Relationship between Attempted Suicide and Cloninger's Personality Dimensions of Temperament and Character in Turkish Psychiatric Patients

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ABSTRACT

Purpose: Suicidal behavior can be regarded as the consequence of the co-occurence of a personality characteristic underlying vulnerability and of state-dependent psychiatric problems. Further research has shown that personality characteristics including impulsivity and a disturbed regulation of anxiety or aggression may represent risk factors for suicidal behavior. The purpose of this study was to report relationship between attempted suicide and Cloninger's personality dimensions of temperament and character in psychiatric patients.

Method: The sample of the study consisted of a sample of 365 female and 179 male adult psychiatric patients, 20.6% (n=112) of whom had recently attempted suicide.

Findings: Novelty seeking was a highly significant predictor with high scores observed in patients with and low scores in patients without attempted suicide. Low self-directedness scores were also a substantial predictor of the presence of attempted suicide.

Discussion: Temperament dimension novelty seeking appears pertinent to explore suicidality and measurement of character dimensions may be useful in the clinical evaluation of suicide risk.

Keywords: attempted suicide, personality, TCI

ÖZET

Türk Psikiyatri Hastalarında İntihar Girişimi ile Cloninger'in Kişilik Boyutlarının Mizaç ve Karakter Arasındaki İlişkileri

Amaç: İntihar davranışının, yatkınlık sağlayan kişilik özelliği ile durumsal psikiyatrik sorunların birlikte oluşmasının bir sonucu olduğunu söylemek mümkün görünmektedir. Araştırmalar, itkisellik (impulsivity) ve kaygı veya saldırganlığın bozuk düzenlenmesini içeren kişilik özelliklerinin intihar davranışı için risk faktörü olduğunu göstermektedir. Bu çalışmanın amacı, psikiyatri hastalarında intihar girişimi ile Cloninger'in mizaç ve karakter kişilik boyutları arasındaki ilişkileri bildirmektir.

Yöntem: Çalışmanın örneklemi, %20.6'sı daha önce intihar girişiminde bulunmuş olan yetişkin 365 kadın ve 179 erkek psikiyatri hastasından oluşmuştur.

Bulgular: Yenilik arama mizaç boyutu en anlamlı yordayıcı olarak bulunmuş, intihar girişimi olan hastalar yüksek, olmayanlar düşük puanlar almışlardır. Düşük kendini yönetme karakter boyutu puanları da intihar girişiminin olup olmadığının orta düzeyde yordayıcısı olarak tesbit edilmiştir.

Sonuç ve Tartışma: Yenilik arama mizaç boyutu intihar niyetinin araştırılmasında alâkalıdır ve karakter boyutlarının ölçümü de intihar riskinin değerlendirilmesinde yararlı olabilir.

Anahtar Kelimeler: intihar girişimi, kişilik, TCI

INTRODUCTION

Suicide and suicide attempts are common in psychiatric disorders. Major advances have been made in the study of the area of suicide research during the past 15 years. A major contribution has been made by psychological autopsy studies of individuals who committed suicide. In these studies more than 90% of the deceased could retrospectively be given a psychiatric diagnosis dominated by major depression, schizophrenia, alcohol dependence, and borderline personality disorder (Hawton and Van Heeringen 2000). It is indisputable that psychiatric disorders are linked to suicide, but in what manner remains to be explained. A patient with major depression has a 30-fold risk for suicide compared with an individual without depression. Since most patients with depression do not show suicidal behavior, it has been argued that other factors than those eliciting depressive mood must operate when a person becomes suicidal. Mann and Arango (1992) regarded suicidal behavior as the consequence of the co-occurence of a personality characteristic underlying vulnerability and of state-dependent psychiatric problems. Further research has shown those personality characteristics including impulsivity and the regulation of anger (Apter et al. 1993) and a disturbed regulation of anxiety or aggression (Van Praag 1996) may represent risk factors for suicidal behavior.

