

Regular Article

Relationship of alexithymia and temperament and character dimensions with lifetime post-traumatic stress disorder in male alcohol-dependent inpatients

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Aims: The purpose of the present study was to evaluate the prevalence of lifetime post-traumatic stress disorder (PTSD) in male alcohol-dependent inpatients and to investigate the relationship of PTSD with alexithymia and temperament and character dimensions.

Methods: Participants were 156 consecutively admitted male alcohol-dependent subjects. Patients were investigated using the Clinician-Administered PTSD Scale (CAPS), the Toronto Alexithymia Scale (TAS-20) and the Temperament and Character Inventory (TCI).

Results: Among alcohol-dependent inpatients 32.1% were considered as having lifetime PTSD. Mean scores of alexithymia, novelty seeking (NS), harm avoidance (HA) and self-transcendence (ST) were higher in the PTSD group, whereas age and self-directedness (S) were lower. Among age and other factors of TAS-20, 'difficulty in identifying

feelings (DIF)' predicted PTSD in a logistic regression model. When age and personality dimensions of TCI were taken as independent variables, S predicted PTSD in the logistic regression model. Finally, among subscales of TCI, 'impulsiveness versus reflection' (NS2) and 'congruent second nature versus bad habits' (S5) predicted PTSD.

Conclusions: Alexithymia and personality traits, particularly high DIF and S scores are related with lifetime PTSD diagnosis, even when controlling for age among alcohol-dependent inpatients. Causal relationships between alexithymia, personality dimensions and PTSD, and their implications on treatment are not clear and should be evaluated in longitudinal studies.

Key words: alcohol dependence, alexithymia, character, post-traumatic stress disorder, temperament.

AN INCREASING BODY of literature has documented an association between post-traumatic stress disorder (PTSD) and alcohol use disorders, highlighting the importance of the relationship between them in both clinical and public health

measures.^{1–3} In this respect, high prevalence rates of comorbid PTSD and alcohol abuse has been documented to range from 36% to 52%.^{4,5} In recent studies, rates of lifetime PTSD diagnosis among alcohol-dependent inpatients ranged from 27% to 31% in Turkey.^{6,7} The majority of studies examining the order of onset among individuals with PTSD and alcohol-use disorders have found that PTSD is most often the primary disorder (i.e. temporally precedes the onset of the alcohol-use disorder).^{2,8} Breslau *et al.* suggested that PTSD might be a causal risk factor for

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substance use disorders.¹ Thus, these studies show the importance of this comorbidity, although generally there is an under-assessment or -recognition of PTSD by clinicians among patients in a substance abuse treatment program.⁹

Comorbid PTSD is known to not only affect the clinical presentation, but also exert substantial influence on treatment service use, course, and outcome of substance-dependent individuals.^{2,10,11} Studies have indicated that, compared with those who have alcohol use disorders only, those with alcohol use disorders and PTSD improve less during treatment, relapse faster, drink more on drinking days, and have more heavy drinking days in the post-treatment period.^{11–13} In addition to these, substance abusers with PTSD have greater psychological, psychosocial, and occupational impairments.^{10,14} In summary, PTSD frequently co-occurs with substance use disorders and appears deleterious to substance abuse treatment outcome. Thus, it is important to evaluate PTSD and related variables in this population.

Alexithymia is a multifaceted personality construct defined as the inability to distinguish one's feelings from the accompanying bodily sensations, the inability to communicate feelings to others, and an externally orientated cognitive style reflecting an absence of inner thoughts and fantasies.¹⁵ Alexithymia is a common trait in individuals with somatoform disorders, PTSD, and substance use disorders.¹⁶ Studies suggest relatively high prevalence rates of alexithymia (42–79%) in alcohol-related disorders.^{17–19} Alexithymia is also highly prevalent in individuals with PTSD,¹⁶ and PTSD, in return, is highly prevalent among substance abusers.²⁰

