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Article in *Anadolu Psikiyatri Dergisi* · March 2014

DOI: 10.5455/apd.43668

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Araştırma / Original article**The relationship between temperament and character features, and social problem solving in psychiatric patients who attempted suicide with drugs: preliminary results**

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ABSTRACT

Objective: In order to gather information in a broader sample, the aims of this preliminary study were: 1) to identify psychiatric diagnoses and any history of suicidal thoughts and attempts in people who attempt suicide with drugs, 2) to evaluate the temperament and character features, social problem solving skills of these patients in relation to sociodemographic data and 3) to analyze the correlations between these factors. **Methods:** Sixty patients between 16 and 49 years old participated in this study. A Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I), a Sociodemographic Data Form, the Beck Depression Inventory (BDI), Temperament and Character Inventory (TCI) and Social Problem Solving Inventory (SPSI) were administered to the participants. **Results:** According to the SCID-I, 23 (38.3%) of the participants had a major depressive disorder, and 39 (65%) of the participants had a history of previous suicide attempts before this admission. There was a significant relationship between self-esteem scores and the incidence of previous suicide attempts. There were significant (negative) correlations between the harm avoidance, reward dependence, self-directedness and cooperativeness dimensions of the TCI and the problem orientation and problem solving skills subscales of the SPSI. **Conclusion:** Psychiatric disorders are common in individuals who attempt suicide with drugs. These individuals may have a history of one or more suicide attempts before admission. In addition to differences in temperament and character features, this study found significant disorders of cognition and behavior in individuals that had attempted suicide. This result may indicate that dimensions of temperament and character can provide significant indications for cognitive and behavioral disorders. (Anatolian Journal of Psychiatry 2014; 15:31-38)

Key words: suicide, social problem solving, temperament, character

İlaçla intihar girişiminde bulunan bireylerde mizaç ve karakter özellikleri ile sosyal sorun çözme arasındaki ilişkiler: Öncü sonuçlar**ÖZET**

Amaç: Bu öncü çalışmanın amaçları, 1) ilaçla intihar girişiminde bulunan kişilerde önceki intihar girişimi ve düşüncelerinin saptanması ve psikiyatrik tanıların belirlenmesi, 2) bu hastaların sosyodemografik özellikleri ile sosyal sorun çözme ve mizaç karakterleri arasındaki ilişkiyi saptamaktır. **Yöntem:** Çalışmaya 16-49 yaşları arasındaki 60 hasta alınmıştır. Veriler DSM-IV Eksen I tanıları için Yapılandırılmış Klinik Görüşme (SCID-I), Sosyodemografik

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Geliş tarihi: 07.02.2013, Kabul tarihi: 02.09.2013 doi: 10.5455/apd.43668

Veri Formu, Beck Depresyon Ölçeği, Mizaç Karakter Ölçeği (MKÖ) ve Sosyal Sorun Çözme Ölçeği (SSÇÖ) ile toplanmıştır. **Bulgular:** SCID-I ile uyumlu olarak hastaların 23'ü (38.3%) majör depresif bozukluğa sahip olduğu, 39'unun (65%) hastaneye başvurmadan önce en az bir intihar girişimi öyküsünün bulunduğu saptanmıştır. MKÖ'nün zarardan kaçınma, ödül bağımlılığı, kendini yönlendirme ve işbirliği boyutları ile SSÇE'nin sorun yönelimi ve sorun çözme becerileri arasında ters yönde anlamlı ilişki belirlenmiştir. **Tartışma:** İlaçla intihar girişiminde bulunmuş bireylerde psikiyatrik tanımlar yaygın olarak görülmektedir. Bu bireylerin hastaneye kabulden önce en az bir intihar girişimi öyküsü bulunmaktadır. İntihar girişiminde bulunan bireyler, mizaç ve karakter özelliklerindeki farklılıklara ek olarak anlamlı düzeyde biliş ve davranış bozuklukları sergilemektedir. Bu çalışma, mizaç ve karakter boyutlarının bilişsel ve davranışsal bozuklukları belirlemek için önemli bir veri sağladığını ortaya koymaktadır. (*Anadolu Psikiyatri Derg* 2014; 15:31-38)

Anahtar sözcükler: İntihar, mizaç, karakter, sosyal sorun çözme

INTRODUCTION

Suicidal behavior is defined as including thoughts of suicide, suicide attempts and completed suicide. Suicide is among the most common and significant of all causes of death.^{1,2}

