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The role of temperament and character in relapse of major depression

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Abstract

Introduction: Major depression is a recurrent and chronic disorder, with many individuals experiencing relapse episodes throughout their lives. Despite extensive research, the factors contributing to recurrence remain unclear. This study explores the relationship between temperament (biological factors), character (social factors), and risk of relapse in depression.

Materials and Methods: This descriptive study included 100 patients in remission from major depressive disorder recruited from multiple clinical centers in Tehran, Iran. The patients were selected using a purposive sampling method. Eligibility was determined through a structured clinical interview. Participants completed the Beck Depression Inventory-II (BDI-II) and Cloninger's Temperament and Character Inventory (TCI). We analyzed the data using independent-sample t-tests to explore the relationship between personality components and relapse risk in depression and factor analysis to assess the reliability of the Persian version of the TCI in this clinical sample.

Results: Temperament components were not found to be associated with depression relapse. However, self-directedness, a character trait, was significantly linked to relapse. Remitted patients who had experienced a single episode of depression scored higher in self-directedness compared to those with multiple episodes, suggesting that self-directedness may play a crucial role in promoting favorable outcomes.

Conclusion: Biological components of personality do not seem to affect outcomes in patients with depression adversely. Conversely, the development of social components of personality, particularly self-directedness, may facilitate improvements in depressive states. These findings have significant implications for both research and clinical practice.

Keywords: Character, Major depression, Personality, Relapse, Temperament

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Introduction

Depression is a severe affective disorder that can last from weeks to years (1). Major Depressive Disorder (MDD) is now recognized as a recurrent condition, with most patients experiencing relapses (2). A depressive relapse is characterized by the return of symptoms following improvement, typically defined as

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symptom reduction of less than 50% (10). Recovery and remission are often marked by specific severity thresholds, such as a Beck Depression Inventory (BDI) score below five (4). MDD is chronic, with over an 80% recurrence risk. Patients typically experience four major episodes, each lasting around 20 weeks. Early-onset depression is linked to more episodes, longer duration, and higher comorbidity rates than late-onset depression (1).

Research has identified personality traits as significant risk factors for relapse in MDD (5). Premorbid personality traits may reflect underlying factors that influence the onset and recurrence of depression and the effectiveness of treatments (6). This raises the question of whether personality affects recovery outcomes, potentially correlating with poorer recovery and a higher chance of relapse.

Cloninger's biosocial personality model (7) posits that personality consists of seven traits: four genetically influenced temperaments (novelty seeking, harm avoidance, persistence, and reward dependence) and three environmentally shaped character dimensions (cooperativeness, self-directedness, and self-transcendence). The Temperament and Character Inventory (TCI) (8) assesses these traits. High character scores on the TCI are linked to more frequent positive emotions, and the interplay between temperament and character supports cognitive development and self-concept throughout life (9).

Population-based studies indicate that high harm avoidance, high persistence, and low self-directedness scores are predictors of future depression (10). Specifically, high persistence and reward dependence have been linked to increased depression risk (11). Clinical samples reinforce these findings, showing a positive correlation between harm avoidance and depression severity (12). Notably, harm avoidance scores tend to decrease from baseline following antidepressant treatment in MDD patients (13). Depressed individuals also show low self-directedness scores, which correlate inversely with depression severity (12). Furthermore, harm avoidance remains high during remission, and self-directedness stays low compared to healthy controls (14).

Although the connection between TCI dimensions and depression is well-established, few clinical studies have focused on relapse. For instance, Asano et al. tracked 69 remitted MDD patients and found that low self-directedness predicted a shorter time to recurrence, independent of other factors, while harm avoidance did not. Low self-directedness is also correlated with higher relapse risk. However, methodological limitations, such as continuous antidepressant use and variability in medication dosage, may have influenced recurrence rates. Additionally, sample quartiles for categorizing patients by harm avoidance and self-directedness may have reduced prognostic accuracy. The high dropout rate and small sample size limit its generalizability (15).

The primary aim of this study was to build on Asano et al.'s findings by examining drug-free patients with a history of depressive episodes. Previous research shows that having two or more episodes is a strong predictor of future relapse risk (2). Accordingly, this study examined the relationship between temperament, character traits, and relapse risk by comparing remitted patients with one episode of depression to those with multiple episodes. The secondary aim of this study was to evaluate the reliability of the Persian version of the TCI in a clinical setting, building on its previous validation in nonclinical populations.

