

Temperament, character traits, and alexithymia in patients with panic disorder

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Background: The primary aim of the present study was to compare temperament and character traits and levels of alexithymia between patients with panic disorder and healthy controls.

Methods: Sixty patients with panic disorder admitted to the psychiatry clinic at Firat University Hospital were enrolled in the study, along with 62 healthy age-matched and sex-matched controls. The Structured Clinical Interview for DSM-IV axis I (SCID-I), Temperament and Character Inventory (TCI), Toronto Alexithymia Scale (TAS-20), and Panic Agoraphobia Scale (PAS) were administered to all subjects.

Results: Within the temperament dimension, the mean subscale score for harm avoidance was significantly higher in patients with panic disorder than in controls. With respect to character traits, mean scores for self-directedness and cooperativeness were significantly lower than in healthy controls. Rates of alexithymia were 35% (n=21) and 11.3% (n=7) in patients with panic disorder and healthy controls, respectively. The difficulty identifying feelings subscale score was significantly higher in patients with panic disorder ($P=0.03$). A moderate positive correlation was identified between PAS and TAS scores ($r=0.447$, $P<0.01$). Moderately significant positive correlations were also noted for PAS and TCI subscale scores and scores for novelty seeking, harm avoidance, and self-transcendence.

Conclusion: In our study sample, patients with panic disorder and healthy controls differed in TCI parameters and rate of alexithymia. Larger prospective studies are required to assess for causal associations.

Keywords: panic disorder, temperament, character, personality, alexithymia

Introduction

Panic disorder is characterized by panic attacks.¹ Episodes are typically sudden, spontaneous, and accompanied by intense somatic and cognitive symptoms. Panic disorder is also often accompanied by personality disorders, with avoidant, histrionic, and borderline personality disorders being particularly common.^{2,3} In addition, avoidant personality disorder characteristics are commonly observed in patients with panic disorder with phobic avoidance.⁴

Cloninger has developed a psychobiological theory to define personality structure and development. In his model, temperament and personality dimensions are two essential cornerstones of personality. The “temperament component” is four-dimensional, consisting of novelty seeking, harm avoidance, reward dependence, and persistence. Meanwhile, the “character component” is three-dimensional, comprised of self-directedness, cooperativeness, and self-transcendence. Temperament dimensions reflect the biological components of personality, which are hereditary. Temperament is distinguished from character by individual differences in interpersonal relationships and object relations. Character dimensions, meanwhile, are molded by life events, culture, and social learning.⁵⁻⁸

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Alexithymia is defined as difficulty realizing, identifying, discriminating, and expressing one's own feelings and the feelings of others.⁹ There is a positive relationship between the "identifying difficulties and describing feelings" dimension of alexithymia and anxiety symptoms, in that difficulties identifying and describing feelings themselves increase levels of anxiety.¹⁰ In one study of patients with panic disorder who showed higher alexithymia levels than controls, there was impairment in feeling and bodily sensations in terms of information processing.¹¹ The study results further suggested that competence in feeling and bodily sensations could be protective in populations at high risk for panic disorder. It was suggested in the literature that, relative to alexithymia, Cloninger's psychobiological model of personality could predict psychopathological symptoms in a distinct and meaningful manner,¹² and a vast majority of alexithymic subjects were also highly anxious, in contrast with the low proportion among nonalexithymic subjects.¹³

There are few studies in the literature that have examined the relationship between alexithymia and temperament-character traits in patients with panic disorder. In this study, our primary objective was to identify and compare rates of alexithymia and temperament and character traits in patients with panic disorder. Our secondary objective was to compare patients with panic disorder and healthy controls in terms of these psychological parameters.

Patients and methods

Sample

Sixty-seven patients consecutively referred to the outpatient psychiatry clinic at Firat University Hospital were evaluated. Of these, seven either refused to participate in the study or were otherwise ineligible for a variety of reasons, including illiteracy, another accompanying Axis I disorder, a general medical condition that could produce physiological effects indistinguishable from panic disorder, a neurological disease, or either a past or present history of psychoactive substance abuse and/or addiction, leaving 60 patients with panic disorder for final analysis. In addition, 62 healthy age-matched and sex-matched controls who otherwise met the study criteria were recruited. The study was approved by the Firat University Faculty of Medicine ethics committee. A diagnosis of panic disorder was made by an attending psychiatrist in accordance with the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) using the Structured Clinical Interview for Axis I Disorders (SCID-I).

Data collection tools

Sociodemographic and clinical information

Sociodemographic and clinical information was collected using a questionnaire consisting of seven questions regarding age, sex, marital status, educational level, and economic status, and for patients with panic disorder, the onset and duration of symptoms.

