

# Personality traits and treatment outcome in obsessive-compulsive disorder

## Traços de personalidade e resposta terapêutica no transtorno obsessivo-compulsivo

Felipe Corchs,<sup>1</sup> Fábio Corregiari,<sup>1</sup> Ygor Arzeno Ferrão,<sup>1,2</sup> Tania Takakura,<sup>1</sup> Maria Eugênia Mathis,<sup>1</sup> Antonio Carlos Lopes,<sup>1</sup> Euripedes Constantino Miguel,<sup>1</sup> Márcio Bernik<sup>1</sup>

### Abstract

**Objective:** Comorbidity with personality disorders in obsessive-compulsive patients has been widely reported. About 40% of obsessive-compulsive patients do not respond to first line treatments. Nevertheless, there are no direct comparisons of personality traits between treatment-responsive and non-responsive patients. This study investigates differences in personality traits based on Cloninger's Temperament and Character Inventory scores between two groups of obsessive-compulsive patients classified according to treatment outcome: responders and non-responders. **Method:** Forty-four responsive and forty-five non-responsive obsessive-compulsive patients were selected. Subjects were considered treatment-responsive (responder group) if, after having received treatment with any conventional therapy, they had presented at least a 40% decrease in the initial Yale-Brown Obsessive Compulsive Scale score, had rated "better" or "much better" on the Clinical Global Impressions scale; and had maintained improvement for at least one year. Non-responders were patients who did not achieve at least a 25% reduction in Yale-Brown Obsessive Compulsive Scale scores and had less than minimal improvement on the Clinical Global Impressions scale after having received treatment with at least three selective serotonin reuptake inhibitors (including clomipramine), and at least 20 hours of cognitive behavioral therapy. Personality traits were assessed using Temperament and Character Inventory. **Results:** Non-responders scored lower in self-directedness and showed a trend to score higher in persistence than responders did. **Conclusion:** This study suggests that personality traits, especially self-directedness, are associated with poor treatment response in obsessive-compulsive patients.

**Descriptors:** Personality; Obsessive-compulsive disorder; Temperament; Character; Treatment outcome

### Resumo

**Objetivo:** Comorbidade com transtornos de personalidade tem sido extensamente descrita no transtorno obsessivo-compulsivo. Aproximadamente 40% dos pacientes com transtorno obsessivo-compulsivo não respondem a tratamentos de primeira linha. Não obstante, não existem estudos comparando diretamente traços de personalidade entre pacientes responsivos e refratários ao tratamento do transtorno obsessivo-compulsivo. Este estudo investiga diferenças nos traços da personalidade baseados no Inventário de Temperamento e Caráter de Cloninger (TCI) entre dois grupos de pacientes com transtorno obsessivo-compulsivo classificados segundo desfecho terapêutico: responsivos e refratários. **Método:** Quarenta e cinco pacientes refratários e 44 responsivos foram selecionados. Os indivíduos foram considerados responsivos se, após tratamento com terapêutica convencional, apresentaram diminuição de ao menos 40% no escore inicial da Yale-Brown Obsessive Compulsive Scale, foram classificados como "melhor" ou "muito melhor" na Clinical Global Impressions; e mantiveram melhora por pelo menos um ano. Os refratários eram os pacientes que não atingiram redução de ao menos 25% na Yale-Brown Obsessive Compulsive Scale e tiveram a melhora menor que "mínima" na Clinical Global Impressions após o tratamento com ao menos três inibidores seletivos da recaptura de serotonina, incluindo clomipramina, e ao menos 20 horas da terapia cognitiva-comportamental. Os traços da personalidade foram avaliados através do Temperament and Character Inventory. **Resultados:** Refratários pontuaram menos em autodirecionamento e tenderam a pontuar mais em persistência. **Conclusão:** Este estudo sugere que os traços de personalidade, especialmente autodirecionamento, estão associados com a resposta pobre do tratamento em pacientes com transtorno obsessivo-compulsivo.