Materials and Methods

This study was conducted over six months, from September 2005 to March 2006, across multiple community healthcare facilities in Tehran, Iran. Participants were compensated by being referred to other ongoing studies offering therapeutic benefits. Participants were recruited through a purposive sampling method, targeting individuals aged 18 to 65 who had experienced one or more episodes of MDD, as defined by the DSM-IV-TR criteria, and had been in the remission phase for at least six months. The inclusion criteria were as follows: 1) participants were aged between 18 and 65 years; 2) participants had a history of one or more episodes of major depressive disorder and were currently in remission for at least six months; 3) participants were not taking any antidepressant or other psychiatric medications at the time of the study; and 4) participants had not experienced any traumatic or stressful events in the last three months. The exclusion criteria included: 1) a history of schizophrenia or schizoaffective disorder; 2) current substance abuse; and 3) diagnoses of borderline personality disorder, organic mental disorders, or pervasive developmental disorder. The sample size for this

study was determined based on practical considerations rather than a specific statistical formula. A total of 100 participants were recruited, with 32 individuals in the group with a single episode and 68 individuals with multiple episodes of MDD. Based on previous research findings and the resources available for the study, this sample size was deemed sufficient to achieve adequate power for detecting differences between groups (1).

Research instruments

A) Demographic Checklist: A self-report demographic questionnaire was administered to collect data on participants' age, sex, education level, marital status, age of onset of depression, and the number of previous depressive episodes.

B) Temperament and Character Inventory (TCI): Participants' temperament and character traits were assessed using the Temperament and Character Inventory (8), a 120-item, true-false, self-report questionnaire that measures seven dimensions of personality: four temperament dimensions (persistence, novelty seeking, reward dependence, and harm avoidance) and three character dimensions (cooperativeness, self-directedness, and self-transcendence). The reliability and validity of the Persian version of the TCI have been previously established in nonclinical populations (16).

C) Beck Depression Inventory-II (BDI-II): The severity of depressive symptoms was measured using the Farsi version of the Beck Depression Inventory-II (BDI-II), a 21-item self-report measure of depression. BDI-II assesses affective, cognitive, motivational, behavioral, and biological symptoms of depression, with scores ranging from 0 to 63. The psychometric properties of the Persian version of the BDI-II have been reviewed elsewhere (17).

D) Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, revised (DSM-IV-TR): To assess mental disorders based on the criteria outlined in the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, revised (DSM-IV-TR; 18), a clinical psychologist administered the Structured Clinical Interview for DSM Disorders-Clinician Version (SCID-CV) (19). The Persian version of the SCID-CV (20) was utilized for standardized assessments.

Participants were identified by reviewing medical records at community healthcare facilities to determine if they met the inclusion criteria. Those who met the screening criteria were contacted and informed about the purpose and procedures of study. Interested participants confirmed their eligibility for the Structured Clinical Interview for DSM-IV-TR (SCID). Upon confirmation, they were asked to consent to participate in the study. Then, they completed research questionnaires, respectively. Participants were categorized based on key clinical characteristics, including gender, level of education, age of onset of depression, and severity of depression. Additionally, participants were grouped into two categories according to the number of previous MDD episodes (one episode vs. more than one episode).

Statistical analyses were conducted using independent samples t-tests to compare demographic and clinical characteristics between groups and Chi-square tests to examine associations between categorical variables. Cohen's d was used to calculate the standardized mean difference between groups, with values of 0.2, 0.5, and 0.8 representing small, medium, and large effect sizes, respectively. Cramér's V was applied to assess the strength of associations between categorical variables, with values of 0.1, 0.3, and 0.5 indicating small, medium, and large associations, respectively (21).

Results

Reliability and factor analysis of the Persian version of the TCI in a remitted depressed sample.

As previously reported, the Persian version of the TCI demonstrated reliability in nonclinical samples (16). To ensure its applicability to the remitted depressed sample, a factor analysis was conducted. The analysis indicated that the temperament and character components were not entirely independent in this version. Consequently, the reliability of each component was reassessed, and low-validity statements in the translated questionnaire were identified and removed. Upon reevaluation, all components except persistence ($\alpha = 0.26$) demonstrated acceptable reliability ($\alpha > 0.5$). To resolve this, persistence was combined with reward dependence, the subscale from which it was originally derived in the revised TPQ (22,23). The updated factor analysis confirmed acceptable internal consistency across TCI subscales and established the independence of

the temperament and character components. In term of demographic variables, participants with only a single depressive episode and no history of relapse did not significantly differ from those with a history of relapse in terms of age, gender, education, depression severity, or age at depression onset. However, analysis of the age of onset for the first depressive episode showed a marginal difference between single-episode remitters (24.34 ± 8.33 years) and multi-episode remitters (21.63 ± 7.06 years), t(98)= 1.7, *P*= 0.09, d= 0.33, 95% CI [-0.39, 5.81]. Although noteworthy, this trend did not reach statistical significance.