DSM-IV structured clinical interview for axis I disorders

The SCID-I is a semistructured clinical interview designed to assess for DSM-IV Axis I disorders.¹⁴ In the current study, we used the Turkish version, for which satisfactory reliability and validity have been demonstrated by Çorapçıoğlu and Aydemir.¹⁵

Temperament and Character Inventory

The Temperament and Character Inventory (TCI) was developed by Cloninger, based on his personality theory. It is a self-rating scale composed of seven subscales encompassing 240 items, all with "right" and "wrong" response options. The seven subscales comprise four temperament subscales (novelty seeking, harm avoidance, reward dependence, and persistence) and three character subscales (self-directedness, cooperativeness, and self-transcendence).^{6,7} Satisfactory reliability and validity for the Turkish version were confirmed in a study by Köse et al.¹⁶

Toronto Alexithymia Scale

The Toronto Alexithymia Scale (TAS, also known as the TAS-20) includes 20 questions across three dimensions, ie, difficulty identifying feelings, difficulty describing feelings, and externally oriented thinking.¹⁷ People who score 61 or higher are considered to have alexithymia. The TAS has undergone numerous adaptations, with the first translation to Turkish done by Dereboy.¹⁸

Panic and Agoraphobia Scale

The Panic and Agoraphobia Scale (PAS) evaluates panic attack features (three questions, plus one question that is not scored), agoraphobia or avoidance behaviors (three questions), anticipatory anxiety (two questions), disability (three questions), and health concerns (two questions).¹⁹ A validity and reliability study for the Turkish version has been published by Tural et al.²⁰

Statistical analysis

The data were analyzed using SPSS version 15.0 software (SPSS Inc., Chicago, IL, USA). Student's *t*-tests were used

for intergroup comparisons of continuous variables, with Pearson's chi-square tests utilized for categorical variables. Pearson correlation analysis was performed to assess the relationship between continuous variables. For all analyses, $\alpha < 0.05$ was considered significant. However, for all comparisons, a modified Bonferroni correction ($\alpha < 0.01$) was applied to reduce the risk of type I error.

Results

Sixty patients met the DSM-IV-TR diagnostic criteria for panic disorder and were deemed suitable for enrolment, as well as 62 healthy controls matched for age and sex. No statistically or clinically significant differences were noted between cases and controls in terms of sociodemographic characteristics ($P > 0.05$). For the patients, the mean age of onset of panic disorder was 31.13 ± 11.39 years, the mean duration of panic disorder symptoms was 4.87 ± 4.5 years, and the mean PAS score was 20.55 ± 11.83 (Table 1).

Among patients with panic disorder, the fatigability and asthenia harm avoidance subscale score (HA4) was significantly higher than in controls. Conversely, the total self-directedness score and the SD1, SD2, and SD3 (responsibility, purposefulness, resourcefulness) subscale scores were significantly lower in those with panic disorder, as was the social acceptance cooperativeness (C1) subscale score ($P < 0.01$, Table 2).

Overall, 33.3% ($n=20$) of cases and 11.3% ($n=7$) of controls met the criteria for alexithymia ($P=0.003$).

In addition, the TAS-20 and TAS-F1 (difficulty identifying feelings) scores were significantly higher in the panic disorder group (Table 3).

A moderately strong positive correlation was identified between the PAS and TAS scores. In addition, statistically significant moderately strong positive correlations were evident between PAS scores and the novelty seeking, harm avoidance, and self-transcendence subscale scores of the TCI ($P < 0.01$, Table 4).

Further analysis of the correlations between the TAS and TCI revealed: a positive weak correlation between the TAS and harm avoidance score ($r=0.254$; $P=0.005$); a moderate negative correlation between the TAS and self-directedness score ($r=-0.481$; $P < 0.001$); and a weak negative correlation between the TAS and cooperativeness score ($r=-0.321$; $P < 0.001$). No statistically significant correlations were detected between the TAS score and any other TCI subscale.