**Descritores:** Personalidade; Transtorno obsessivo-compulsivo; Temperamento; Caráter; Resultado de tratamento

<sup>1</sup> Department and Institute of Psychiatry, Medical School, Universidade de São Paulo (SP), Brazil

<sup>2</sup> Centro Universitário Metodista (IPA), Porto Alegre (RS), Brazil

### Correspondence

Márcio Bernik  
Ambulatório de Ansiedade, Instituto de Psiquiatria  
Hospital das Clínicas da FMUSP  
R. Dr. Ovídio Pires de Campos, 785  
05403-010 Caixa Postal 3671  
São Paulo, SP, Brazil  
Phone/Fax: (+55 11) 3069-6988  
E-mail: marcio.bernik@uol.com.br

## Introduction

Obsessive-compulsive disorder (OCD) is a common and chronic psychiatric disorder.<sup>1,2</sup> In spite of the many therapeutic options available nowadays (some of them particularly efficacious<sup>3-5</sup>), still a considerable amount of patients achieve minimal or no improvement.<sup>3,6</sup> Early reviews have suggested that personality disorders are associated with both greater symptom severity and poorer outcomes<sup>7</sup> (see also<sup>8</sup> for a review). This type of categorical approach of personality traits, however, seems to be more dependent on acute clinical expression (state). The dimensional evaluation of personality features has the advantage of being more stable over time (trait)<sup>9</sup> and, therefore, useful when investigating risk factors of treatment-resistant subjects with axis I disorders. Among personality dimension instruments the Cloninger's Temperament and Character Inventory (TCI)<sup>10</sup> provides a theoretically based, and systematic approach to personality testing.

The TCI has been used in previous studies in OCD patients.<sup>11-16</sup> All of them have found distinct patterns of temperament and character in OCD patients compared with healthy controls. Consistently, in all these studies, OCD subjects displayed lower self-directedness and increased harm avoidance compared to controls. Furthermore, low self-directedness and high harm avoidance were associated with increased severity of obsessive-compulsive symptoms. Only one study<sup>14</sup> has investigated the impact of these patterns of temperament and character in the treatment outcome of OCD. Interestingly, in this study, harm avoidance scores decreased after treatment, whereas self-directedness scores did not change. However, no previous studies have investigated if these personality traits could be associated with worse treatment response. Therefore, this study aimed to compare possible differences in personality traits (using the TCI) between two very clear distinct subgroups of responder and non-responder patients with OCD.

## Method

### 1. Sample

Eighty-nine subjects meeting DSM-IV diagnostic criteria for OCD after SCID-I/P<sup>17</sup> interview were selected from a psychiatric reference service for this cross-sectional study. Patients were recruited from private and public clinics in Porto Alegre and São Paulo (both cities from Brazil) in the years 2002 to 2005. They were selected based on their treatment response, either treatment responders ( $n = 44$ , 25 females [57%], mean age  $\pm$  sd:  $39.55 \pm 11.18$  years) or non-responders ( $n = 45$ , 19 females [42%], mean age  $36.44 \pm 10.61$  years). Mean age showed no significant difference between groups ( $U = 287.00$ ,  $p = 0.181$ ), as well as the gender ratio for each group compared using Pearson's chi-square test with Yates' correction ( $X^2 = 1.36$ ;  $p = 0.244$ ). Duration of illness was also not different between responders and non-responders (mean duration of 20.07 ( $\pm 12.15$ ) years and 21.50 ( $\pm 11.21$ ) years, respectively) ( $U = 886.50$ ,  $p = 0.496$ ). Subjects were considered treatment-responsive OCD patients (responder group) if, after having received treatment with any conventional therapy (serotonin reuptake inhibitors or cognitive behavior therapy [CBT]), not necessarily after just one trial, they: 1) presented at least a 40% decrease in the initial Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) score; 2) were rated "better" or "much better" on the Clinical Global Impressions (CGI) scale; 3) and had maintained improvement for at least one year. Non-responders were patients who did not achieve at least 25% reduction in Y-BOCS scores and had less than minimal improvement on the CGI scale after the following treatment interventions: 1) one selective serotonin reuptake inhibitor (SSRI) in maximum recommended dose