In previous studies alexithymia was found to have a negative relationship with the maintenance of abstinence²¹ and was associated with poor outcomes in alcoholic inpatients.^{19,22,23} These associations may also be explained by the overlap between alexithymia and related constructs, such as positive and negative affects.²⁴ Studies of alexithymia present two seemingly contradictory views on the relationship of alexithymia to the experience of negative affect. In the context of somatoform disorders and PTSD, alexithymia is seen as a restriction of affective experience.¹⁶ Alexithymia, however, is also seen as a deficit in the modulation of emotion resulting in the intensification of negative affect.²⁵ In one study conducted among individuals with PTSD, severity of alexithymia was positively correlated with PTSD symptoms.²⁵ Also in an other study, association was

found across alexithymia, hostility, and PTSD symptoms in substance abusers that did not depend on the type of substance abused.²⁶ Thus, among alexithymic patients, undifferentiated negative affect that requires relief through self-medication with euphorigenic agents such as alcohol might increase the risk of this comorbidity of PTSD and alcohol dependence.²⁷

The Temperament and Character Inventory (TCI) is a self-administered dimensional questionnaire constructed to assess the seven basic dimensions of personality in two major components of personality: temperament and character.²⁸ The psychobiological model assumes interactions between temperament and character scales. These interactions elicit secondary emotions and are important in the development of personality.²⁹ Individual differences in personality structure and development have a strong influence on the risk of all forms of psychopathology, including alcohol abuse.³⁰ Temperament dimensions of personality traits, particularly novelty seeking (NS), have direct clinical applications for prediction of relapse in detoxified male alcohol dependents.³¹ In a recent study among alcohol dependents high harm avoidance (HA) and self-transcendence (ST) and low self-directedness (S) were related with alexithymia, suggesting that alexithymia can be explained by specific dimensions within Cloninger's psychobiological model of personality in this population.³²

There are also studies considering the relationship of personality dimensions with PTSD. Among juvenile male rape victims the level of post-traumatic stress, which in most cases is moderate–high, correlated with the temperament dimensions of HA and reward dependence (RD).³³ Barnow *et al.* found significantly higher levels of HA in patients with borderline personality disorder and complex PTSD compared to those without complex PTSD.³⁴ Gil and Caspi found that participants who demonstrated high levels of HA before the trauma were at increased risk for the development of PTSD in 6 months.³⁵ A report by North *et al.* based on fire victims showed that symptoms of PTSD are related to HA, ST, and S dimensions of the TCI.³⁶ Finally in a recent study, patients with PTSD had significantly higher scores on subscales of HA and ST and lower scores on S and Cooperativeness (C) compared to controls.³⁷

The aim of the present study was to evaluate the prevalence of lifetime PTSD in male alcohol-dependent inpatients and to investigate the relationship of PTSD with alexithymia and temperament and

character dimensions, while controlling the effect of current age.

METHODS

Participants

The study was conducted in Bakirkoy State Hospital for Psychiatric and Neurological Diseases, Alcohol and Drug Research, Treatment and Training Center (AMATEM) in Istanbul between January 2007 and January 2008. AMATEM is a specialized center for substance use disorders with 84 inpatient beds, and accepts referrals from all over the country. The Ethics Committee of the hospital approved the study. Patient written informed consent was obtained after the study protocol was thoroughly explained.

One hundred and eighty consecutively admitted male alcohol-dependent inpatients without a history of any other substance abuse were considered for participation in the study. All participants fitted the DSM-IV diagnostic criteria for alcohol dependence. Excluding criteria were illiteracy, mental retardation or cognitive impairment and comorbid psychotic disorder. Five patients were excluded due to illiteracy and three patients due to cognitive deficits. Although none of the patients refused to participate in the study, 16 patients were excluded because they left some parts of the scales unfilled, did not give the forms back or left the treatment program prematurely, that is, before filling the forms. A total of 156 alcohol-dependent inpatients participated in the study. Mean age of the participants was 44.21 ± 9.10 years.