In order to describe the structure and development of personality, Cloninger and his co-workers developed a general psychobiological model that accounts for both normal and abnormal variation in the two major components of personality, temperament and character (Cloninger 1987, Cloninger et al 1993). Cloninger first concentrated on three biogenetic dimensions of personality and developed the Tridimensional Personality Questionnaire (TPQ) to measure Novelty Seeking, Harm Avoidance, and Reward Dependence. These temperament dimensions were assumed to be evolutionarily and genetically homogeneous and independent of one another, moderately stable throughout life, invariant despite social-cultural influences, and to involve preconceptual bias in perceptual memory and habit formation. Novelty Seeking is a heritable tendency to respond to novelty and cues for reward that leads to exploratory activity in pursuit of rewards as well as avoidance of monotony and punishment. Harm Avoidance is a heritable bias to respond to aversive stimuli, leading to learned behavioral inhibition. Reward Dependence is a heritable tendency to respond to rewards and to maintain behaviors previously associated with reward. Variation in each of the three temperament dimensions was supposed to be associated with a specific central monoaminergic system activity (Cloninger 1986): Novelty Seeking with low basal dopaminergic activity, Harm Avoidance with high serotonergic activity, and Reward Dependence with low basal noradrenergic activity. Through subsequent studies, Persistence was separated from Reward Dependence as a fourth dimension of temperament, and it implies a tendency towards continuing and persevering despite fatigue and lack of reward.

Recently, the model was extended by including three character dimensions in order to be more comprehensive and to improve the assessment of personality disorders (Cloninger et al 1993). The three character dimensions are Self-directedness, Cooperativeness, and Self-transcendence, which reflect individual differences in goals, values, and self-conscious emotions. These character dimensions are supposed to be influenced by social learning and are hypothesized to be less developed in immature personality and in personality disorders. Self-directedness corresponds to self-determination and "willpower", to self esteem, and to the ability of an individual to control, to regulate, and to adapt his behavior in accord with personal goals and values. Cooperativeness refers to the ability to identify empathically with other individuals and, thus, establish purposeful relationships. Self-transcendence refers to the awareness that all beings, including the self, are integral participants in the evolution of the universe as a whole.

As temperament dimensions are hypothetically associated with specific psychobiological systems, knowledge about their role in the pathogenesis of suicidal behaviour may contribute to the prediction and treatment of suicidal behavior. Evidence is accumulating that suicidal behaviour may be associated with certain personality characteristics (Apter and Ofek 2001). Recently, Van Heeringen and colleagues demonstrated that the occurence of attempted suicide might be related to Cloninger's personality characteristics "reward dependence" (Van Heeringen et al 2000) and "harm avoidance", "self-directedness", and "cooperativeness" (Van Heeringen et al 2003). Grucza and his co-workers (2003) reported that high "novelty seeking" is associated with past suicide attempts.

Furthermore, controlled studies of committed suicide (Lesage et al 1994) and of attempted suicide (Beautrais et al 1996) have found an increased prevalance of comorbid personality disorders characterized by impulsiveness and aggressive acts such as borderline and antisocial personality disorders. Comorbidity of personality disorders with other psychiatric disorders contri-

Table 1: Frequency and percentage of attempted suicide in relation to Axis 1 disorder

	Attempted Suicide				
Axis 1 disorder	**no**	**%**	**yes**	**%**	**Total**
Major depression	129	69.0	58	31.0	187
Schizophrenia	37	72.5	14	27.5	51
OCD	31	93.9	2	6.1	33
Panic disorder	35	89.7	4	10.3	39
Adjustment disorder	30	96.8	1	3.2	31
Dysthymia	15	93.8	1	6.3	16
Alcohol	23	71.9	9	18.1	32
Phobic disorder	10	90.9	1	9.1	11
Eating disorder	2	66.7	1	33.3	3
Psychosexual Dysfunction	6	100			6
GAD	43	89.6	5	10.4	48
Conversion disorder	20	90.9	2	9.1	22
Paranoid disorder	5	62.5	3	37.5	8
Bipolar disorder	17	68.0	8	32.0	25
Other	29	90.6	3	9.4	32
Total	432	79.4	112	20.6	544

butes to suicidality, and increases the risk of suicide.

