusunoki et al., 2000) dimensions have been observed. Nevertheless, most of these studies fail to consider the possible influence of the sample's clinical status in the assessment of personality. Some personality domains, specifically harm avoidance, have been described as being related to depressive mood states in normal volunteers (Svrakic et al., 1992), patients with first-episode psychosis (Strakowski et al., 1992) and subjects with major depression (Joffe et al., 1993). Only the study conducted by Lyoo et al. (2001) analysed the influence of OCD and depression severity on personality patterns, while all other reports were obtained from both symptomatic (Pfohl et al., 1990; Richter et al., 1996) and recovered (Bejerot et al., 1998; Kusunoki et al., 2000) patients. Finally, the relationship of personality dimensions to other clinical variables such as age at onset of

OCD or previous duration of the disorder has not been addressed to date.

Little attention has been paid to differences in personality features among OCD subtypes. Horesh et al. (1997) reported that patients with contamination obsessions and cleaning compulsions were much more likely to have personality disorders than those with predominantly checking rituals, although these results were not replicated by Matsunaga et al. (2001). Symmetry and hoarding obsessions and compulsions have been described as being associated with obsessive personality traits (Baer, 1994), and hoarding significantly predicted the presence of cluster C personality disorders (Mataix-Cols et al., 2000). In a recent separate study of 56 OCD patients, our group detected that hoarding symptoms in OCD were associated with higher scores on Gray's Sensitivity to Punishment scale and lower scores on Eysenck's Psychoticism scale (Fullana et al., 2004). To our knowledge, the relationship between Cloninger's temperament and character features and OCD symptom dimensions has not been previously examined.

1.1. Aims of the study

The purpose of this study was (1) to evaluate the patterns of biogenetic temperament and character in 60 OCD patients compared with a group of 60 age-, sex- and education-matched healthy controls, (2) to determine whether personality dimensions assessed by the Temperament and Character Inventory (TCI) were related to clinical variables such as severity of OCD and depressive symptoms, age at onset or previous duration of the disorder or presence/absence of comorbid conditions, and (3) whether any relationship exists between patterns of temperament and character and previously identified OCD symptom dimensions.

2. Method

2.1. Subjects

Subjects comprised 60 outpatients with OCD (37 male and 23 female) and 60 age-, sex-, and education-matched healthy comparison subjects. OCD subjects were recruited from the OCD Clinic of Bellvitge University Hospital (Barcelona, Spain) between 1999 and 2001. Of these patients, 38 had participated in a long-term follow-up study of OCD outcome and had undergone standardized treatment in our unit for a minimum period of 1 year previous to personality assessment, while 22 were new consecutive outpatients referred for OCD treatment to our Hospital during this period. All patients met DSM-IV

criteria for OCD (American Psychiatric Association, 1994) and had had symptoms of OCD for at least 1 year. Diagnosis was independently assigned by two psychiatrists (P.A. and J.M.M.) with extensive clinical experience in OCD, who separately interviewed the patients using the Structured Clinical Interview for DSM-IV Axis I Disorders–Clinician Version (SCID–CV) (First et al., 1997). Patients were eligible when both research examiners agreed on all criteria. Exclusion criteria were past or present history of psychoactive substance abuse, age under 18 or over 65 years, mental retardation and severe organic or neurological pathology, except tic disorder. Comorbidity with other DSM-IV Axis I disorders was not considered an exclusion criterion provided OCD was the main diagnosis and the primary reason for seeking medical assistance. During the selection period, 79 outpatients were assessed by the examiners and fulfilled DSM-IV criteria for OCD. Of these patients, eight were ruled out in accordance with the exclusion criteria and 11 refused to take part in the study.

Patients from the long-term follow-up study ($n=38$) had undergone standardized treatment for OCD in our unit for 27.5 ± 10.2 months (range = 12–45), including exhaustive pharmacological and cognitive–behavioural therapy – details of treatment strategies in this group of patients are reported in Alonso et al. (2001). At the time of the personality assessment, they were all receiving pharmacological treatment. The remaining 22 newly referred patients were all medication free for at least 2 weeks at the time of the assessment.