Procedure

The diagnosis of alcohol or drug dependence for each participating patient was based on the clinical examination, a screening interview based on the Structured Clinical Interview for DSM-IV (SCID-I),³⁸ Turkish version,³⁹ conducted by a trained interviewer (CE) initially at admission. Interviews with the study group were conducted after the detoxification period, that is, 4–6 weeks after the last day of alcohol use. At this time all the patients were assessed using a semi-structured sociodemographic form and scales, which were given by the same interviewer (ED).

Assessments

The diagnosis and the symptom severity of PTSD were assessed on the Clinician-Administered PTSD

Scale (CAPS). The CAPS is a reliable structured interview designed to assess symptoms of PTSD for frequency and intensity.^{40,41} The CAPS has excellent psychometric properties and utility as a diagnostic instrument for PTSD.⁴¹ PTSD severity was computed as the sum of the frequency and intensity scores. When determining whether participants met the DSM-IV PTSD diagnosis, a frequency score of 1 and intensity score of ≥ 2 were sufficient for a symptom to be counted. For PTSD diagnosis the same criteria as in DSM-IV were used: one symptom from B cluster, three symptoms from C cluster and two symptoms from D cluster. The Turkish version of CAPS was used in the present study. A study on its reliability and validity has been conducted for the Turkish population.⁴²

Alexithymia was assessed with the Turkish version of the 20-item Toronto Alexithymia Scale (TAS-20).^{43,44} The first factor (F1) in the three-factor model for the TAS-20 consists of seven items (items 1, 3, 6, 7, 9, 13, 14) assessing the ability to identify feelings and to distinguish them from the somatic sensations that accompany emotional arousal. Factor 2 (F2) consists of five items (items 2, 4, 11, 12, 17) assessing the ability to describe feelings to other people. Factor 3 (F3) consists of eight items (items 5, 8, 10, 15, 16, 18, 19, 20) assessing externally oriented thinking. The total scores of the TAS-20 were dichotomized as a score of ≥ 61 , which indicated alexithymia, and a score of < 61 , which indicated no alexithymia. The approved form has been validated in a Turkish population study.⁴⁵

For the evaluation of temperament and character traits, the Turkish version of the TCI was used.^{46,47} The TCI is a 240-item self-administered questionnaire that measures the four temperament dimensions (NS, HA, RD, and persistence [P]) and the three character dimensions (S, C, and ST).⁴⁶ The Turkish version of the TCI has been validated in a Turkish sample.⁴⁷

Data analysis

Statistical analyses were done using SPSS for Windows, version 12.0 (SPSS, Chicago, IL, USA). Categorical variables were compared using χ^2 test. We used Student's *t*-test to compare the groups on continuous variables, because these variables were normally distributed. Two forward Wald logistic regression analyses were performed to evaluate variables that predict PTSD. In the first model age and

personality dimensions of TCI were taken as the independent variables. In the second model age and TAS-20 factors were taken as the independent variables. Also forward Wald logistic regression was performed in which PTSD was the dependent variable, whereas age, TCI subscales and TAS-20 factors were taken as independent variables. For all statistical analysis *P* was two-tailed and differences were considered significant at *P* < 0.05.

RESULTS

Among 156 inpatients, 50 (32.1%) had a lifetime diagnosis of PTSD, whereas 47 (30.1%) were considered as alexithymic. The rate of those considered as alexithymic was higher in the PTSD group (*n* = 23, 46.0%) than in the non-PTSD group (*n* = 24, 22.6%; $\chi^2 = 8.81$, d.f. = 1, *P* = 0.003; odds ratio, 2.91; 95% confidence interval: 1.42–5.97). Mean age was lower in the PTSD group (41.98 ± 7.76 years) than in the non-PTSD group (45.26 ± 9.53 years; *t* = 2.13, *P* = 0.035; Table 1). Also, duration of education was lower in the PTSD group (8.70 ± 3.52 years) than in the non-PTSD group (10.02 ± 4.03 years; *t* = 1.99, *P* = 0.049). In the PTSD group 23 patients (46.0%) were married, four (8.0%) were divorced and 23 (46.0%) were never married. In the non-PTSD group 71 patients (67.0%) were married, 10 (9.4%) were divorced, and 25 (23.6%) were never married ($\chi^2 = 8.11$, d.f. = 2, *P* = 0.017). The difference in