Factors that predispose individuals to suicidal behaviors can be considered according to several specific concepts. Patients' problem solving skills are reported to be an important factor in predicting suicidal behaviors.^{3,4} Especially in adolescents, the elevation of stress levels along with the deterioration of problem solving skills increases the risk of suicidal thoughts and non-fatal suicide attempts.⁵⁻⁷ Although it was clear that the deterioration of problem solving skills is associated with depression and increased the risk of suicidal behaviors in teenagers and adults, the nature of this deterioration and who was most likely to show it was not clear.⁸

Problem solving skills are defined here within the framework of the cognitive behavioral approach. According to this model there is a negative correlation between suicidal behaviors and problem solving skills.^{9,10} This social problem solving model defines cognitive, emotional and behavioral processes conceptualized as 'problem orientation' and 'problem solving skills'. 'Problem orientation' indicates an individual's level of awareness about a problem; evaluates his/her problem solving skills; and predicts his/her efficacy in attempting to solve the problem. 'Problem solving skill' is defined as an individual's ability to define problems, to generate logical solutions, and to monitor the results of those solutions.¹¹⁻¹⁴

Temperamental and characterological issues are also important to the suicidal behavior.¹⁵ Cloninger describes them using two-dimension scale. Studies of suicidal behavior using this model show that an increase in the temperamental traits of novelty seeking, harm avoidance and reward dependence, and an increase

in the character dimension of self-transcendence along with a decrease in cooperation and self-management can be correlated with suicide attempts and suicidal thoughts.¹⁶⁻¹⁹

To date, there has been no other study that has assessed temperament, character and social problem solving skills together. The aim of this study is to assess the correlations between temperament and character features and social problem solving skills in individuals who attempt suicide with drugs.

METHODS

This study was the preliminary part of the multicentric research. Sixty individuals participated in this study. They were between the ages of 16 and 49, and were admitted to Ankara Diskapi YB Education and Research Hospital Emergency Service due to suicide attempts with drugs. The inclusion criteria for the study were a patient's agreement to participate, and their treatment and observation within the emergency service. The exclusion criteria for the study were a cognitive disability that might interfere with answering assessment scales, and the presence of acute psychotic disorders. The study was approved by the institution's Ethics Committee and written informed consent was obtained from each participant.

Data collection tools

The Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I): This is a structured clinical interview form developed by Spitzer et al. to diagnose DSM-IV Axis I disorders.²⁰ Validity and reliability was established for the Turkish test by Özkürkçügil et al.²¹

Beck Depression Inventory (BDI): This 21-item scale was developed by Beck.²² For the Turkish version of this test, the cut off point for validity and reliability is considered to be 17.²³

The Temperament and Character Inventory

(TCI): This test was developed by Cloninger and colleagues²⁴ and its Turkish validity and reliability was established by Köse et al.²⁵ There are four temperament and three personality dimensions in this inventory. Temperament dimensions: novelty seeking (NS), exploratory excitability (NS₁), impulsiveness (NS₂), extravagance (NS₃), disorderliness (NS₄), harm avoidance (HA), anticipatory worry (HA₁), fear of uncertainty (HA₂), shying away (HA₃), fatigue (HA₄), reward dependence (RD), sentimentality (RD₁), attachment (RD₂), dependence (RD₃), persistence (P); character dimensions: self-directedness (S), responsibility (S₁), purposefulness (S₂), resourcefulness (S₃), self-acceptance (S₄), adjusted secondary temperament (S₅), cooperativeness (C), social acceptance (C₁), empathy (C₂), helpfulness (C₃), compassion (C₄), pure-hearted conscience (C₅), self-transcendence (ST), self-forgetfulness (ST₁), metapersonal identification (ST₂), and spiritual acceptance (ST₃).

The Social Problem Solving Inventory-SPSI:

The SPSI developed by D'Zurilla and Nezu.²⁶ The validity and reliability of the Turkish version was established by Duyan and Gelbal.²⁷ This is a 70-item multi-dimensional measurement tool. Every item in this inventory consists of statements that reflect either positive (promoter) or negative (inhibitive) cognitive, emotional and

behavioral reactions to problem solving situations in daily life. The SPSI has two primary scales, the Problem Orientation Scale (POS-30 items) and the Problem Solving Skills Scale (PSSS-40 items). The SPSI has 7 subscales of 10 items. The three subscales of the POS are cognitive, sensory and behavioral subscales. The four subscales of the PSSS are: 1) problem identification and formulation, 2) generating alternative solutions, 3) decision making and 4) solution implementation and verification. Subjects are asked to rate answers on a five point scale: 'never true for me'-0 point to 'always true for me'-4 points with the higher the score, the better the subject's social problem solving capacity.