or in maximum tolerated dose for at least 8 weeks if completely unresponsive or 12 weeks if partially responsive; 2) another SSRI in maximum recommended dose or in maximum tolerated dose for at least 8 weeks if completely unresponsive or 12 weeks if partially responsive; and 3) clomipramine in maximum recommended dose or in maximum tolerated dose for at least 8 weeks if completely unresponsive or 12 weeks if partially responsive; and 4) at least 20 hours of cognitive behavior therapy (specifically, exposure and response prevention).

These treatments did not have to follow a pre-established order between each other.

Partial responders, whose rates of response were in-between responsive and non-responsive criteria, were excluded.

### 2. Procedures

The research protocol was reviewed and approved by the Department of Psychiatry and the Research Ethics Committee of the Universidade de São Paulo. All subjects gave written informed consent.

#### 1) Measures

All the patients had their personality traits assessed by the Cloninger's TCI, which had been translated and validated into Portuguese.<sup>18</sup> The TCI is a self-reported questionnaire, with 240 questions that require "true" or "false" responses. Each question is related to one of the seven factors described by the authors of the scale: novelty seeking, harm avoidance, reward dependence, persistence, self-directedness, cooperativeness and self-transcendence. The first four are considered temperament dimensions while the last three are character dimensions. This instrument was applied only once in each patient after the therapeutic procedures had occurred.

Mood symptoms were assessed by means of the Hamilton Depression Rating Scale (HAM-D),<sup>19</sup> anxiety levels through the Hamilton Anxiety Rating Scale (HAM-A)<sup>20</sup> and obsessive-compulsive disorders by means of the Y-BOCS.<sup>21</sup>

#### 2) Clinical sample description

As expected, symptom severity at the moment of the TCI application proved to be significantly different between groups as measured by the Y-BOCS<sup>21</sup> (responsive X non-responsive group, median [min to max]: 8 [0 to 32] x 30 [10 to 37];  $U = 158.50$ ,  $p < 0.001$ ). Also, the (HAM-A)<sup>20</sup> (6 [0 to 17] x 12 [5 to 24];  $U = 312.50$ ,  $p < 0.001$ ) and the HAM-D<sup>19</sup> (5 [0 to 15] x 13.5 [4 to 34];  $U = 193.00$ ,  $p < 0.001$ ) showed higher scores for the non-responsive group.

In the responsive group 29 patients received pharmacological treatment alone, 13 received combined pharmacological and CBT treatment and only 1 received CBT alone. In the non-responsive group all patients received both treatments as this was a required criterion for treatment resistance.

#### 3) Data analysis

Data of the two independent groups were tested for normal distribution and for equality of variance between the groups. Differences between the groups were then evaluated using the Mann-Whitney U test for each TCI's dimensions. Each TCI variable was tested for correlations with scores of anxiety, depressive and obsessive-compulsive symptoms to indirectly detect possible interference of psychopathology on the results obtained. For this proposition we used the Spearman's test for linear correlation in each group independently. Testing was done for each group and not for the sample as a whole because of the gap between groups' psychopathology as demonstrated above.

Finally, the TCI's dimensions that showed significant differences between groups were further analyzed to detect which of their subscales were actually responsible for the differences between the groups.

Results were considered significant when  $p < 0.05$ . All tests were two-tailed. Data were processed with the statistical package SPSS 10.0 for windows (SPSS, Chicago, Illinois).

## Results

We found statistically significant differences between responders and non-responders on the self-directedness TCI dimension and a statistical trend (but not clinical) of difference in the persistence dimension. The non-respondent group scored lower in both. Data from all dimensions from the two groups are presented in Table 1.