marriage rates was significant. The unemployment rate did not differ between the PTSD (30.0%, *n* = 15) and non-PTSD groups (34.0%, *n* = 36; ($\chi^2 = 0.29$, d.f. = 3, *P* = 0.960).

The mean score of the SD dimension on the TCI was lower, whereas the mean scores of the NS, HA and ST dimensions on the TCI, TAS-20 total score, difficulty in identify feelings (DIF) and difficulty in describing feelings (DDF) factor scores of the TAS-20 were higher in the PTSD group (Table 1). Among patients with PTSD (*n* = 50), alexithymia total score and factors of alexithymia were not correlated with the severity of PTSD symptoms. Also the mean CAPS score did not differ significantly between those who were considered as alexithymic (*n* = 23, 68.73 ± 17.19) and who were not (*n* = 27, 67.56 ± 20.79; *t* = -0.23, *P* = 0.82).

Low S scores predicted PTSD on forward Wald logistic regression, when age and temperament and character dimensions of the TCI were taken as independent variables. Among age and other TAS-20 factors, high scores on the DIF factor predicted PTSD in the other forward Wald logistic regression model (Table 2). When age, subscales of TCI and TAS-20 factors were taken as independent variables 'impulsiveness versus reflection' (NS2) and 'congruent second nature versus bad habits' (S5) predicted PTSD in the forward Wald logistic regression model (Table 3). Mean scores of NS2 and S5 were negatively correlated (*r* = -0.28, *P* < 0.001).

Table 1. Characteristics of alcohol-dependent men vs PTSD status

	No PTSD (<i>n</i> = 106)		PTSD (<i>n</i> = 50)		<i>t</i>
	Mean	SD	Mean	SD	
Age (years)	45.26	9.53	41.98	2.13	2.13*
TCI					
Novelty Seeking	18.05	4.08	20.06	4.92	-2.51*
Harm Avoidance	17.61	6.12	20.22	5.08	-2.62*
Reward Dependency	13.09	2.85	12.94	2.16	0.34
Persistence	4.97	1.62	4.92	1.74	0.18
Self-directedness	24.28	6.56	20.84	5.56	3.11**
Cooperativeness	27.55	6.15	26.00	5.19	1.54
Self-transcendence	18.76	5.48	20.62	5.29	-2.00*
TAS-20 Total	53.54	10.21	58.84	8.87	-3.12**
Difficulty in identifying feelings	17.89	5.76	21.08	5.29	-3.29***
Difficulty in describing feelings	14.12	3.74	15.59	3.62	-2.29*
Externally oriented thinking	21.53	3.77	22.16	3.06	-1.02

P* < 0.05; *P* < 0.01; ****P* = 0.001.

PTSD, post-traumatic stress disorder; TAS-20, Toronto Alexithymia Scale-20; TCI, Temperament and Character Inventory.

Table 2. Predictors of PTSD on forward Wald logistic regression

	B	SE	Wald	d.f.	P	Exp(B) (95%CI)
Model 1						
Self-directedness (S)	-0.091	0.030	9.170	1	0.002	0.913 (0.861–0.968)
Model 2						
Difficulty in identifying feelings	0.101	0.032	9.578	1	0.002	1.106 (1.038–1.178)

Model 1: age and personality dimensions of Temperament and Character Inventory are taken as independent variables; Model 2: age and Toronto Alexithymia Scale-20 factors are taken as independent variables.

CI, confidence interval; PTSD, post-traumatic stress disorder.

