

Does Personality Matter? Temperament and Character Dimensions in Panic Subtypes

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ABSTRACT

Introduction: Symptomatic heterogeneity in the clinical presentation of Panic Disorder (PD) has led to several attempts to identify PD subtypes; however, no studies investigated the association between temperament and character dimensions and PD subtypes. The study was aimed to verify whether personality traits were differentially related to distinct symptom dimensions.

Methods: Seventy-four patients with PD were assessed by the Mini-International Neuropsychiatric Interview (M.I.N.I.), and the Temperament and Character Inventory (T.C.I.). Thirteen panic symptoms from the M.I.N.I. were included in a factor analysis with varimax rotation. A correlation analysis (Pearson's correlation), a linear regression analysis, and a forward stepwise regression analysis between the identified factors and T.C.I. variables were performed for evaluating the association between panic subtypes and personality features.

Results: Three factors were obtained: "Somato-dissociative", "Respiratory", and "Cardiologic" explaining respectively 18.31%, 13.71%,

and 12.78% of the total variance. Correlations analyses showed that only "Somato-dissociative" factor was significantly correlated with T.C.I. "Self-directedness" ($p < 0.0001$) and "Cooperativeness" ($p = 0.009$) variables. Results from the regression analysis indicate that the predictor models account for 33.3% and 24.7% of the total variance respectively in "Somatic-dissociative" ($p < 0.0001$) and "Cardiologic" ($p = 0.007$) factors, while they do not show statistically significant effects on "Respiratory" factor ($p = 0.222$). After performing stepwise regression analysis, "Self-directedness" resulted the unique predictor of "Somato-dissociative" factor ($R^2 = 0.186$; $\beta = -0.432$; $t = -4.061$; $p < 0.0001$).

Conclusion: Current results, although preliminary, suggest the importance of assessing personality and temperament features that may be potentially related to poor treatment response for a better understanding and characterization of PD subtypes.

Keywords: Panic disorder; panic dimensions; temperament; character; personality.

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INTRODUCTION

Panic disorder (PD), whose lifetime prevalence estimates in the general population are about 4.7% (1), is characterized by a substantial degree of symptomatic heterogeneity. Variations from typical panic attacks are well acknowledged, whereas the core features of unexpectedness, recurrence, and associated distress are usually maintained (2). As a consequence, the diagnostic process may be affected by a substantial variability in clinical presentation. For these reasons, several studies have investigated possible symptom subtypes of panic disorder (2, 3), identifying up to six potential panic subtypes: respiratory (4), cardiac (5), nocturnal (6), nonfearful (7), cognitive (8), and vestibular/somatic (5). Nevertheless, current evidence does not reach univocal conclusions, due to methodological differences in measuring panic symptoms, samples selection, and to the lack of reliable and sufficient external validation (9).

Moreover, an additional source of symptomatic heterogeneity may depend on the possible association of PD with personality traits and constellations (10). A number of studies in the literature (11-15) have examined the relationship between PD and personality traits according to the psychobiological model developed by Cloninger et al. (16). This model attributes to temperament and character dimensions the role of essential foundations of personality. Temperament, which reflects the

biological, innate part of personality, is four-dimensional, and it comprises Novelty Seeking (NS), Harm Avoidance (HA), Reward Dependence (RD), and Persistence (P), whereas character, modeled by experience and learning, is three-dimensional, and consists of Self-Directedness (SD), Cooperativeness (C), and Self-Transcendence (ST). Main findings from these studies are congruent in establishing significant associations among PD, higher levels of HA, and lower levels of SD. Interestingly, a study that evaluated temperament and character dimensions in PD patients before and after 1 year of pharmacological treatment showed that higher levels of HA persisted even after a complete symptomatic remission in treatment-responder PD patients, whereas low SD levels characterized only non-responders (13). These results seem to support the hypothesis that HA might be a stable temperamental dimension predisposing individuals to PD; nevertheless, it must be kept in mind that in most studies heterogeneous samples of patients with psychiatric comorbidities, such as mood, anxiety, and personality disorders were enrolled (13-14). At the present, these evidences are not strong enough to affirm that high HA and low SD indicate vulnerability to PD, and further studies are needed to better understand this association (11). To best of our knowledge, no studies specifically investigated the association between Cloninger's temperament and character dimensions and PD subtypes. The objectives

of the present study were to identify the potential subtypes of PD with the related clinical features, and to explore possible relationships among temperament and character features and the identified PD subtypes.