Spearman's tests applied to the responsive group evidenced regular positive linear correlation of Y-BOCS scores with both novelty seeking ( $r_o = 0.394$ ;  $p = 0.008$ ) and harm avoidance ( $r_o = 0.597$ ;  $p < 0.001$ ), and regular negative linear correlation with both self directedness ( $r_o = -0.568$ ;  $p < 0.001$ ) and cooperativeness ( $r_o = -0.351$ ;  $p = 0.021$ ). Besides, harm avoidance had regular positive correlation with both HAM-A ( $r_o = 0.365$ ;  $p = 0.016$ ) and HAM-D scores ( $r_o = 0.533$ ;  $p < 0.001$ ). For the non-responsive group, the only significant finding was a positive regular correlation between harm avoidance and HAM-D ( $r_o = 0.322$ ;  $p = 0.033$ ). All the other TCI factors had no relationship with the scales of psychopathology.

## Discussion

Clinical sense usually associates comorbid personality disorders with poor outcomes in several psychiatry conditions.<sup>22</sup> Nevertheless, the first published trial testing this hypothesis is relatively recent, dating from 1983<sup>23</sup> and no previous study had investigated the impact of personality traits using a dimensional approach in clearly distinct subgroups as defined in this study. Our findings support the notion that there are distinct patterns of temperament and character in OCD patients who respond and do not respond to current treatments. Consistent with our hypothesis, non-responders had lower self-directedness.

According to Cloninger's theory,<sup>24</sup> the response to initiate, maintain or stop behaviors, although initially determined by temperament, can be modified by character traits. One such character trait is self-directedness, which basically refers to self-determination and "willpower", or the ability of an individual to control, regulate, and adapt behavior to fit the situation according to individually chosen goals and values<sup>25</sup> [apud<sup>24</sup>].

The lower self-directedness scores we observed in non-responders may interfere in purposeful efforts to overcome problems, leading to a more resistant form of illness. Cloninger et al.<sup>24</sup> have suggested that those who believe that their success is controlled by their own efforts

are more responsible and resourceful problem-solvers, whereas others are more alienated and apathetic, tending to blame other people and change circumstances for problems.<sup>26</sup> In other words, people with high self-directedness are more capable to engage in behaviors with delayed but "better" reinforcement, rather than an immediate but "worst" reinforcement. This idea is in accordance with the behavioral concept of "self-control", in which an individual learns how to choose and delays the "best" consequence for his/her behavior.<sup>27</sup>

In this sense, we hypothesize that if such a capacity is reduced in a given OCD patient, he (or she) will be more susceptible to engage in responses immediately reinforced by the allaying of anxiety (compulsions) to the detriment of responses that would have delayed but healthier consequences: preventing the compulsion. This rationale could explain, at least in part, why low self-directedness may have a negative impact on treatment outcomes.

Our results showed that harm avoidance scores were not different between OCD patients groups, a core characteristic of OCD patients as proposed by other studies.<sup>15,16</sup> We could then speculate that the non-responsive group could have had higher scores as an increased sensitivity to aversive stimulation establishes the negative reinforcement value of rituals. However, the studies cited above compared OCD patients to normal volunteers or to depressed patients, while our study compared respondent to non-respondent OCD patients. Therefore, harm avoidance could be considered a temperament feature of OCD patients, but doesn't distinguish treatment outcome.

Nevertheless, our results showed that harm avoidance scores vary according to the severity of obsessive-compulsive, depressive, and anxious symptoms (collinear variables), especially for the responsive group. This aspect leads us to agree with Lyoo et al.<sup>14</sup> regarding the fact that harm avoidance could be susceptible to treatment response. We believe that harm avoidance deserves further investigation as a treatment response factor, including longitudinal designs and adequate sample sizes.

As for persistence, our findings suggest that this TCI's dimension could eventually play a role in severity. However, the weak statistical significance and the lack of direct scientific evidence supporting this finding, imply that it should be read carefully.