Healthy comparison subjects, recruited from residents of the local community, were asked to participate in a study on psychological health with no payment offered. They had no past or current history of psychiatric or neurological diagnoses as determined in a brief interview based on the Structured Clinical Interview for DSM-III-R: Non-Patient Version (SCID-NP) (Spitzer et al., 1989) and the guidelines established by Shtasel et al. (1991) to exclude psychiatric disorders.

Written informed consent was obtained from each subject after complete description of the study, which was approved by the Institutional Review Board.

2.2. Clinical assessment

Information was obtained on sociodemographic – age, sex, and years of education – and clinical variables – age at onset of OCD (defined as age when symptoms became a significant source of distress and interfered with the patient’s social functioning) – and previous duration of OCD. The severity of OCD was assessed using a clinician-administered version of the Yale–

Brown Obsessive–Compulsive Scale (Y-BOCS) (Goodman et al., 1989) which establishes the following severity levels: subclinical (score of 0–7), mild (8–15), moderate (16–23), severe (24–31) and extreme (32–40). A clinician-administered version of the 21-item Hamilton Depression Rating Scale (HDRS) (Hamilton, 1960) was used to assess the severity of depressive symptoms (scores from 0 to 63).

Recent theories on the multidimensional and heterogeneous nature of OCD (see Mataix-Cols et al., 2005, for a review), which attempt to search for OCD symptom dimensions rather than categorizing patients into mutually exclusive subgroups, were adopted in our study. Despite some differences, factor-analytical studies have been fairly consistent in reducing obsessive symptoms into three to five clinically meaningful dimensions (Baer, 1994; Leckman et al., 1997; Mataix-Cols et al., 1999; Summerfeldt et al., 1999), which, at least in adult patients, tend to remain stable over time (Mataix-Cols et al., 2002). In this study, a clinician-administered version of the Y-BOCS Symptom Checklist (Goodman et al., 1989), which comprises a list of more than 50 examples of obsessions and compulsions, was employed to ascertain scores on five previously identified symptom dimensions (Mataix-Cols et al., 1999) designated as “Symmetry/Ordering”, “Hoarding”, “Contamination/Cleaning”, “Aggression/Checking”, and “Sexual/Religious obsessions”. If a patient identified at least one of the specific symptoms under one of these dimensions as a principal or major problem, that dimension was assigned a score of 2. If a patient endorsed at least one of the specific symptoms but did not consider it to be a major problem, that dimension was assigned a score of 1. Finally, a score of 0 was assigned if a patient did not endorse any of the symptoms under that dimension.

2.3. Personality assessment

The Temperament and Character Inventory (TCI) version 9 (Cloninger et al., 1994) was used to measure biogenetic temperament and acquired character. The TCI is a self-administered paper-and-pencil, true–false questionnaire of 240 items constructed by Cloninger et al. to assess four basic dimensions of temperament, namely novelty-seeking, harm avoidance, reward dependence and persistence, and three primary dimensions of character, namely self-directedness, cooperativeness and self-transcendence. Each of the seven dimensions, except persistence, has three to five lower-order subscales; because they are not usually considered in the literature, we will not report on them here. Novelty-seeking is hypothesized to be a heritable tendency towards intense

Table 1

Sociodemographic and clinical characteristics of 60 patients with obsessive–compulsive disorder and healthy comparison subjects