METHODS

Subjects

All subjects consecutively admitted to the Outpatient Psychiatry Unit of the University Hospital of Messina, Italy, between February 2014 and April 2015, were screened for the study by a senior psychiatrist using the Italian versions of the Structured Clinical Interviews for DSM-IV Axis I and Axis II Disorders (SCID-I, SCID-II) (17–18).

Inclusion criteria were age 18–65, and Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR) diagnosis of panic disorder.

Patients with any other major psychiatric disorder, personality disorder, significant concurrent medical illnesses, organic brain disorder, history of substance and alcohol abuse, and mental retardation were excluded.

All the patients provided written informed consent after a full explanation of the protocol design, which had been approved by the local ethics committee and was conducted according to the Declaration of Helsinki.

Instruments

Mini-International Neuropsychiatric Interview (M.I.N.I.)-Italian version (19): a diagnostic structured interview developed to provide diagnoses for the main *Diagnostic and Statistical Manual, Revised Third Edition / Fourth Edition* disorder categories. The M.I.N.I. includes 23 disorders from the tenth revision of the International Classification of Diseases and Related Health Problems (ICD-10) and from the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM IV). The Italian version performs similarly to other M.I.N.I. versions, and demonstrates adequate reliability and validity.

Temperament and Character Inventory (T.C.I.), Italian translation (20): The T.C.I. has 226 items and measures four primary dimensions of temperament and their facets: Novelty seeking (NS): NS1-Exploratory excitability vs. Stoic rigidity; NS2-Impulsiveness vs. Reflection; NS3-Extravagance vs. Reserve; NS4-Disorderliness vs. Regimentation; Harm avoidance (HA): HA1-Anticipatory worry and pessimism vs. Uninhibited optimism; HA2-Fear of uncertainty; HA3-Shyness with strangers; HA4-Fatigability and asthenia; Reward dependence (RD): RD1-Sentimentality;

RD2-Attachment vs. Detachment; RD3-Dependence vs. Independence; Persistence (P). The three dimensions of character are: Self-directedness (SD): S1-Responsibility vs. Blaming; S2-Purposefulness vs. Lack of goal-direction; S3-Resourcefulness; S4-Self-acceptance vs. Self-striving; S5-Enlightened second nature; Cooperativeness (C): C1-Social acceptance vs. Social intolerance; C2-Empathy vs. Social disinterest; C3-Helpfulness vs. Unhelpfulness; C4-Compassion vs. Revengefulness; C5-Pure-hearted conscience vs. Self-serving advantage; Self-Transcendence (ST): ST1-Self-forgetful vs. Self-conscious experience; ST2-Transpersonal identification vs. Self-differentiation; ST3-Spiritual acceptance vs. Rational materialism.

Statistical Analysis/Methods

Data obtained from the study underwent check and quality control by the Kolmogorov-Smirnov test for data distribution and the Levene's test for homoscedasticity, and subsequently, to descriptive and inferential statistical analysis. Continuous data were expressed as mean \pm standard deviation (S.D.); non-continuous data were expressed as percentages. Thirteen panic symptoms presented on the M.I.N.I. were used for the factor-analytic study. The factors with an Eigen value over 1 were obtained at the end of the principal component analysis and varimax rotation in the factor analysis.

Further, a correlation analysis (Pearson's correlation), a linear regression analysis and a forward stepwise regression analysis between the identified factors and T.C.I. variables were performed in order to evaluate the association between panic subtypes and personality features.