Discussion

In our study, within the temperament dimension, the mean total harm avoidance and fatigability (HA4) subscale scores were significantly higher in patients with panic disorder than in controls. This makes sense, because individuals with high harm avoidance scores are often quite negative in their outlook regarding the potential for future problems; as such, they may exhibit avoidance behaviors, fear of uncertainty, shyness, insecurity,

Table 1 Demographic and clinical characteristics in patients with panic disorder and controls

	PD group	Control group	Statistical analysis	
			t/χ^2	P-value
Sex, n (%)				
Female	41 (68.3)	41 (66.1)	0.06	0.79
Male	19 (31.7)	21 (33.9)		
Marital status, n (%)				
Married	33 (55.0)	26 (41.9)	3.85	0.14
Single/divorced	27 (45.0)	36 (58.1)		
Educational level, n (%)				
Literate	2 (3.3)	2 (3.2)	0.101	0.99
Primary school	12 (20.0)	13 (21.0)		
High school	22 (36.7)	23 (37.1)		
College	24 (40.0)	24 (38.7)		
Economic status, n (%)				
Low/middle	3 (88.3)	60 (93.2)	3.65	0.16
High	7 (11.7)	2 (6.2)		
Age (mean $\pm$ SD)	35.2 ± 8.8	36.2 ± 7.8	0.44	0.96
Age of PD onset (mean $\pm$ SD)	31.1 ± 11.3			
Total duration of PD, years (mean $\pm$ SD)	4.8 ± 4.5			
PAS score (mean $\pm$ SD)	20.5 ± 11.8			

Note: t/χ^2 denotes the Student's *t*-test and the chi-squared test, respectively.

Abbreviations: PD, panic disorder; PAS, Panic and Agoraphobia Scale; SD, standard deviation.

Table 2 Temperament and character TCI inventory scores in patients with panic disorder and controls

	PD group (n=60) mean $\pm$ SD	Control group (n=62) mean $\pm$ SD	P-value
Temperament			
Novelty seeking	18.1 $\pm$ 5.8	18.8 $\pm$ 4.4	0.442
Exploratory excitability	5.4 $\pm$ 2.3	5.7 $\pm$ 1.9	0.399
Impulsiveness	3.9 $\pm$ 1.8	4.3 $\pm$ 1.9	0.400
Extravagance	4.4 $\pm$ 2.0	4.6 $\pm$ 2.2	0.677
Disorderliness	4.1 $\pm$ 2.0	4.0 $\pm$ 1.6	0.613
Harm avoidance	19.4 $\pm$ 7.5	16.6 $\pm$ 6.2	0.034
Anticipatory worry	6.2 $\pm$ 2.9	5.5 $\pm$ 2.2	0.143
Fear of uncertainty	4.6 $\pm$ 1.9	4.0 $\pm$ 1.8	0.932
Shyness	3.4 $\pm$ 2.3	3.3 $\pm$ 2.2	0.820
Fatigability	5.1 $\pm$ 2.2	3.7 $\pm$ 2.1	0.001*
Reward dependence	14.0 $\pm$ 4.2	13.0 $\pm$ 2.8	0.146
Sentimentality	7.2 $\pm$ 2.2	6.8 $\pm$ 1.4	0.173
Attachment	4.5 $\pm$ 2.0	3.9 $\pm$ 1.7	0.061
Dependence	2.1 $\pm$ 1.3	2.3 $\pm$ 1.5	0.514
Persistence	4.3 $\pm$ 1.9	5.1 $\pm$ 1.8	0.022
Character			
Self-directedness	22.6 $\pm$ 8.8	27.3 $\pm$ 6.3	0.001*
Responsibility	3.7 $\pm$ 2.4	4.7 $\pm$ 1.8	0.007*
Purposefulness	4.5 $\pm$ 2.0	5.7 $\pm$ 1.7	0.001*
Resourcefulness	2.3 $\pm$ 1.4	3.0 $\pm$ 1.2	0.002*
Self-acceptance	4.6 $\pm$ 2.6	5.4 $\pm$ 2.5	0.055
Enlightened second nature	7.5 $\pm$ 2.6	8.2 $\pm$ 1.9	0.803
Cooperativeness	25.3 $\pm$ 8.8	27.9 $\pm$ 6.6	0.063
Social acceptance	4.7 $\pm$ 2.1	5.7 $\pm$ 1.7	0.007*
Empathy	3.6 $\pm$ 1.7	4.2 $\pm$ 1.5	0.034
Helpfulness	4.1 $\pm$ 1.7	4.5 $\pm$ 1.4	0.193
Compassion	6.4 $\pm$ 2.9	6.5 $\pm$ 2.9	0.904
Pure-hearted conscience	6.2 $\pm$ 2.1	6.7 $\pm$ 1.5	0.082
Self-transcendence	18.1 $\pm$ 6.4	19.5 $\pm$ 4.8	0.176
Self-forgetful	5.7 $\pm$ 2.6	6.1 $\pm$ 2.0	0.332
Transpersonal identification	5.1 $\pm$ 2.2	5.3 $\pm$ 1.9	0.652
Spiritual acceptance	7.2 $\pm$ 2.9	8.0 $\pm$ 2.6	0.121

Note: *Statistically significant.