DISCUSSION

Consistent with the previous studies conducted in Istanbul among treatment-seeking alcohol dependents (26.8%)⁶ and substance dependents (31%),⁷ the rate of lifetime PTSD diagnosis was found to be 32.1% in the present study. The present study found that, among male alcohol-dependent patients, the PTSD was related with alexithymia, particularly the DIF factor. Also PTSD was related with personality traits, particularly lower S scores. Stability of the TCI dimensions is a question of debate;⁴⁷ that is, Berglund *et al.* suggested that long duration of excessive alcohol consumption appears to have an influence on personality traits in male alcohol-dependent individuals and these personality traits may therefore be a consequence of, rather than precede, alcoholism in these individuals.⁴⁸ Similarly, two studies that examined the stability of alexithymia in a population of alcohol-dependent patients reported conflicting results, one viewing alexithymia as a state (transitory reaction) evoked by stressful situations and accompanying depression and anxiety,⁴⁹ whereas the other viewed it as a trait.⁵⁰ Thus, because the present study utilized a cross-sectional research design, it is not possible to make conclusive statements about the causal relationships of alexithymia, personality and PTSD.

The present results are consistent with those of previous studies. Prior studies found higher HA scores in PTSD patients and suggested the protective effect of low HA on the development or severity of PTSD symptoms.^{32–37} HA is a hereditary tendency to inhibition or cessation of a behavior. Such a tendency may result in pessimistic worry in anticipation of future problems, passive avoidant behaviors such as fear of uncertainty and shyness, and rapid fatigue.^{28,46} The disadvantages occur when danger is unlikely but still anticipated; in such case pessimism or inhibition leads to unnecessary worry.²⁸ Preliminary findings supported the possibility that the HA dimension may be considered as a personality indicator for the development of PTSD.³⁵ In a previous study, Akvardar *et al.* reported higher HA scores among Turkish alcoholics than healthy controls. In that study it was suggested that individuals high in HA might be using alcohol to relieve negative emotions.⁵¹ In the studies on mood disorders, HA scores were found to be much higher before treatment for depression compared to the general population.^{46,52} Thus, one of the main limitations of the present study may be the lack of a reliable depression scale for correcting the TCI data for the influence of residual depressive symptoms, which may still be present after detoxification of alcohol dependents. Nevertheless, it is unclear whether the characteristic temperament such as HA

Table 3. Predictors of PTSD on forward Wald logistic regression using age, TCI subscales and TAS-20 factors as independent variables

	B	S.E.	Wald	d.f.	P	Exp(B) (95%CI)
Impulsiveness vs Reflection (NS2)	0.189	0.094	4.002	1	0.045	1.208 (1.004–1.453)
Congruent Second nature vs Bad Habits (S5)	-0.353	0.121	8.525	1	0.004	0.703 (0.554–0.890)

CI, confidence interval; PTSD, post-traumatic stress disorder; TAS-20, Toronto Alexithymia Scale-20; TCI, Temperament and Character Inventory.

contributed to the development of PTSD or whether the traumatic event and subsequent stress made the subjects more avoidant of potential harm.³⁷

Individuals high in NS tend to be quick-tempered, excitable, exploratory, curious, enthusiastic, ardent, easily bored, impulsive, and disorderly.⁴⁶ Research suggests that NS represents a vulnerability factor for substance abuse in general.^{53,54} It is associated with craving scores in treatment-seeking women with substance dependence,⁵⁵ and it has direct clinical applications for prediction of relapse in detoxified male alcohol dependents.³¹ The present results suggest that high NS (vulnerability for alcohol dependence) and HA (vulnerability for PTSD) together play an important role in alcohol use disorder and PTSD comorbidity. In the present study high score on the Impulsiveness subscale (NS2) of the NS dimension also predicted PTSD. Individuals who score high on this subscale tend to be excitable, dramatic and impressionistic, and they make decisions quickly on incomplete information and control their impulses poorly.²⁸ Impulsiveness is one of the most important risk factor for substance use disorder⁵⁶ and a study suggested that impulsive (extroverted) neurotic subjects are more vulnerable to post-traumatic stress than introverted ones.⁵⁷ The other predictor of PTSD was low Congruent Second Nature subscale (S5) score. Low scores on this subscale are associated with inconsistency, which makes it hard for them to accomplish worthwhile goals ('goal-incongruent habits'). Their willpower appears to be too weak to overcome many strong temptations, even if they know they will suffer as a consequence.²⁸ In a previous study, lower scores on this subscale were strongly related to severity of alcohol craving.⁵⁸