To lessen the risk of Type 1 errors, a p value <0.01 was considered statistically significant, and the statistical analysis was performed with Statistical Package for the Social Sciences-SPSS 16.0 software (SPSS Inc, Chicago, IL, USA) (21).

RESULTS

The sample consisted of 74 participants: 38 males (51.4%) and 36 females (48.6%). Mean age was 34.16 ± 12.44 , mean duration of education was 11.49 ± 3.44 years, mean age at onset was 26.16 ± 9.92 , and mean duration of illness was 8 ± 9.16 years. Forty-nine (66.23%) of the participants received a diagnosis of PD with agoraphobia.

The factor analysis was conducted using 13 panic symptoms listed in the M.I.N.I. (Table 1). Three factors explaining 44.81% (18.31%, 13.71%, and 12.78%, respectively) of the total variance were obtained in the principal component analysis and varimax rotation. These factors were

Table 1. Factor analysis after varimax rotation with Kaiser normalization

M.I.N.I. panic symptoms	Component		
	Factor 1. Somatic-dissociative	Factor 2. Respiratory	Factor 3. Cardiologic
Dizziness	0.787		
Fear of going mad	0.787		
Depersonalization/derealization	0.605		
Shaking	0.592		
Feeling of choking		0.720	
Shortness of breath		0.717	
Prespiration			
Nausea			
Paresthesia			
Palpitations			0.698
Fear of death			0.675
Chest pain			0.567
Shivering			
% variance	18.31	13.71	12.78
Eigen value	2.464	1.730	1.632

a. Rotation converged in 5 iterations; b. The values whose correlation coefficient 0.50 and over were presented here.

Table 2. Correlations (Pearson correlation) between panic subtypes factors and TCI variables

	Somato-dissociative	Respiratory	Cardiologic
Novelty seeking	0.205	0.108	0.170
Harm avoidance	0.067	-0.138	-0.030
Reward dependence	-0.066	-0.016	-0.043
Persistence	-0.284	0.042	0.033
Self-directedness	-0.432*	0.228	-0.190
Cooperativeness	-0.302*	-0.075	-0.073
Self-transcendence	0.117	-0.026	-0.270

* p=0.009; ** p<0.0001

named according to the predominant symptoms during panic attacks. "Dizziness", "Fear of going mad or losing control", "De-personalization/de-realization", and "Shivering/shaking" belonged to the first factor, named "Somato-dissociative". "Shortness of breath" and "Feeling of choking" fitted in the second factor, named "Respiratory". Finally, "Palpitations", "Fear of death", and "Chest pain" assembled within the third factor, "Cardiologic".

Correlations between panic subtypes factors and T.C.I. variables are presented in Table 2. Only the "Somato-dissociative" factor showed statistically significant relationships with T.C.I. variables: it was inversely correlated with "Self-directedness" (p<0.0001) and "Cooperativeness" (p=0.009).

All panic factors and T.C.I. variables ("Somato-dissociative", "Respiratory", and "Cardiologic" factors –as dependent variables, and T.C.I. variables –as independent variables) were analyzed in three linear regression models, as reported in Table 3.

Results from the regression analysis indicate that the predictor models account for 33.3% and 24.7% of the total variance respectively in "Somato-dissociative" (F=4.712; df=7; p<0.0001) and "Cardiologic" (F=3.093; df=7; p=0.007) factors, while they do not show statistically significant effects on "Respiratory" factor (F=1.397; df=7; p=0.222). Forward stepwise regression analysis indicated that only "SD" was the unique predictor of "Somato-dissociative" factor (R²=0.186; β=-0.432; t=-4.061; p<0.0001), whereas other T.C.I. variables did not give a significant additional contribution to the prediction of panic subtypes.