Abbreviations: PD, panic disorder; SD, standard deviation; TCI, Temperament and Character Inventory.

pessimism, anxious personality traits, and anxiety and depressive disorder traits.^{5,6} Several earlier studies investigating the temperament characteristics of patients with panic disorder have also found these patients to have higher

harm avoidance scores than controls.^{21–26} Additionally, in the literature, high harm avoidance dimension categorical scores have been reported to be associated with cluster C personality disorders.^{27,28}

Within the character dimension, total self-directedness scores, as well as the responsibility (SD1), purposefulness (SD2), and resourcefulness (SD3) subscale scores and the social acceptance (C1) subscale score for cooperativeness were significantly lower in patients with panic disorder. Again, this makes sense, because self-directed individuals tend to be confident, responsible, reliable, and resourceful people who have personal goals and are at peace with themselves.²⁹ Conversely, individuals with low self-directedness scores typically blame others, are usually incompetent, and undisciplined.^{6,7} Individuals with TCI

Table 3 Alexithymia TAS scores in patients with panic disorder and controls

	PD group (n=60)	Control group (n=62)	t-test	P-value
TAS	53.0 $\pm$ 11.5	48.4 $\pm$ 9.8	2.385	0.019*
TAS-F1	18.2 $\pm$ 6.2	14.9 $\pm$ 5.8	3.052	0.031*
TAS-F2	12.9 $\pm$ 3.9	12.5 $\pm$ 4.1	0.543	0.588
TAS-F3	21.8 $\pm$ 3.6	21.0 $\pm$ 3.2	1.299	0.211

Note: *Statistically significant.

Abbreviations: PD, panic disorder; TAS, Toronto Alexithymia Scale; TAS-F1, difficulty identifying feelings; TAS-F2, difficulty describing feelings; TAS-F3, externally orientated thinking.

Table 4 Correlations of PAS scores with TAS and TCI scores in patients with panic disorder

	PAS score	
	<i>r</i>	<i>P</i> -value
Temperament		
Novelty seeking	0.324	0.012*
Harm avoidance	0.533	<0.01*
Reward dependence	0.201	0.124
Persistence	0.032	0.809
Character		
Self-directedness	−0.185	0.157
Cooperativeness	−0.006	0.964
Self-transcendence	0.461	<0.01*
TAS score	0.447	<0.01*

Note: *Statistically significant.

Abbreviations: TAS, Toronto Alexithymia Scale; PAS, Panic Agoraphobia Scale; TCI, Temperament and Character Inventory.

self-directedness subscale scores lower than 20 are weak in terms of self-directedness and are likely to be diagnosed with a personality disorder. They also find it difficult to take responsibility, choose meaningful goals, accept limitations, and develop discipline habits.³⁰ In our study, the self-directedness total score and the SD1, SD2, and SD3 subscale scores were significantly lower in patients than in controls. Having low scores on the self-directedness scale may be interpreted as failing to control one's own behavior and manage interpersonal relationships. As such, personality disorders may coexist.

People with high levels of cooperativeness perceive themselves as part of society. Consequently, they are identified as people who are capable of empathizing with and understanding others and, as such, are compassionate, supportive, and principled. Conversely, individuals with low levels of cooperativeness tend to pay attention only to themselves, and are intolerant and critical of others as well as being opportunistic.^{5,8} In our study, cooperativeness scores were significantly lower in patients with panic disorder than in controls. Having low scores on the cooperativeness scale may be interpreted as engaging more with self, being intolerant of others, and having a desire to live apart from society. Cloninger et al reported that low self-directedness and cooperativeness subscale scores may predict the development of a personality disorder.⁶

Alexithymia is a recently coined term in clinical practice. It is defined as difficulty realizing, recognizing, discriminating, and expressing feelings.³¹ According to Taylor,¹⁷ alexithymia is not a disease; rather, it is a condition related to personality. However, sociocultural factors are also influential in the development of alexithymia. According to

Pennebaker,³² alexithymic traits are linked to self-reflection skills and emotional inhibition. Because of deficiencies in processing emotions during cognitive processes, the individual focuses on physical elements of emotional stimulation. This condition is consistent with the somatic complaints often observed in alexithymic patients. Paez et al³³ suggested that alexithymia, as a personal tendency and coping style, has four components that include deficiencies in thinking and communicating about emotions, dissociation between emotional and physical reactions, and a conflict between a tendency to give away secrets and to suppress this tendency.