Further alterations on TCI scores were also found to be associated with OCD, such as lower cooperativeness<sup>15</sup> and novelty seeking<sup>12,13</sup> compared to what has been found in normal volunteers and depressive patients.<sup>12</sup> However, such findings are isolated and related to non-OCD samples, which diminish their importance for the current discussion.

Our study has several limitations. Although, we used very effective criteria to distinguish respondent from non-respondent patients, as evidenced by higher Y-BOCS, HAM-D and HAM-A scores found in the non-responsive group, our cross-sectional design does

**Table 1 - Means and standard deviation ( $\pm$  SD) of the Cloninger's TCI factors for responsive and non-responsive groups**

Median (min to max)	Responsive n = 44	Non-responsive n = 45	Mann-Whitney U test	p-value
<b>Novelty seeking</b>	18 (3 to 30)	17 (4 to 28)	929.00	0.616
<b>Harm avoidance</b>	16 (5 to 22)	15 (8 to 24)	820.00	0.162
<b>Reward dependence</b>	4 (0 to 8)	5 (1 to 11)	982.00	0.947
<b>Persistence</b>	25 (8 to 43)	20 (9 to 36)	762.50	0.058
<b>Self-directedness</b>	32 (15 to 41)	31 (16 to 38)	663.00	0.007
<b>Cooperativeness</b>	16 (4 to 31)	15 (5 to 31)	865.50	0.306
<b>Self-transcendence</b>	5 (0 to 15)	13.5 (4 to 34)	933.00	0.639

min = minimum; max = maximum

not allow us to determine if a current non-responder subject will become a responder in the future and vice-versa. Besides, results might have been influenced by the fact that symptom severity at baseline was higher in the non-responder than in the responder group. Psychopathological features such as the higher depressive or anxiety levels described in the non-responsive group could have possibly biased the results. If true, the lower self-directedness found in this group could be secondary (as a defense mechanism) to the severity of the disorder itself as demonstrated by earlier studies.<sup>28-30</sup> However, our study's correlational tests showed that even though self-directedness was negatively correlated with Y-BOCS scores in the responsive group, it was not correlated neither with depressive (HAM-D) nor with anxiety (HAM-A) levels, and in the non-responsive group self-directedness had no correlation with scores on severity instruments. These findings are in accordance with other studies that showed that self directedness might be more specifically related with OCD than with depressive or anxiety disorders as a whole.<sup>12</sup>

Another point that should be taken into account is the fact that the treatment modality, i.e. CBT, pharmacotherapy or both combined, is probably affected differently by personality aspects. The design of the present study does not allow this sort of observations but certainly future research that evaluates such aspect would provide quite important information.

Finally, one point that should be taken into account is the fact that it is clinically difficult to distinguish axis I symptoms from

axis II personality traits, especially in psychiatric disorders that usually have an early onset and chronic course, such as OCD. For example, the results on the four subscales of self-directedness that differed significantly between responders and non-responders are closely linked to the main characteristics of obsessive-compulsive phenomena. In fact, inflated sense of personal responsibility for unwanted events is one of the core features of OCD. Future longitudinal studies investigating if personality traits started before or after OCD installation are warranted.

Concluding, our study found an association between lower Self-Directedness and treatment refractoriness in OCD patients. If the predictive value of self-directedness for the treatment outcome is confirmed in future longitudinal studies, specific psychotherapeutic interventions tailored to modify subcomponents of this personality trait should be tested in these patients.

#### Acknowledgments

This study was supported by grants from the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP, The State of São Paulo Research Foundation): no. 99/08560-6 to Dr. Miguel and no. 99/00170-4 to Dr. Bernik. Additional support was provided by the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPQ, Brazilian Council for Scientific and Technological Development; grants: no. 521369/96-7 to Dr. Miguel). We also thank Prof. Dr. Hermano Tavares for his comments.