Furthermore, a significant difference was found in remission duration, with single-episode remitters experiencing longer periods of remission (49.89 ± 76.01 months) compared to multi-episode remitters (13.31 ± 17.94 months), t(98)= 2.69, *P*= 0.01, d = 0.74, 95% CI [12.05, 64.01]. This indicates greater remission stability in single-episode remitters (Tables 1 and 2).

Table 1. Participants' demographic information

Variable	Group 1: Single-episode remitters (Mean (SD) or N (%))	Group 2: Multi-episode remitters (Mean (SD) or N (%))
N	32	68
Age (Year)	30.13 (9.51)	31.54 (9.41)
Education (Year)	10.75 (1.16)	10.87 (1.17)
Gender		
Male	3 (9.4)	13 (19.1)
Female	29 (90.6)	54 (79.4)
Prefer not to disclose	0	1 (1.5)
Marital status		
Married	15 (51.7)	21 (61.8)
Single	14 (48.3)	13 (38.2)
Prefer not to disclose	3 (9.4)	4 (5.9)

Continuous variables are presented as Mean (SD); categorical variables are presented as N (%). Percentages may not total 100% due to participants preferring not to disclose certain information.

Table 2. Comparison of single-episode and multi-episode remitter participants

Variable	Group 1: Single-episode remitters (Mean (SD) or N (%))	Group 2: Multi-episode remitters (Mean (SD) or N (%))	Statistic (t/χ^2)	Effect size (d/V)	95% CI	P
Categorical variables						
Gender						
Male	3 (9.4)	13 (19.1)	1.54	0.15	NA	0.21
Female	29 (90.6)	55 (80.9)				
Marital status						
Married	15 (51.7)	21 (61.8)	0.94	0.10	NA	0.33
Single	14 (48.3)	13 (38.2)				
Continuous variables						
Age (Years)	30.13 (9.51)	31.54 (9.41)	-0.70	0.15	[-0.27; 0.60]	0.49
Education (Years)	4.75 (1.16)	4.87 (1.17)	-0.47	0.10	[-0.32; 0.52]	0.64
Depression score	16.63 (12.8)	19.24 (9.68)	-1.15	0.24	[-0.18; 0.66]	0.25
Age at first episode (Year)	24.34 (8.33)	21.63 (7.06)	1.7	0.36	[-0.79; 0.06]	0.09
Last remission length (Month)	49.89 (76.01)	13.31 (17.94)	2.69	0.81	[-1.24; -0.37]	0.01*

N (%) was used for categorical variables and Mean (SD) for continuous variables. T-tests and Chi-square tests were performed, with effect sizes reported as Cohen's d and Cramér's V, respectively. *P< 0.05

Group differences based on the TCI scores

After validity correction, participants were compared based on their scores on TCI. Results showed that two study groups differed significantly in self-directedness, such that participants without relapse history (i.e., experienced only one depression episode) scored significantly higher in the self-directedness subtest compared to participants with a history of relapse (*P*= 0.048, t= 1.94). Harm avoidance and reward dependence in patients with relapse history, although not significant, were higher than in the group with only one episode of depression. No significant differences were found between the two groups in self-transcendence and cooperativeness. Table 3 presents the results of comparing temperament and character scores, stratified by relapse history.