Statistical analysis

Study data were analyzed using the SPSS, version 16.0. The independent samples t-test procedure was employed to compare the means for the two sets of cases. We also employed Pearson correlation coefficients to determine the relationships between dependent and independent variables. The minimum acceptable level of significance was set at .05. Additionally, to control the family-wise error rate we used Bonferroni Correction while setting a significance level for multiple comparisons. Accordingly significance level was set as $p < 0.007$ for comparisons.

Table 1. Sociodemographic features and Beck Depression Inventory scores ratios of individuals who attempted suicide with drugs

		n	%	Beck Depression Inventory Ort.±SD	p
Gender	men	16	26.7	20.8±15.8	0.024*
	women	44	73.3	30.3±13.4	
Marital status	single	32	53.3	23.8±13.0	0.035*
	married	25	41.7	31.8±15.1	
	divorced	3	5.0	42.3±13.5	
Education level	primary school	7	11.7	39.4±10.5	0.071*
	secondary school	15	25.0	30.6±15.7	
	high school	32	53.3	24.3±13.0	
	university	6	10.0	25.5±18.3	
Working status	employed	24	40.0	23.4±14.7	0.059*
	unemployed	36	60.0	30.6±13.9	
Suicidal thoughts	lifetime	9	15.0	31.3±12.1	0.671*
	in last 12 months	22	36.7	28.6±14.0	
	present	15	25.0	28.0±11.9	
	none	14	23.3	23.9±19.4	
Suicide attempt	lifetime	11	18.3	30.3±12.8	0.373*
	in last 12 months	28	46.7	29.5±14.8	
	none	21	35.0	24.1±14.9	
Suicide attempt in family	yes	9	15.0	32.4±15.3	0.304*
	no	51	85.0	26.9±14.4	

* Significance level was set at 0.007 for group comparisons

RESULTS

A total of 60 participants were included in the study. The sociodemographic data including gender, marital status, education level, previous suicide attempts and a history of a suicide attempt in the family can be seen in Table 1. BDI scores indicated no significant differences between the genders and according to marital status, education level, working status, previous suicidal thoughts, previous suicide attempts and

a history of suicide (Table 1).

According to the psychiatric evaluation using SCID-I, 7 (11.6%) of the participants showed no psychiatric diagnosis. On the other hand, 23 (38.3%) of them had major depressive disorder (MDD), 20 (33.3%) had an adjustment disorder (AD), 13 (21.6%) had generalized anxiety disorder (GAD), 10 (16.6%) had post-traumatic stress disorder (PTSD), 5 (8.3%) had schizophrenia (SCH), 5 (8.3%) had dissociative dis-

Table 2. Correlation findings between the Temperament and Character Inventory the Social Problem Solving Inventory

	Problem Orientation Scale			Identification	Problem Solving Skills Scale		
	Cognition	Emotion	Behavior		Generating alternatives	Decision making	Solution implementation
Temperament s of TCI							
(NS)	-0.093	-0.038	-0.031	-0.041	-0.234	-0.231	-0.143
(HA)	-0.443***	-0.081	-0.189	-0.186	-0.359**	-0.492***	-0.363**
(RD)	-0.279*	-0.001	-0.004	-0.193	-0.180	-0.334**	-0.261*
(P)	-0.146	-0.088	-0.031	-0.044	-0.212	-0.219	-0.218
Character features of TCI							
(S)	-0.476***	-0.548***	-0.415**	0.149	-0.209	-0.469***	-0.055
(C)	-0.293*	-0.277*	-0.246	-0.015	-0.251	-0.424**	-0.084
(ST)	-0.214	-0.249	-0.078	-0.082	-0.210	-0.274*	-0.198
Novelty seeking subscales							
(NS1)	-0.201	0.000	0.066	-0.224	-0.362**	-0.313*	-0.345**
(NS2)	-0.085	-0.074	-0.051	-0.088	-0.206	-0.257*	-0.221
(NS3)	-0.010	-0.126	-0.272*	0.169	0.059	-0.035	0.221
(NS4)	0.040	0.068	0.113	0.060	-0.106	-0.027	0.001
Harm avoidance subscales							
(HA1)	-0.347**	0.002	-0.161	-0.187	-0.301*	-0.433**	-0.242
(HA2)	-0.291*	-0.176	-0.113	0.070	0.006	-0.203	-0.131
(HA3)	-0.236	0.029	-0.188	-0.096	-0.262*	-0.253	-0.229
(HA4)	-0.393**	-0.128	-0.084	-0.274*	-0.433**	-0.480***	-0.429**
Reward dependence subscales							
(RD1)	-0.230	-0.071	-0.055	-0.150	-0.148	-0.235	-0.147
(RD2)	-0.270*	-0.134	-0.055	-0.071	-0.191	-0.271*	-0.240
(RD3)	0.069	0.298*	0.171	-0.156	0.018	-0.060	-0.125
Self directedness subscales							
(S1)	-0.275*	-0.551***	-0.495***	0.329**	-0.003	-0.261*	0.071
(S2)	-0.377**	-0.210	-0.159	-0.073	-0.281*	-0.351**	-0.174
(S3)	-0.298*	-0.386**	-0.458***	0.264*	0.036	-0.261*	0.122
(S4)	-0.369**	-0.380**	-0.214	-0.018	-0.265*	-0.420**	-0.109
(S5)	-0.233	-0.265*	-0.103	0.058	-0.095	-0.201	-0.034
Cooperativeness subscales							
(C1)	-0.168	-0.198	-0.269*	-0.058	-0.226	-0.287*	-0.022
(C2)	-0.169	-0.347**	-0.217	0.186	-0.130	-0.250	0.091
(C3)	-0.274*	-0.020	-0.029	-0.206	-0.248	-0.335**	-0.239
(C4)	-0.132	-0.182	-0.109	0.086	-0.010	-0.158	0.075
(C5)	-0.135	-0.072	-0.095	-0.079	-0.195	-0.276*	-0.206
(ST1)	-0.091	-0.350**	-0.091	0.075	-0.086	-0.157	-0.037
(ST2)	-0.048	0.121	0.090	-0.205	-0.180	-0.158	-0.145
(ST3)	-0.336**	-0.279*	-0.154	-0.087	-0.219	-0.302*	-0.274*