The purpose of the present study was to report relationship between attempted suicide and Cloninger's personality dimensions of temperament and character in psychiatric patients. The study of the personality dimensions of patients with attempted suicide may provide a clear insight into pathogenesis of suicidal behaviour, thus potentially leading to new approaches to the treatment and prevention of suicidal behaviour.

METHOD

Subjects

The sample of the study consisted of a sample of 365 female and 179 male adult psychiatric patients (39 inpatients and 505 outpatients) who were admitted at Dokuz Eylül University Hospital Psychiatry Clinics (with a mean age of 37.6, s.d.=13.9). Data were collected within the first month of admission for treatment. DSM-IV criteria based diagnoses can be seen in Table 1. They were mostly married (54%), although a considerable number were single (35%). The majority of the sample had some level of formal education ranging from primary school to university (high school, 47.6%; primary school, 17.8%; secondary school, 11.6%; university, 23%).

Instrument

The instrument used in the study was a questionnaire with a section on background information and the Temperament and Character Inventory (TCI). TCI is a 240-item, self-report, true/false format, paper-and-pencil test. It was used to assess the four dimensions of temperament and the three dimensions of character. TCI measures four higher-order dimensions of temperament and their lower-order traits: Novelty seeking: NS1-Exploratory excitability vs. Stoic rigidity; NS2-Impulsiveness vs. Reflection; NS3-Extravagance vs. Reserve; NS4-Disorderliness vs. Regimentation; Harm Avoidance: HA1-Anticipatory worry and pessimism vs. Uninhibited optimism; HA2-Fear of uncertainity; HA3-Shyness with strangers vs. Gregariousness; HA4-Fatigability and asthenia vs. Vigor; Reward Dependence: RD1-Sentimentality; RD3-Attachment vs. Detachment; RD4-Dependence vs. Independence; Persistence. The three dimensions of characters are: Self-directedness: SD1-Responsibility vs. Blaming; SD2-Purposefulness vs. Lack of goal-direction; SD3-Resourcefulness; SD4-Self-acceptance vs. Self-striving; SD5-Congruent second nature; Cooperativeness: CO1-Social acceptance vs. Social intolerance; CO2-Empathy vs. Social disinterest; CO3-Helpfulness vs. Unhelpfulness; CO4-Compassion vs. Revengefulness; CO5-Pure-hearted conscience vs. Self-serving advantage; Self-Transcendence: ST1-Self-forgetful vs. Self-conscious experience; ST2-Transpersonal identification vs. Self-differentiation; ST3-Spiritual acceptance vs. Rational materialism. The scale scores were obtained by adding the subscale scores under each scale. Empirical data supporting its psychometric properties and clinical applications are reported by Arkar and his co-workers (2005) and Köse and his co-workers (2004) in Turkey.

Procedure

TCI was administered individually to the subjects.

Table 2: Logistic regression analysis of attempted suicide as a function of the TCI scales

Variables	B	S.E.	Wald Test (z-ratio)	p	Odds Ratio	95% Confidence Interval	
						Lower	Upper
NS	0.09	0.02	15.44	0.000	1.10	1.05	1.15
HA	0.04	0.02	2.94	0.087	1.04	1.00	1.09
RD	-0.04	0.04	0.04	0.356	0.96	0.89	1.04
PER	0.06	0.07	0.07	0.393	1.06	0.93	1.21
SD	-0.06	0.02	6.86	0.009	0.94	0.90	0.99
CO	-0.02	0.02	1.27	0.259	0.98	0.94	1.02
ST	0.02	0.02	0.57	0.452	1.02	0.97	1.06
Constant	-1.98						

Questionnaire had the necessary instructions. However, the subjects were helped in filling out the inventory when it was necessary. The first page of the questionnaire included a general introduction to the study, the name and address of the investigator, and information for the subjects to the effect that participation was on a volunteer basis. This page also included the questions on demographic characteristics.

Suicidal behavior was assessed retrospectively and clinically, by gathering data, on the one hand, about suicide attempts just before hospitalization, and on the other hand, about previous suicide attempts (defined as any voluntary, harmful behavior with a suicidal intent).