Characteristics	Subjects with OCD (<i>n</i> =60)	Healthy comparison subjects ^a (<i>n</i> =60)
Age, years [mean±S.D. (range)]	31.8±9.5 (18–55)	31.6±9.1 (18–55)
Male/female	37/23	
Education, years [mean±S.D. (range)]	10.9±2.7	11.0±2.8
Age at onset of OCD, years [mean±S.D. (range)]	17.9±5.8 (7–40)	
Duration of illness, years [mean±S.D. (range)]	13.7±8.9 (1–39)	
Global Y-BOCS score (mean±S.D.)	19.7±12.2	
Y-BOCS obsessions score (mean±S.D.)	10.1±6.0	
Y-BOCS compulsions score (mean±S.D.)	9.6±6.3	
HDRS score (mean±S.D.)	12.1±5.5	

OCD=obsessive–compulsive disorder, Y-BOCS=Yale–Brown Obsessive–Compulsive Scale, HDRS=Hamilton Depression Rating Scale.

^a There were no significant differences in age, gender or education between subjects with OCD and healthy comparison subjects.

exhilaration or excitement in response to novel stimuli or cues for potential rewards or potential relief of punishment. It involves impulsiveness in decision-making, extravagance in approach to cues of reward and disorderliness with quick loss of temper. Harm avoidance reflects a tendency to respond intensely to signals of aversive stimuli, and thereby the subject learns to inhibit behaviour to avoid punishment, novelty and frustrative nonreward. It involves anticipatory worry about possible problems, fear of uncertainty, shyness with strangers, and easy fatigability. Reward dependence reveals a tendency to respond intensely to signals of reward (particularly verbal signals of social approval, sentiment and succour) and to maintain or resist extinction of behaviour that has previously been associated with rewards or relief from punishment. It is manifest as sentimentality, social attachment and dependence upon others' approval. Persistence reflects a tendency to industriousness, ambitious overachieving and perseverance despite frustration. Self-directedness refers to self-determination and “willpower”, or the ability of an individual to control, regulate and adapt behaviour to fit the situation in accord with individually chosen goals and values. Cooperativeness can be formulated as a developmental process which includes social acceptance, empathy, helpfulness, compassion and pure-hearted principles. Self-transcendence reflects a tendency toward spirituality and identification with the wider world, as well as the ability to accept ambiguity and uncertainty.

The validated Spanish version of the TCI was employed in the present study (Gutierrez et al., 2001). It showed good psychometric properties including its internal consistency (all Cronbach's α coefficients were above 0.65, except Persistence, α =0.49), concurrent validity and factorial structure.

Table 2

Sociodemographic and clinical characteristics of 60 patients with obsessive–compulsive disorder

Characteristics	Subjects with OCD		<i>P</i>
	Treated for a minimum period of 1 year (<i>n</i> =38)	Newly recruited (<i>n</i> =22)	
Age, years [mean±S.D. (range)]	33.0±8.4 (20–52)	29.8±11.0 (18–55)	0.2
Male/female	24/14	13/9	0.7
Age at onset of OCD, years (mean±S.D.)	17.6±4.4	18.4±7.8	0.6
Duration of illness, years (mean±S.D.)	15.0±8.3	11.4±9.7	0.1
Pre-treatment Y-BOCS score (mean±S.D.)			
Global	26.5±7.9		
Obsessions	13.6±3.4		
Compulsions	12.9±5.2		
Pre-treatment HDRS score (mean±S.D.)	12.4±5.8		
Treatment status: SRI trials completed, <i>N</i> (%)			
1	12 (31.6%)		
2	13 (34.2%)		
3	11 (28.9%)		
>3	2 (5.3%)		
Complete CBT protocol, <i>N</i> (%)	28 (73.7%)		
Reduction in Y-BOCS global score after treatment (mean %±S.D.)	47.0±33.2		
Y-BOCS score at TCI assessment (mean±S.D.)			
Global	13.5±10.6	30.5±5.5	<0.001
Obsessions	7.1±5.2	15.3±2.9	<0.001
Compulsions	6.3±5.5	15.2±2.6	<0.001
HDRS at TCI assessment (mean±S.D.)	10.4±5.4	15.1±3.7	0.001
Personality dimensions:			
Harm avoidance	67.9±9.8	71.5±6.4	0.09
Novelty-seeking	43.2±8.2	43.9±11.3	0.7
Reward dependence	48.1±8.9	51.8±8.3	0.1
Persistence	41.7±8.7	42.0±9.8	0.8
Self-directedness	38.2±11.6	34.5±11.4	0.2
Cooperativeness	41.9±9.1	45.0±9.8	0.2
Self-transcendence	36.3±9.2	37.1±13.1	0.7