* p<0.05, ** p<0.01, *** p<0.001

order (DD), 4 (6.6%) had social phobia (SP), 3 (5%) had obsessive-compulsive disorder (OCD), 2 (3.3%) had dysthymia (D), 2 (3.3%) had alcohol abuse (AA) and 1 (1.6%) had bipolar disorder (BB).

A significant negative correlation was found between the HA subscale of TCI and the cognition, generating alternatives, solution implementation, and decision making subscales of the SPSI. There were also significant correlations between HA₁₋₄ and some subscales of the SPSI. There was no significant correlation between NS on the TCI and the SPSI subscales. But there was a significant correlation between the NS₁₋₃ and some subscales of the SPSI.

Another significant negative correlation was found between the cognition, solution implementation, generating alternatives subscales of the SPSI and the RD subscale of the TCI. Significant correlations were found between the RD₂₋₃ and the subscales of the SPSI (Table 2).

A significant negative correlation was found between the S subscales and the cognition, emotion, behavior and solution implementation subscales of the SPSI. There was a meaningful correlation between the S₁₋₅ and some subscales of the SPSI. A significant negative correlation was found between the C dimension of the TCI and the cognition, emotion, and solution implementation subscales of the SPSI. Also a significant correlation was found between the C₁₋₅ and the some subscales of SPSI. Finally, a meaningful negative correlation was found between the ST dimension (TCI) and the decision making subscale of the SPSI. Another significant correlation was established between the ST_{1,3} subscales and some subscales of the SPSI (Table 2).

DISCUSSION

In this study our aims were to: 1) determine clinical and sociodemographic features including psychiatric diagnoses, previous suicidal thoughts and suicide attempts for people who attempted suicide with drugs, 2) evaluate these people in terms of temperament and character feature and a social problem solving skills and 3) to analyze the correlations between these parameters.

When the sociodemographic data were evaluated, we found that 88.4% of participants had at least one psychiatric disorder. Psychiatric diagnoses in order of frequency were: MDD, AD, GAD and PTSD. Mental disorders, especially

MDD, reflect a predisposition to suicidal thoughts and attempts.²⁸ While mood disorders are the main risk factors that have been identified in developed countries, in developing countries, impulse control disorders, SA and PTSD have been demonstrated to be the primary risk factors.²⁹

In our study 76.7% of the participants reported previous suicidal thoughts, 65% of them had a history of at least one previous suicide attempt. Several follow-up studies show that individuals who attempt suicide also report previous suicidal thoughts and suicide attempts.³⁰⁻³²

In our study we evaluated cognitions and behaviors related to coping, using the SPSI, for subjects who had attempted suicide. The POS measures the meta-cognitive processes of an individual. In one way, a problem orientation can be adaptive, providing motivational, attitudinal, and affective abilities for solving problems that may increase the effectiveness of an individual when solving a particular problem.³³ The ability to solve a problem which is measured by PSSS indicates cognitive and behavioral activities directed toward understanding the problem and toward finding efficient solutions and implementing them.³⁴

In the literature, the TCI and the SPSI have been used separately, but no study has considered how these features show correlations with each other in persons who attempt suicide. In our study, we demonstrated many correlations between these two scales. Temperamental subscales such as HA and RD and characterological subscales such as S, C and ST were somewhat correlated with SPSI subscales.