Investigators examining the relationship between anxiety and alexithymia have reported that alexithymia is primarily associated with deficient recognition and identification of emotions.^{10,34} Consistent with these findings, Motan and Gencoz³⁴ highlighted a positive relationship between difficulties within the "recognizing and identifying feelings" dimension of the TAS-20 and anxiety symptoms. In addition, in this study, an inverse relationship was observed between difficulties communicating feelings and anxiety symptoms. Accordingly, in this study, we observed that as anxiety symptoms increased, difficulties expressing feelings decreased. In the opposite case, people who have difficulty expressing feelings avoid these types of relationship due to their coping mechanisms, so can reduce their anxiety levels. In another study, anxiety and panic symptoms and verbal cognitive skills were found to be associated with alexithymia; and the comorbidity of alexithymia in patients with panic disorder was found to adversely affect verbal cognitive function.³⁵

In a study using the TAS-20 to assess for the presence of alexithymia in panic disorder, the prevalence of alexithymia was found to be 39%.³⁶ In another study performed using the TAS-20, the prevalence of alexithymia was 34%.³⁷ In a third follow-up study in which 52 adult patients diagnosed with panic disorder were enrolled, the prevalence of alexithymia was 44.2%.³⁸ In our study, in which we used the TAS-20, 33% of our patients with panic disorder and 11.3% of our controls were alexithymic. TAS-20 and TAS-F1 scores were significantly higher in patients with panic disorder. One study has suggested that there is impairment in emotional and bodily sensation information processing in subjects with panic disorder, and emotional and bodily sensation competencies could be protective factors for panic disorder in high-risk populations.¹¹ Findings from another study indicated that, because alexithymic patients are unable to identify, differentiate, and articulate their emotions, they make less use of individualized psychotherapy, and there is some tendency

for alexithymic patients to prefer group therapy instead of individual psychotherapy.³⁹

Accordingly, we suggest that patients with panic disorder are more alexithymic, may have more difficulty identifying feelings than others, and want to make less use of individualized psychotherapy. Finally, total alexithymia scores and panic agoraphobia scale scores were positively correlated in our sample, ie, agoraphobic avoidance increases with increasing alexithymia scores. On correlation analysis assessing the relationship between panic agoraphobia scale scores and temperament and character subscores, there was a positive relationship with novelty seeking, harm avoidance, and self-transcendence scores. Accordingly, it can be said that agoraphobic avoidance should be expected to be present more often in alexithymic, impulsive, and anxious individuals. In a study examining the relationship between alexithymia and temperament-character traits, the regression analysis identified low self-directedness, low reward dependence, and to a minor degree harm avoidance dimensions of TCI as independent predictors for alexithymia.⁴⁰ In our study, on correlation analysis of TAS and TCI scores, a positive correlation was observed between TAS and harm avoidance, but a negative correlation between TAS and self-directedness and cooperativeness scores by correlation analysis of TAS and TCI scores. In another study in male alcohol-dependent inpatients suffering from intense anxiety symptoms, TAS-20 scores correlated positively with harm avoidance and self-transcendence and negatively with self-directedness and cooperativeness.⁴¹ In another study, it was seen that alexithymia was correlated with depression and that TAS-20 total and subscale scores were correlated with harm avoidance, low self-directedness, low cooperativeness, and low reward dependence scores.^{42,43} Low self-directedness and cooperativeness scores that predict personality pathology may suggest an association with alexithymia and personality disorders.⁴⁻⁷ Likewise, it may be argued that alexithymic individuals are likely to have higher harm avoidance scores.

Our study has several limitations, including its cross-sectional design that precludes any determination of causality between variables, the relatively small subject samples that limit power and generalizability, and the exclusive use of self-report questionnaires. Despite these limitations, we feel that our study has merit as a precursor analysis in which personality dimensions and alexithymic traits are evaluated together for the first time.

In conclusion, in this study comparing 60 adults with panic disorder and 62 age-matched and sex-matched controls,

intergroup differences were evident both in temperament and character inventory scores, and in rates and scores for alexithymia. It is noteworthy that harm avoidance was greater among patients with panic disorder, while self-directedness and cooperativeness was lower. Greater harm avoidance seen in patients with panic disorder may suggest a chronic course, while lower self-directedness and cooperativeness may suggest a higher risk of concomitant alexithymia and personality disorder. In addition, the presence of alexithymia in these patients might predict agoraphobic avoidance, fear, worrying, and anxiety. This being said, controlled and long-term prospective studies with larger sample sizes are needed to more definitively investigate the relationships between these various constructs.

Disclosure

The authors report no conflicts of interest in this work.

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