OCD=obsessive–compulsive disorder; Y-BOCS=Yale–Brown Obsessive–Compulsive Scale, HDRS=Hamilton Depression Rating Scale, SRI=serotonin reuptake inhibitors, CBT=cognitive–behavioural therapy.

Table 3

Frequencies of the major symptom dimensions of the Yale–Brown Obsessive–Compulsive Checklist in 60 patients with obsessive–compulsive disorder

	Absent symptom		Present symptom		Major symptom ^a	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Hoarding	45	75.0	11	18.3	4	6.7
Aggressive/Checking	16	26.7	18	30.0	26	43.3
Contamination/Cleaning	29	48.3	14	23.3	17	28.3
Sexual/Religious	44	73.3	7	11.7	9	15.0
Symmetry/Ordering	41	68.3	12	20.0	7	11.7

^a More than one principal category was allowed for each patient.

A computer program was used that provided raw scores and calculated *T* scores according to norms for the seven scales (Cloninger et al., 1994). Raw scores were calculated by adding 1 point for each item answered in the direction predicted by the scale. Standardization to *T* scores adjusts mean scores of each scale to the reference value of 50 points.

2.4. Statistical analysis

The TCI scores on temperament and character dimensions were compared between OCD patients and healthy subjects using an independent *t* test. To control for error derived from multiple comparisons, the Bonferroni correction was employed (significance level was established at 0.007 when comparing both groups on the seven personality dimensions). Relationships between personality dimensions and clinical variables such as age, age at onset of OCD, previous duration of the disorder, severity of OCD and comorbid depression were initially explored with Pearson correlation coefficients. Due to the detected influence of age and level of depression on TCI scores, partial correlation coefficients between personality variables and clinical factors were then calculated controlling for age and HDRS scores.

Table 4

Comparison of Temperament and Character Inventory (TCI) scores between obsessive–compulsive patients and healthy comparison subjects

Personality dimensions	OCD, <i>n</i> =60 (mean±S.D.)	Controls, <i>n</i> =60 (mean±S.D.)	<i>t</i>	<i>P</i>	95% CI	
Harm avoidance	69.2±8.8	51.9±8.7	10.7	<0.001	14.1	20.5
Novelty seeking	43.4±9.4	52.0±10.7	−4.6	<0.001	−12.2	−4.9
Reward dependence	49.5±8.8	51.0±8.4	−0.9	0.32	−4.6	1.5
Persistence	41.8±9.1	44.5±10.2	−1.5	0.1	−6.1	0.82
Self-directedness	36.8±11.6	52.6±8.4	−8.5	<0.001	−19.4	−12.1
Cooperativeness	43.0±9.4	50.6±6.7	−5.0	<0.001	−10.5	−4.6
Self-transcendence	36.6±10.7	39.0±10.9	−1.1	0.2	−6.2	1.5

OCD=obsessive–compulsive disorder.

Multiple linear regression analyses (stepwise method) were conducted to assess whether temperament and character patterns were related to the presence of specific obsessive–compulsive symptom dimensions. In these models, the patients' scores on each of the subscales of the TCI were entered as independent variables and the scores on the five previously identified OCD symptom dimensions as dependent variables. To control for the effect of symptom severity and depression, all analyses were repeated by entering the total Y-BOCS and HDRS scores first in the models (enter method).

The SPSS statistical package (version 10.0) was used in all analyses. The significance level was set at $P<0.05$ (2-tailed) except for those analyses where the use of Bonferroni correction raised the significance level to 0.007.