Prior to statistical analyses, all of the variables were examined through various SPSS programs for accuracy of data entry, missing values, and fit between their distributions and the assumptions of multivariate analysis. Normality and linearity was checked and found to be satisfactory. A direct logistic regression analysis was performed to predict the presence or absence of attempted suicide as a function of the seven TCI scales. Using one-way ANOVA, the mean TCI scale and subscale scores of patients with and without attempted suicide were compared with one another. All the statistical analyses were carried out by using the appropriate subprograms of the SPSS.

FINDINGS

The frequency and percentage of attempted suicide in relation to Axis 1 disorder is given in Table 1. Fifty-eight of 187 persons (31%) with major depression had made at least one earlier suicide attempt. The similar result was found in persons (27.5%) with schizophrenia.

A direct logistic regression analysis was performed on attempted suicide as a function of the TCI scales; Novelty Seeking (NS), Harm Avoidance (HA), Reward Dependence (RD), Persistence (PER), Self-directedness (SD), Cooperativeness (CO), and Self-transcendence (ST). Table 2 shows regression coefficients, Wald statistics, odds ratios and 95% confidence intervals for odds ratios for each of the seven predictors. According to the Wald criterion, Novelty Seeking ($z=15.44$, $p<0.001$) and Self-directedness ($z=6.86$, $p<0.01$) reliably predicted attempted suicide.

The classification table for the model is shown in Table 3. Overall, the model correctly classified 80.3% of the cases. Sensitivity, 13.4% is very low compared with specificity, which is 97.7%. The positive predictive value, computed for the presence of attempted suicide, is 60%; the negative predictive value, computed for the absence of attempted suicide, is 81%.

The mean scores and the standard deviations of

Table 3: Attempted suicide classification table

		Predicted		
		Suicide		
Actual		No	Yes	Correct %
Suicide	No	422	10	97.7
	Yes	97	15	62.0
Total %				80.3

Table 4: Means and standard deviations (in parentheses) of the TCI scales and subscales in psychiatric patients with and without attempted suicide.

	Attempted suicide			
	Yes (n=112)	No (n=432)	F(df=1,542)	P
Novelty Seeking	20.24(5.31)	17.62(5.03)	23.42	<0.001
Exploratory excitability (NS1)	5.62(2.13)	5.49(2.11)		n.s.
Impulsiveness (NS2)	4.77(2.00)	4.01(1.92)	13.62	<0.001
Extravagance (NS3)	5.21(2.45)	4.41(2.16)	11.17	=0.001
Disorderliness (NS4)	4.65(1.69)	3.70(1.64)	29.19	<0.001
Harm Avoidance	23.45(6.18)	21.39(6.41)	9.26	<0.005
Worry and pessimism (HA1)	7.94(2.35)	7.11(2.22)	11.80	=0.001
Fear of uncertainty (HA2)	4.79(1.53)	5.07(1.63)		n.s.
Shyness (HA3)	4.89(2.24)	4.01(2.26)	13.44	<0.001
Fatigability (HA4)	5.82(2.10)	5.19(2.27)	7.06	<0.01
Reward Dependence	13.36(3.66)	13.99(2.91)		n.s.
Sentimentality (RD1)	7.04(1.87)	7.12(1.77)		n.s.
Attachment (RD3)	3.76(2.10)	4.22(1.80)	5.33	<0.05
Dependence (RD4)	2.56(1.38)	2.65(1.37)		n.s.
Persistence	4.53(2.00)	4.79(1.82)		n.s.
Self-directedness	21.47(7.14)	26.02(6.86)	38.35	<0.001
Responsibility (SD1)	2.94(1.97)	4.14(2.04)	31.47	<0.001
Purposefulness (SD2)	3.90(1.85)	5.31(1.94)	47.56	<0.001
Resourcefulness (SD3)	2.55(1.30)	2.67(1.45)		n.s.
Self-acceptance (SD4)	5.39(2.68)	5.73(2.60)		n.s.
Congruent second nature (SD5)	6.69(2.30)	8.16(2.12)	41.39	<0.001
Cooperativeness	24.35(7.21)	27.24(5.88)	19.44	<0.001
Social acceptance (CO1)	4.79(1.97)	5.41(1.79)	10.22	=0.001
Empathy (CO2)	3.69(1.51)	3.69(1.46)		n.s.
Helpfulness (CO3)	4.03(1.53)	4.59(1.42)	13.83	<0.001
Compassion (CO4)	5.75(3.03)	6.89(2.63)	15.63	<0.001
Principled (CO5)	6.09(1.79)	6.64(1.48)	11.44	=0.001
Self-transcendence	18.10(5.96)	16.98(5.93)		n.s.
Self-forgetfulness (ST1)	6.53(2.50)	5.82(2.55)	6.79	<0.01
Transpersonal identification (ST2)	4.72(2.23)	4.80(2.29)		n.s.
Spiritual acceptance (ST3)	6.85(2.90)	6.35(2.83)		n.s.