DISCUSSION

Research on the relationship between PD and personality has focused on the comorbidity between PD and personality disorders, mainly those included in Clusters C and B (22), whereas evidence on the possible associations of PD with personality traits is still sparse. In such studies, PD patients were characterized by high levels of HA, although the majority of studies included subjects with comorbid mood disorders (23). It is still

Table 3. Linear regression analysis

Dependent variable	Unstandardized coefficients		Standardized coefficients	t	p
	B	S.E.	Beta		
Somato-dissociative^a					
(Constant)	1.578	0.795		1.986	0.051
Novelty seeking	0.027	0.010	0.364	2.679	0.009
Harm avoidance	-0.009	0.011	-0.108	-0.808	0.422
Reward dependence	0.001	0.017	0.009	0.048	0.962
Persistence	-0.018	0.010	-0.207	-1.757	0.084
Self-directedness	-0.028	0.010	-0.337	-2.845	0.006
Cooperativeness	-0.023	0.017	-0.183	-1.342	0.184
Self-transcendence	0.005	0.011	0.057	0.432	0.667
Respiratory^b					
(Constant)	0.328	0.908		0.361	0.719
Novelty seeking	0.017	0.012	0.228	1.466	0.147
Harm avoidance	-0.017	0.013	-0.194	-1.276	0.206
Reward dependence	0.003	0.020	0.032	0.153	0.879
Persistence	-0.004	0.011	-0.043	-0.318	0.751
Self-directedness	0.023	0.011	0.281	2.072	0.042
Cooperativeness	-0.025	0.019	-0.202	-1.296	0.199
Self-transcendence	-0.002	0.012	-0.026	-0.172	0.864
Cardiologic^c					
(Constant)	1.132	0.845		1.341	0.185
Novelty seeking	0.031	0.011	0.422	2.921	0.005
Harm avoidance	-0.018	0.012	-0.212	-1.498	0.139
Reward dependence	0.013	0.018	0.140	0.715	0.477
Persistence	-0.006	0.011	-0.075	-0.599	0.551
Self-directedness	-0.023	0.010	-0.283	-2.252	0.028
Cooperativeness	0.012	0.018	0.101	0.694	0.490
Self-transcendence	-0.040	0.011	-0.485	-3.466	0.001

^aR=0.577; F=4.712; p<0.0001; ^bR=0.359; F=1.397; p=0.222; ^cR=0.497; F=3.093; p=0.007

almost unclear whether high HA may represent a predisposing factor to the development of PD or reflect the severity of clinical symptoms (22, 23), also considering the comorbid presence of depressive conditions. Furthermore, the considerable heterogeneity in the clinical presentation of PD which determines a significant variability in panic symptom profiles has not been taken into account.

To the best of our knowledge, this was the first study attempting to evaluate personality traits in PD subtypes in a sample of PD subjects without comorbidities with other major psychiatric disorders, including personality disorders. On the basis of predominant symptoms, factor analysis lead to the identification of three main panic subtypes respectively named: "Somato-dissociative" (dizziness, fear of going mad or losing control, depersonalization/derealization, shivering/shaking), "Respiratory" (shortness of breath, feeling of choking), and "Cardiologic" (palpitations, fear of death, chest pain). In the recent years, the increasing acknowledgement of the heterogeneity of PD has lead researchers to focus on the classification of PD patients into specific subgroups based on symptom clusters. Different subtype models have been proposed, ranging from a two-factor model, respiratory vs non-respiratory (24) to more complex classifications which have included six or more panic subtypes (2–8). These subtypes are thought to differ across a number of factors, such as psychiatric comorbidity, treatment response, and clinical features, included frequency of panic attacks, severity, and disability. In our sample, further correlation and regression analyses showed that the "Somato-dissociative" factor was inversely correlated with the character variables "Self-directedness" and "Cooperativeness", and that only "Self-directedness" could be considered the unique predictor of this panic subtype, whereas other T.C.I. variables did not contribute to the prediction of panic dimensions.