3. Results

Demographic and clinical characteristics of the patient and control groups are shown in Tables 1 and 2. Data comparability analyses showed no differences in sex distribution, age, age at onset of OCD, previous duration of the disorder, and personality dimensions assessed by the TCI between patients who had completed a minimum treatment period of 1 year and those newly referred for therapy. Pharmacological and behavioural treatment received by the group of 38 patients in the long-term follow-up study is summarized in Table 2. At the time of personality assessment, subjects who had undergone standardized OCD treatment in our unit scored significantly lower than the newly recruited patients on the Y-BOCS global, obsessions and compulsions subscales as well as on the HDRS (Table 2). Frequencies of the principal OCD symptom dimensions in the sample as a whole were distributed as shown in Table 3.

Seventeen patients (28.3%) fulfilled criteria for other comorbid psychiatric disorders, including Major Depressive Disorder ($N=10$), Dysthymic Disorder ($N=3$), Anxiety Disorders other than OCD ($N=1$) and Eating

Disorders ($N=3$). In all cases, OCD onset was prior to the development of any other psychiatric condition. Seven patients (11.6%) exhibited chronic motor tic disorder or Tourette's syndrome.

Mean scores and standard deviations (S.D.) on TCI subscales in OCD patients and healthy controls are presented in Table 4. Independent t tests indicated that OCD subjects had significantly higher mean scores in harm avoidance ($t=10.7$, $df=118$, $P<0.001$) and lower mean scores in novelty-seeking ($t=-4.6$, $df=118$, $P<0.001$), self-directedness ($t=-8.5$, $df=118$, $P<0.001$) and cooperativeness ($t=-5.0$, $df=118$, $P<0.001$) compared with healthy comparison subjects.

Since approximately one-third of OCD subjects had comorbid psychiatric conditions, mainly affective disorders, which have been reported to be related to specific TCI patterns (Joffe et al., 1993) and could therefore influence our results, we decided to repeat analyses on TCI dimensions just considering differences between OCD patients without comorbid psychiatric disorders and healthy controls. Results of this second analysis were identical to those obtained in the sample as a whole, indicating that pure OCD subjects had significantly higher mean scores in harm avoidance (68.2 ± 9.4 vs. 51.9 ± 8.7 ; $t=8.8$, $df=99$, $P<0.001$) and lower mean scores in novelty-seeking (43.3 ± 8.0 vs. 52.0 ± 10.7 ; $t=-4.3$, $df=99$, $P<0.001$), self-directedness (38.6 ± 12.1 vs. 52.6 ± 8.4 ; $t=-6.4$, $df=99$, $P<0.001$) and cooperativeness (42.3 ± 10.4 vs. 50.6 ± 6.7 ; $t=-4.5$, $df=99$, $P<0.001$) than healthy comparison subjects.

No gender differences on TCI scores were detected in the OCD group, except for the self-transcendence subscale, in which women scored significantly higher than men (40.6 ± 11.6 vs. 34.1 ± 9.4 , $t=-2.3$, $df=58$, $P=0.02$).

A significant negative correlation was detected between age and NS ($r=-0.52$, $P<0.001$) in the OCD group. No significant correlations between TCI scores and age at onset of OCD or previous duration of the disorder were detected when controlling for current age.

Presence of depressive symptoms assessed by the HDRS was closely correlated with HA ($r=0.49$, $P<0.001$). These results remained unchanged when controlling for OCD severity and age. OCD severity assessed by the Y-BOCS appeared to be correlated with HA ($r=0.39$, $P=0.002$) and NS scores ($r=-0.28$, $P=0.002$), but these correlations were not statistically significant when controlling for age and presence of depressive symptoms.