n.s.: not significant.

the TCI scales and subscales in psychiatric patients with and without attempted suicide were calculated (see Table 4). One-way ANOVA procedure showed that the comparisons of psychiatric patients with and without attempted suicide on Novelty Seeking, NS2, NS3, NS4, and Harm Avoidance, HA1, HA3, HA4, and RD3, and Self-Directedness, SD1, SD2, SD5, and Cooperativeness, CO1, CO3, CO4, CO5, and ST1 were significant. NS1, HA2, Reward Dependence, RD1, RD4, SD3, SD4, CO2, Self-trancendence, ST2, and ST3 did not give a significant result. On Novelty Seeking and Harm Avoidance scales, and Impulsiveness, Extravagance, Disorderliness, Worry and pessimism, Shyness, Fatigability, and Self-forgetfulness subscales, patients with attempted suicide reported significantly higher scores than did patients without attempted suicide. On Self-Directedness and Cooperativeness scales, and Attachment, Responsibility, Purposefulness, Congruent second nature, Social acceptance, Helpfulness, Compassion, and Principled subscales, patients with attempted suicide reported significantly lower scores than did patients without attempted suicide.

DISCUSSION

Logistic regression was carried out to predict the presence or absence of attempted suicide based on the TCI scales' scores. Novelty seeking was a highly significant predictor with high scores observed in patients with and low scores in patients without attempted suicide. Low self-directedness scores were also a substantial predictor of the presence of attempted suicide. Further, differences were observed in patients with and

without attempted suicide on the TCI scale and subscale scores, in generally in the expected direction. On Novelty Seeking and Harm Avoidance scales, and Impulsiveness (NS2), Extravagance (NS3), Disorderliness (NS4), Worry and pessimism (HA1), Shyness (HA3), Fatigability (HA4), and Self-forgetfulness (ST1) subscales, patients with attempted suicide reported significantly higher scores than did patients without attempted suicide. On Self-Directedness and Cooperativeness scales, and Attachment (RD3), Responsibility (SD1), Purposefulness (SD2), Congruent second nature (SD5), Social acceptance (CO1), Helpfulness (CO3), Compassion (CO4), and Principled subscales (CO5), patients with attempted suicide reported significantly lower scores than did patients without attempted suicide.

This study suggests a temperamental characteristic to be associated with suicidal behavior, as patients showing suicidal behavior tend to be comparatively high in novelty seeking. The disadvantages of high 'novelty seeking' are related to excessive anger, quick decision making upon incomplete information, and poor control of impulses (Cloninger et al 1994). Relationships between suicidality and impulsivity in various psychopathological contexts have been reported (Mann et al 1999); impulsivity is a component of "novelty seeking".

Previous studies (Lesage et al 1994, Beautrais et al 1996) have shown that personality disorders are common in patients who have committed suicide and in patients who made suicide attempts. Further, comorbidity of personality disorders with other psychiatric disorders contributes to suicidality. In this study, patients with attempted suicide showed comparatively lower scores on the character dimensions self-directedness and cooperativeness. Poorly developed character traits are shared by all categorical subtypes of personality disorder (Svrakic et al 1993 and 2002). Also, both low self-directedness and cooperativeness have previously been found to increase the risk of suicide (Cloninger et al 1999).

CONCLUSION

In conclusion, temperament dimension novelty seeking appears pertinent to explore suicidality and measurement of character dimensions may be useful in the clinical evaluation of suicide risk.

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