Consistent with previous studies, S was lower and ST was higher in patients with alcohol dependence and PTSD.^{36,37} Among the other dimensions, S predicted PTSD diagnosis in this population. These character dimensions could be considered to be resilience factors for PTSD symptoms because they represent individual resources to cope with trauma events.³⁶ Consistent with this, PTSD symptom scores were predominantly related to behavior inhibition and poor coping (high HA and low S) in male juvenile delinquents.⁵⁹ Low S is defined by poor impulse control or weak ego strength and is described as being irresponsible, purposeless, immature, weak, fragile, blaming, destructive, ineffective, unreliable, helpless, poorly integrated, and low in self-acceptance.⁴⁶ North *et al.* found the ST dimension to be significantly related to

a greater number of avoidant/numbing symptoms.³⁶ Yoon *et al.* found S to be lower and ST to be higher in patients with PTSD than that of controls.³⁷ All the personality disorders are distinguished by low S, regardless of the cluster or category of the personality disorder. The ST character, which can be described as self-forgetful, transpersonal, less materialistic, and less practical, was found to be more prevalent in outpatients with histrionic or narcissistic personality traits.⁴⁶ Considering that premorbid cluster B personality traits predict development of PTSD,⁶⁰ the current results indicate the possible predictive value of S and ST character dimensions for post-traumatic stress symptoms.

Consistent with the previous study, which found associations across alexithymia, hostility and PTSD symptoms in substance abusers,²⁶ in the present study total alexithymia score and DIF and DDF factors of alexithymia and the alexithymia rate were higher in the PTSD group. Also DIF predicted PTSD in the regression model. These findings are supported by previous studies, that is, Cecero and Holmstrom reported the usefulness of the alexithymia construct in the understanding and treatment of affect pathology and its consequences among alcoholic subjects,⁶¹ whereas Haviland *et al.* suggested that the state of alexithymia can result from severe anxiety and depression.⁶² Alexithymia may serve as a primitive way of dealing with emotional problems.^{63,64} Thus, as some researchers have suggested for depression,^{65,66} alexithymia might be a state-dependent phenomenon secondary to PTSD as well. But in the present study severity of PTSD symptoms was not correlated with alexithymia in alcohol-dependent subjects with PTSD, which is inconsistent with some previous studies.^{25,26} This suggests that PTSD and alexithymia may have a complex relationship in alcohol dependents.

The present findings must be understood in the light of several limitations. First, patients included in the present study were all male and the study group was restricted to a treatment population. Therefore it is not possible to generalize the findings to female substance-dependent patients and non-treatment groups. A second limitation was that although subjects were not assessed during withdrawal, patients might still have some cognitive problems with regard to evaluating themselves correctly at the time of the interview.⁶⁷ A third limitation was the use of self-report instruments only and the lack of a reliable depression scale for correcting the influence of residual depressive symptoms.

Understanding the patterns of alexithymia, temperament and character including the specific configurations of these traits in patients with PTSD may help health professionals to have a more comprehensive understanding of patients and to provide them with a more efficient treatment. Responses to pharmacotherapy and psychotherapy depend on personality structure and development.³⁰ Further longitudinal studies that investigate the links between characteristic patterns of alexithymia, temperament and character and treatment outcome or course of alcohol dependence and PTSD are needed to elucidate the therapeutic implication of these traits in patients with this comorbidity.

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