#### Disclosures

Writing group member	Employment	Research grant <sup>1</sup>	Other research grant or medical continuous education <sup>2</sup>	Speakear's honoraria	Ownership interest	Consultant/ Advisory board	Other <sup>3</sup>
Felipe Corchs	IPq-HC-FMUSP	---	---	---	---	---	---
Fábio Corregiari	IPq-HC-FMUSP	---	---	---	---	---	---
Ygor Arzeno Ferrão	Universidade Metodista do Sul	---	---	Ely Lilly Boeringher Novartis Roche Solvay Pharma	---	---	---
Tania Takakura	IPq-HC-FMUSP	---	---	---	---	---	---
Maria Eugênia Mathis	IPq-HC-FMUSP	---	---	---	---	---	---
Antonio Carlos Lopes	IPq-HC-FMUSP	FAPESP	CAPES	---	---	---	---
Euripedes Constantino Miguel	IPq-HC-FMUSP	FAPESP CNPq	Novartis	---	---	CNPq FAPESP CAPES	---
Márcio Bernik	IPq-HC-FMUSP	FAPESP	---	---	---	---	---

\* Modest

\*\* Significant

\*\*\* Significant. Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.

Note: IPq-HC-FMUSP = Departamento e Instituto de Psiquiatria do Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo; FAPESP = Fundação de Amparo à Pesquisa do Estado de São Paulo; CNPq = Conselho Nacional de Desenvolvimento Científico e Tecnológico; CAPES = Coordenação de Aperfeiçoamento de Pessoal de Nível Superior.

For more information, see Instructions for authors.