We found significant correlations between the RD and HA dimensions of the TCI and the two dimensions of the SPSI. According to Cloninger, the Temperament subscale shows prejudices and tendencies that are parts of perceptual memory and are independent of sociocultural attributes during the early stages of life.³⁵ Temperament is the integration of skills and routines related to emotions by perception, linkage and motivation processes.³⁷⁻³⁹

HA has a strong negative correlation with cognition item of problem orientation subscale and decision making subscale of PSSS alongside a moderate correlation with generation alternatives and solution implementation items. These findings suggest, at least in suicide attempters, that harm avoidance is related with behavioral

components of the problem solving as well as cognitive component of problem orientation. This is consistent with the negative problem orientation concept which is described by D'Zurilla as one's lack of commitment to solving problems and avoiding them.⁴⁰ However harm avoidance is state dependent in depression and the higher score of harm avoidance is not specific to any psychopathology since the same result has been observed in various clinical states.⁴¹ Rather higher score on this dimension could reflect the severity of general psychopathology and could constitute a personality risk to develop general adjustment deterioration with poor problem solving skills. Another temperamental item which is correlated weakly to moderately with the same SPSI subscales except 'generating alternatives' item is RD. Reward dependence is characterized as sentimentality, tender-heartedness, social sensitivity, attachment and dependence on approval of others. This temperamental feature is related to suggestibility and loss of objectivity. According to our findings high reward dependency is related to more dysfunctional cognitive appraisals to a problem along with poor decision making and solution implementation skills.

HA is the temperament dimension most affected by MDD and it shows an increase in people who attempt suicide.¹³⁻¹⁸ Cognitive beliefs and internalization processes connected to the HA dimension may affect individual's perceptions of social problems and their ability to find efficient solutions. One study on this question found that individuals who have high HA and low S and C features, demonstrate defects in their cognitive executive functions. Similarly, a visualization study showed a significant relationship between RD and cognitive-emotional responses.⁴² Individuals who score high on RD have a tendency to build warm and lasting relationships. They are also reported to show intense emotional reactions after the loss of an object and separations. They may also be highly affected by other people.³⁶ This malleability and reactivity toward life events may be associated with disturbances in cognition and the enacting dimensions of the SPSI.

Although there was no correlation between the NS in general and SPSI there were meaningful correlations between problem solving skill subscales and exploratory excitement, extravagance and impulsiveness items. Exploratory excitement which is supposed as the opposite of 'stoic rigidity'²⁴ seems to be mainly related to problem solving skills rather than problem

orientation.

We found a significant correlation between the S and C scores of the TCI and the two areas of the SPSI. Cloninger defines 'character extension' as the selfhood concepts individuals learn through interactive relationships with others and their insight into these concepts. However, he indicated that insight into selfhood concepts develop in the adulthood stage.³⁵ Character is correlated with propositional memory, which includes high level cognitive processes like symbolization and abstraction.³⁷ Almost the strongest correlations detected in the current study are between self directedness character feature and problem orientation processes. Individuals who score low on the S, also endorse features like not being able to take responsibility for their choices and decisions, difficulty with goal setting, diffidence, emotional fragility and immaturity.³⁵ Accordingly we detected strong correlations between Responsibility item of S and emotional & behavioral problem orientation of POS. Our findings related to S may help explain the correlation between suicide attempts and deficits in problem solving for people who endorse this character dimension.

In this study, the significant correlations between the HA, RD, S and C dimensions of the TCI and SPSI, show similarities with the findings that show differences in temperament and character features between those individuals who attempt suicide and those who do not. This finding may demonstrate that temperament and character features reflect significant cognitive and behavioral disorders. One study conducted about this issue found that the Temperament and Character features affected by depressive disorders showed significant correlations with the questions about cognition in the BDI.⁴³

CONCLUSION

Individuals who attempt suicide with drugs also show symptoms of many psychiatric disorders like MDD. Handicaps in temperament and character and social problem solving domains are also similar for individuals who attempt suicide. The SPSI may reflect defects in Temperament and Character dimensions in concordance with the cognitive behavioral therapeutic model. The limitations of this study include difficulty in generating a control group, and small sample size. Besides, psychopathologies as confounders might affect the relationships between parameters. Yet this is a preliminary study, we

we have more comprehensive insight when will get the data from the multi-centric research.

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