In the OCD group, multiple linear regression analyses revealed weak partial correlations between scores on the hoarding dimension and HA ($R^2=0.07$,

$\beta=0.27$, $t=2.14$, $P=0.03$). These results remained unchanged when total Y-BOCS and HDRS scores were forced first into the models. None of the other OCD symptom dimensions were significantly related to specific personality dimensions.

4. Discussion

The aim of this study was to examine the personality profile of OCD patients and to determine whether temperament and character dimensions were related to different clinical aspects such as severity of obsessive-compulsive or depressive symptoms, age at onset of the disorder, presence/absence of comorbid conditions, and OCD symptom subtypes.

Our results are consistent with previous reports on patterns of temperament and character in OCD subjects characterized by high scores on the harm avoidance dimension (Pfohl et al., 1990; Richter et al., 1996; Bejerot et al., 1998; Kusunoki et al., 2000; Lyoo et al., 2001) and low scores on the novelty-seeking (Kusunoki et al., 2000; Lyoo et al., 2001), self-directedness (Bejerot et al., 1998; Kusunoki et al., 2000; Lyoo et al., 2001) and cooperativeness (Bejerot et al., 1998; Kusunoki et al., 2000) dimensions. Recent cognitive theories emphasize the important role of certain belief domains in the development of OCD including an exaggerated sense of responsibility and the overestimation of threat (Steketee et al., 1998). Distorted appraisals of the power of one's actions to produce or prevent harm combined with an unusually high estimation of risk would explain why most OCD sufferers seem to view situations as dangerous unless proven safe and become highly vigilant when novel circumstances arise. Excessive anticipatory worries about possible problems or the tendency to inhibit exploratory activity that could lead to novel potentially dangerous or punishable situations, both characteristics of subjects with high harm avoidance and low novelty-seeking scores, can be considered congruent with this hypothesized cognitive schema.

Results on character dimensions have been interpreted from different perspectives. Low self-directedness has been postulated as being related to a reduced ability of OCD patients to regulate their own thoughts and behaviors, especially when they seek to guide them towards concrete goals, due to the presence of invasive obsessions and compulsions (Lyoo et al., 2001). On the other hand, low self-directedness and cooperativeness have been hypothesized to reflect the high frequency of comorbid personality disorders observed in OCD patients, since low scores on both dimensions are common characteristics of Axis II pathology (Bejerot et al., 1998). Finally, Cloninger

postulates that character can be understood in terms of the epigenetic development of increasingly inclusive concepts of the self: identification as an autonomous individual (self-directedness), as an integral part of human society (cooperativeness) and as an integral part of the universe (self-transcendence) (Cloninger et al., 1993). The presence of pervasive intrusive thoughts since childhood or adolescence along with accompanying feelings of isolation, guilt and blame, typical of OCD sufferers, might render such adequate character development difficult.

Although initial exploratory analysis appeared to indicate that OCD severity was correlated with scores on HA and NS dimensions, these results were not statistically significant after controlling for age and presence of depressive symptoms. On the other hand, a strong correlation between depressive mood symptoms and HA scores, regardless of OCD severity, was detected in our sample. In the only previous study addressing this issue, Lyoo et al. (2001) reported that high HA and low SD scores significantly predicted more severe obsessive–compulsive symptoms, controlling for age, gender and level of depression. Nevertheless none of these patients suffered from a Major Depressive Episode, since the presence of comorbid Axis I disorders was considered an exclusion criterion by the authors. Thirteen of our patients (21.6%) fulfilled criteria for Major Depressive or Dysthymic Disorder, a percentage similar to usually reported rates of comorbid depression in OCD (Black and Noyes, 1990). Absence of comorbid mood disorders in Lyoo et al.'s sample may, at least partially, account for differences between studies on the relationship between personality and OCD severity. Our findings are consistent with the previously observed influence of mood states on personality assessment, especially regarding the harm avoidance dimension (Svrakic et al., 1992; Strakowski et al., 1992; Joffe et al., 1993). In fact, in a study designed to assess changes on TCI scores in response to OCD therapy, Lyoo et al. (2003) reported that the decrease in levels of depressive symptoms was the major contributing factor for the change in HA scores after treatment. All these findings point to the importance of considering the presence of comorbid depressive symptoms in assessing personality dimensions in OCD patients.