Table 3. Comparing participants in groups based on their TCI scores

	Group 1	Group 2				
Variable	**M (SD)**	**M (SD)**	**t**	**95%CI**	**d**	**P**
Novelty seeking	7.31 (3.87)	6.50 (2.83)	1.06	[-0.7; 0.17]	0.25	0.29
Harm avoidance	10.84 (5.39)	12.50 (3.92)	-1.55	[-0.05; 0.80]	0.37	0.13
Reward-dependence	8.89 (2.61)	9.20 (2.54)	-0.57	[-0.3; 0.54]	0.12	0.57
Self-directedness	12.52 (5.07)	10.59 (4.33)	1.94	[-0.85; 0.00]	0.42	0.05*
Self-transcendence	7.88 (3.9)	8.35 (3.03)	-0.67	[-0.28; 0.56]	0.14	0.51
Cooperativeness	13.50 (3.31)	12.88 (3.47)	0.84	[-0.60; 0.24]	0.18	0.40

Group 1: Remitted patients with one depression episode; Group 2: Remitted patients with multiple episodes. Values are rounded to two decimal places; the upper CI limit [0.00] and *P*-value (0.05) reflect this rounding. *$P< 0.05$

Discussion

This study explored the relationship between temperament and character traits and the relapse of depression. The study compared remitted patients with one or multiple relapse histories based on their TCI scores. Consistent with previous research (24,25), demographic data indicated that individuals with more relapses were diagnosed at a younger age and had shorter remission periods between episodes. This finding suggests that an earlier onset of depression may contribute to a higher likelihood of relapse, potentially due to the cumulative impact of chronicity, risk factors, and neurobiological changes over time (10).

Furthermore, the analysis revealed that while novelty seeking, harm avoidance, and reward dependence differed between participants with and without a history of relapse, these differences were not significant. Consistent with the findings of Asano et al. (15), the current study suggests that temperament traits do not contribute to depression relapse. Similarly, in line with recent evidence (12), no significant differences in self-transcendence or cooperativeness were observed between patients with and without a history of relapse.

Notably, among all character components, only self-directedness was associated with relapse. Specifically, low self-directedness was found to correlate with an increased risk of depression relapse. This finding is consistent with previous research indicating that patients with lower self-directedness scores tend to experience a shorter time to relapse from remission than those with higher self-directedness scores (12-15). Moreover, this result supports earlier evidence suggesting that individuals with high self-directedness have a better prognosis for recovery from depression (12,14) or are less likely to develop dysthymia (26). Low self-directedness may contribute to depression relapse by fostering apathy, lack of goals, diminished self-striving, externalization, and an incongruent second nature, suggesting its direct involvement in relapse pathogenesis. Conversely, developing self-directedness may protect against depression by promoting psychological resources such as self-acceptance, problem-solving, and coping strategies, which help mitigate life stressors. It may also reflect executive functions that aid individuals in navigating challenging situations, thereby providing a protective buffer against depression (27,28). Additionally, higher self-directedness is associated with a stronger social support network (29).

Given these relationships, interventions designed to enhance self-directedness may improve coping skills and social support, potentially helping to prevent or delay the recurrence of depression. Such interventions

will likely improve self-esteem, foster a sense of purpose, increase accomplishment, and lead to more fulfilling interpersonal relationships.

Finally, based on the present data, we confirmed the applicability of the TCI Persian version on remitted depressed samples. These results suggest that the TCI Persian version is a reliable tool for assessing temperament and character traits in clinical populations, particularly among remitted depressed individuals. However, to ensure robust internal consistency, subscales with low reliability, such as persistence, may require revision. The findings highlight the importance of ongoing refinement of assessment tools to enhance their applicability and reliability in clinical settings.

An important limitation of this study is its focus solely on depression symptoms without measuring anxiety severity. Since anxiety often coexists with depression, it may have specific associations with personality profiles that were not explored here. Additionally, the cross-sectional design limits the ability to analyze causation. Future longitudinal studies are needed to track individuals over time with comprehensive measurements to address this causal question.

Conclusion

This study explored the relationship between temperament and character traits and depression relapse by comparing remitted patients with a single depressive episode to those with recurrent episodes. The results indicate that temperament does not impact relapse, but character traits—especially high self-directedness—may influence treatment responses in major depressive disorder. From a clinician's perspective, there is encouraging news: temperament components (biological factors) do not seem to worsen outcomes for those suffering from depression.

Instead, the results suggest that promoting character maturation could have a positive influence on depressive states. While these findings enhance our understanding of how personality profiles may impact affective well-being, further research is needed to confirm these patterns and explore their clinical relevance in greater depth.

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Conflicts of Interests

The author declares no conflicts of interest.

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Ethical Considerations

Participants were assured that their data would remain confidential and used solely for research. The ethical committee of the University of Social Welfare and Rehabilitation Sciences approved this study.

Authors' Contributions

The author independently designed, conducted, and authored all study aspects, ensuring its integrity and quality.

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