Concerning personality features in PD subjects, our findings are partially congruent with previous studies whose results showed evidenced a personality pattern characterized by low scores of SD. On the contrary, no relationship was found between the temperament dimension HA and PD subtypes, although high HA scores were found in previous studies investigating the temperament characteristics of PD patients (23, 25). Nevertheless, it should be highlighted that most studies have evaluated subjects affected by PD comorbid with other anxiety disorders (generalized anxiety disorder, social phobia, and obsessive-compulsive disorder), and mood disorders. Thus, it cannot be excluded that high HA was related to comorbid conditions rather than to PD itself, since higher HA scores have been shown to be associated with anxiety severity, depressive symptoms, and cluster C personality disorders (26). Such potential selection biases have been partially resolved by a recent study in which sixty-seven PD patients without comorbid Axis I disorders have been selected (11). The study, aimed to investigate temperament and character dimensions along with alexithymia, showed that PD subjects compared with healthy controls were characterized by lower SD total score, and by higher scores only on HA "fatigability" subscale, which, according to the model of Cloninger (16), is a trait reflecting low energy level depending on personality characteristics. Since the sample was not screened for coexisting Axis II disorders, it cannot be excluded that this last result may represent a possible consequence of the presence of comorbid personality disorders. In our study, the lack of significant correlations between HA and panic symptoms found in previous studies might be due to the exclusion of subjects with comorbid mood and anxiety symptoms or with personality disorders, since more restrictive exclusion criteria, also extended to Axis II disorders, have been used.

On the other hand, we found significant relationships among the character dimensions SD and C and the "Somato-dissociative" panic subtype, although only SD had a predictive role. Actually, in the literature two main PD subtypes have been identified, Respiratory vs. Non-

respiratory (7), whereas only one study reported a three factor solution very similar to the one obtained in this research (5). It is almost widely accepted that the predominance of respiratory symptoms identifies a distinct, stable PD subtype that may predict a better or a faster response to antidepressants and benzodiazepines (4). Regarding the Non-respiratory subtype, it has been associated with higher levels of neuroticism (25), which reflects a general distress component common to anxiety, mood, and personality disorders (27). According to Cloninger's model, the core features of personality disorders are low scores on SD and C dimensions, and individuals are more often diagnosed as personality disordered if they show difficulties in setting and achieving goals, accepting limitations and responsibilities, cooperating, and in being socially tolerant and empathic. Based on their findings, Svrakic et al. (26) proposed that SD is a more accurate core descriptor of personality disorders than neuroticism, since the construct of neuroticism encompasses heterogeneous psychopathological features, such as distress and negative affects, and this might explain the association of high neuroticism with anxiety and depression. Examining PD patients with T.C.I., it has been evidenced that only in Non-respiratory subtype patients character dimensions resulted lower than normal, and this finding should represent a trait feature, since the observed differences remained stable after treatment; moreover, the presence of lower scores on SD was associated with a poor response to treatment (13). According to these findings, our results suggest that lower SD scores in PD patients, even in the absence of a full-blown personality disorder, may indicate a maladaptive personality features associated with the "Somato-dissociative" subtype and with a poor response to conventional pharmacological treatments.

The results of our study need to be interpreted with caution due to several limitations. First, the relatively small sample size that makes it difficult to extend these findings to the broader PD patients community. However, it should be evidenced that our sample consisted of subjects affected only by PD ("pure" PD patients), since all screened subjects presenting comorbid psychiatric disorders were excluded; the choice of such restricted inclusion criteria is the main reason that explains the small sample size. Another limitation derives from the exclusive use of the M.I.N.I. as assessment instrument for evaluating panic symptoms, whereas in other studies supplemental or diverse psycho-diagnostic scales were applied. Our choice was determined by the need of a reliable instrument compatible with DSM-IV diagnostic criteria. Finally, this study would have benefited by including a control group from general population.

Nevertheless, beyond the limitations, current results suggest the importance of assessing personality and temperament features for a better understanding and characterization of PD subtypes. Further studies on larger samples could provide new insight into the possible role of personality traits on panic symptom clusters, longitudinal course, and treatment response.

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Ethics Committee Approval: This study which had been approved by Ethics Committee of the district of Messina and was conducted according to the Declaration of Helsinki.

Informed Consent: All the patients provided written informed consent after a full explanation of the protocol design.

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