Our results on the relationship between high HA and the development of hoarding symptoms are consistent with previous reports on the association between hoarding and comorbid personality disorders. In the study by Mataix-Cols et al. (2000), obsessive–compulsive and avoidant were the personality disorders most closely related to the hoarding dimension. Several aspects of the HA dimension are common among pa-

tients with these personality profiles: excessive anticipatory worry about possible problems and fear of uncertainty are characteristic of subjects with obsessive–compulsive personality, while shyness with strangers and intense response to signals of aversive stimuli can be considered the core symptoms of avoidant personality disorder. Our results would further support the hypothesis that differential relationships exist among personality dimensions and specific OCD symptom profiles (Baer, 1994; Mataix-Cols et al., 2000). So, previous conflicting findings on the role of personality factors in OCD may be due in part to differences in the constitution of the patients groups studied, i.e. the differential presence of patients with hoarding symptoms.

Our results must be interpreted with several caveats in mind. A personality profile characterized by high HA scores has been described to be related to different anxiety and affective disorders (Ball et al., 2002). So, the use of a psychiatric control group would have been interesting to elucidate whether the detected relation between personality dimensions and OCD is a specific one.

Although the dimensional approach adopted in this study has the potential advantage of overcoming the difficulty of recruiting a sufficient sample size for each OCD clinical subtype, some symptom dimensions (i.e. sexual/religious, symmetry/ordering, hoarding) were present in a reduced proportion of patients. So, the sample size might have been insufficient to detect a significant relationship between some of these clinical dimensions and temperament and character profile. The results of the current study need to be replicated in larger samples to address this issue as well as to confirm the stability of the detected association between hoarding and HA scores.

On the other hand, differentiating hoarding as an OCD symptom from hoarding as a personality trait associated to obsessive–compulsive personality disorder (OCPD) is not always easy, and this fact could have influenced our results on the proposed relationship between hoarding and some personality dimensions, specially high HA scores. Since no psychometrically sound hoarding scales were available at the time of this study, we tried to overcome this limitation employing the strict definition of hoarding proposed by Frost and Hartl (1996), which appears to show no correlation with a global measure of obsessive–compulsive personality disorder as well as with the other characteristics of this personality disorder except for perfectionism (Frost and Gross, 1993). Reliable and valid instruments recently developed to assess hoarding symptoms (Frost et al., 2004) should be used in future studies to clarify the relationship between hoarding and personality.

Studies on comorbidity, symptom pattern and etiological factors suggest that OCD is far from being a homogeneous disorder. Although scarce data are available on this issue in adult samples, temperamental heterogeneity in child and adolescent OCD has been observed by Ivarsson and Winge-Westholm (2004), who described two temperamental subgroups using hierarchical cluster analysis in a sample of 83 obsessive children and adolescents: the uninhibited and the inhibited/shy groups. The authors also hypothesize the existence of an “autistic-like” sub-group included in the inhibited/shy one, characterized by low levels of sociability and presence of repeating compulsions. Such a study of temperamental heterogeneity in our sample of adults with OCD is currently underway.

Our results support the importance of considering the presence of comorbid depressive symptoms in assessing personality dimensions in OCD. Notwithstanding, some OCD patients suffer from other comorbid conditions besides depression and anxiety disorders, such as tic disorder, Tourette’s syndrome or autistic traits similar to those present in Asperger’s disorder, that appear to be related to specific symptom dimensions or genetic findings (Mataix-Cols et al., 2005). The relation of personality dimensions with these comorbid conditions could not be assessed in our study due to the absence of a sufficient number of afflicted patients. Future studies on the relation between personality dimensions and specific comorbid conditions in OCD might help to clarify the remarkable heterogeneity of the disorder.