## References

1. Torres AR, Lima MC. Epidemiologia do transtorno obsessivo-compulsivo: uma revisão. *Rev Bras Psiquiatr.* 2005;27(3):237-42.
2. Niederauer KG, Braga DT, Souza FP, Meyer E, Cordioli AV. Quality of life in patients with obsessive-compulsive disorder: a review. *Rev Bras Psiquiatr.* 2007;29(3):271-8.
3. Ferrão YA, Diniz JB, Lopes AC, Shavitt RG, Greenberg B, Miguel E. Resistance and refractoriness in obsessive-compulsive disorder. *Rev Bras Psiquiatr.* 2007;29(Suppl 2):S66-76.
4. Stein DJ, Andersen EW, Overo KF. Response of symptom dimensions in obsessive-compulsive disorder to treatment with citalopram or placebo. *Rev Bras Psiquiatr.* 2007;29(4):303-7.
5. Prazeres AM, Souza WF, Fontenelle LF. Cognitive-behavior therapy for obsessive-compulsive disorder: a systematic review of the last decade. *Rev Bras Psiquiatr.* 2007;29(3):262-7.
6. Miguel EC, Shavitt RG, Ferrao YA, Brotto SA, Diniz JB. How to treat OCD in patients with Tourette syndrome. *J Psychosom Res.* 2003;55(1):49-57.
7. Moritz S, Fricke S, Jacobsen D, Kloss M, Wein C, Rufer M, Katenkamp B, Farhumand R, Hand I. Positive schizotypal symptoms predict treatment outcome in obsessive-compulsive disorder. *Behav Res Ther.* 2004;42(2):217-27.
8. Baer L, Jenike MA. Personality disorders in obsessive compulsive disorder. *Psychiatr Clin North Am.* 1992;15(4):803-12.
9. McCrae RR, Costa PT Jr. Personality trait structure as a human universal. *Am Psychol.* 1997;52(5):509-16.
10. Cloninger CR, Przybeck TR, Svrakic, DM, Wetzel RD. *The Temperament and Character Inventory (TCI): a guide to its development and use.* St. Louis, Missouri: Center for Psychobiology of Personality; 1994.
11. Bejerot S, Schlette P, Ekselius L, Adolfsson R, von Knorring L. Personality disorders and relationship to personality dimensions measured by the Temperament and Character Inventory in patients with obsessive-compulsive disorder. *Acta Psychiatr Scand.* 1998;98(3):243-9.
12. Kusunoki K, Sato T, Taga C, Yoshida T, Komori K, Narita T, Hirano S, Iwata N, Ozaki N. Low novelty-seeking differentiates obsessive-compulsive disorder from major depression. *Acta Psychiatr Scand.* 2000;101(5):403-5.
13. Lyoo IK, Lee DW, Kim YS, Kong SW, Kwon JS. Patterns of temperament and character in subjects with obsessive-compulsive disorder. *J Clin Psychiatry.* 2001;62(8):637-41.
14. Lyoo IK, Yoon T, Kang DH, Kwon JS. Patterns of changes in temperament and character inventory scales in subjects with obsessive-compulsive disorder following a 4-month treatment. *Acta Psychiatr Scand.* 2003;107(4):298-304.
15. Cruz-Fuentes C, Blas C, Gonzalez L, Camarena B, Nicolini H. Severity of obsessive-compulsive symptoms is related to self-directedness character trait in obsessive-compulsive disorder. *CNS Spectr.* 2004;9(8):607-12.
16. Alonso P, Menchon JM, Jimenez S, Segalas J, Mataix-Cols D, Jaurrieta N, Labad J, Vallejo J, Cardoner N, Pujol J. Personality dimensions in obsessive-compulsive disorder: relation to clinical variables. *Psychiatry Res.* 2008;157(1-3):159-68.
17. First MB, Spitzer RL, Gibbon M, Williams JBW, Janet B. Structured Clinical Interview for DSM-IV Axis I Disorders (SCID), Clinical Version: Users Guide. In: Press AP, editor. Washington (DC); 1996.
18. Fuentes D, Tavares H, Camargo CHP, Gorenstein C. Inventário de Temperamento e Caráter de Cloninger - Validação da Versão em Português. *Rev Psiquiatr Clin.* 1999;26:363-76.
19. Hamilton M. Rating scale for depression. *J Neurol Neurosurg Psychiatry.* 1960;23:56-62.
20. Hamilton M. The assessment of anxiety states by rating. *Br J Med Psychol.* 1959;32(1):50-5.
21. Goodman WK, Price LH, Rasmussen SA, Mazure C, Fleischmann RL, Hill CL, Heninger GR, Charney DS. The Yale-Brown Obsessive Compulsive Scale. I. Development, use, and reliability. *Arch Gen Psychiatry.* 1989;46(11):1006-11.
22. Hantouche EG. Troubles obsessionnels compulsifs. *Encycl Med Chir.* Paris, France 1995;37-370-A-10, 14p.
23. Tyrer P, Casey P, Gall J. Relationship between neurosis and personality disorder. *Br J Psychiatry.* 1983;142:404-8.
24. Cloninger CR, Svrakic DM, Przybeck TR. A psychobiological model of temperament and character. *Arch Gen Psychiatry.* 1993;50(12):975-90.
25. Watson DL, Tharp RG. 5th ed. Pacific Grove, California: Brooks/Cole Publishing; 1989.
26. Lefcourt HM. Recent developments in the study of locus of control. *Prog Exp Pers Res.* 1972;6:1-39.
27. Goldiamond I. Self-control procedures in personal behavior problems. *Psychol Rep.* 1965;17(3):851-68.
28. Brown SL, Svrakic DM, Przybeck TR, Cloninger CR. The relationship of personality to mood and anxiety states: a dimensional approach. *J Psychiatr Res.* 1992;26(3):197-211.
29. Strakowski SM, Faedda GL, Tohen M, Goodwin DC, Stoll AL. Possible affective-state dependence of the Tridimensional Personality Questionnaire in first-episode psychosis. *Psychiatry Res.* 1992;41(3):215-26.
30. Black KJ, Sheline YI. Personality disorder scores improve with effective pharmacotherapy of depression. *J Affect Disord.* 1997;43(1):11-8.