Finally, any discussion of the relationship between personality and OCD must be extremely cautious in hypothesizing on the direction of causality between both phenomena. Personality patterns may render an individual vulnerable to the development of obsessive–compulsive disorder, but the presence of debilitating and invasive obsessive–compulsive symptoms from late adolescence or early adulthood may irrevocably change the individual’s habitual patterns of thought, behaviour and emotional regulation. Moreover, in the case of such a lifelong condition as OCD, the disorder itself becomes a stable part of the experience and behavioural repertoire of the individual, and discerning which symptoms are those of OCD and which more accurately reflect personality may be quite difficult. Studies in children and adolescents with OCD, who have been suffering from the disorder for less time, might help to clarify this issue. Gothelf et al. (2004), in the only published study investigating Cloninger’s temperament and character model in children with OCD and other anxiety disorders (AD), reported higher scores on the HA dimension in children with OCD and other AD compared with normal

controls. No significant differences were detected between the groups in scores for novelty-seeking, reward dependence, persistence or character factors. Similar to Cloninger’s HA concept, Kagan (1997) defined a temperament construct, named “behavioural inhibition to the unfamiliar (BI)”, which reflects the tendency to be unusually shy and fearful as a toddler and quiet and withdrawn in unfamiliar situations in the preschool and early school-age years. Several studies have described that children classified as “stable inhibited” – those who remained inhibited throughout childhood – have an increased risk for anxiety disorders (Hirshfeld et al., 1992). Specific anxiety disorders related to BI appear to change from early childhood to later years, since younger children had mainly avoidant, overanxious and phobic disorder, while 3 years later they had more avoidant and separation anxiety disorder (Biederman et al., 1993). Due to the low prevalence of OCD in pediatric years, no significant association between BI and OCD could be detected in these studies. Nevertheless, Ivarsson and Winge-Westholm (2004), specifically assessed the relation between OCD and temperament in a group of 83 obsessive children and adolescents and detected higher scores on the “shyness” subscale and lower scores on the “activity” subscale of the EAS (Emotionality, Activity, Sociability) questionnaire in the OCD group compared with normal controls. The authors stated that, together, these scores could be seen as indicative of the presence of behavioural inhibition. Adults characterized by high harm avoidance and low novelty-seeking scores on Cloninger’s TCI exhibit excessive anticipatory worries about possible problems, fear of uncertainty, shyness with strangers and a tendency to inhibit exploratory activity that could lead to novel potentially dangerous or punishable situations. These behavioural characteristics are quite similar to those ascribed to inhibited children who are described as quiet, fearful, withdrawn and noninteractive in unfamiliar situations. So, although not identical, harm avoidance, novelty-seeking and behavioural inhibition can be seen as related theoretical concepts, addressing an innate temperamental tendency that describes one’s style of behaviour in situations of uncertainty. Studies comparing the EAS and the Cloninger systems would help to clarify the exact relation between these theoretical models. On the other hand, prospective studies following inhibited children into adulthood would help to resolve whether certain temperament factors really reflect an enhanced vulnerability to develop OCD or other anxiety disorders.

In summary, the results support the existence of a dimensional personality profile associated with OCD and characterized by high harm avoidance and low

novelty-seeking, self-directedness and cooperativeness scores. This pattern of temperament and character was not related to OCD severity, age at onset or previous duration of the disorder, but partially to the presence of comorbid depressive symptoms. After all state variables were controlled, hoarding obsessions and compulsions were significantly associated with high scores on the harm avoidance dimension. Probably, much of the lack of consensus in the literature on personality factors associated with OCD, both categorically and dimensionally considered, may have arisen from a failure to consider the clinical heterogeneity of the disorder. Future research should take into account the influence of comorbid clinical conditions or symptom subtypes in addressing the role of personality factors in obsessive–compulsive disorder.

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