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Research / Araştırma

Relation of the Nine Types of Temperament Model with Personality Disorders

Enver Demirel Yilmaz[1], Ali Gorkem Gencer[2], Ozge Unal[3], Mehmet Palanci[4], Mehmet Kandemir[5], Ziya Selcuk[6], Omer Aydemir[7]

[1]Dortyol State Hospital, Department of Psychiatry, Hatay - Turkey
[2]Basaksehir State Hospital, Department of Psychiatry, Istanbul -Turkey
[3]Self Employed, Istanbul - Turkey
[4]Karadeniz Technical University, Faculty of Education, Department of Special Education, Trabzon - Turkey
[5]Kirikkale University, Faculty of Education, Department of Elementary Education, Primary School Teacher Training Programme, Kirikkale - Turkey
[6]Gazi University, Faculty of Education, Department of Primary Education, Division of Classroom Education, Ankara - Turkey
[7]Celal Bayar University, Faculty of Medicine, Department of Psychiatry, Manisa - Turkey

ABSTRACT

Relation of the Nine Types of Temperament Model with personality disorders

Objective: Aim of this study is to determine the correspondence between personality categories and the types making up the Nine Types of Temperament Model (NTTM) –a new temperament model which evaluates personality disorders within the context of temperament traits and maladaptive personality features- and conceptualization of NTTM types.

Method: The sample group is composed of 117 participants with a personality disorder. SCID II and Nine Types of Temperament Scale (NTTS) were applied to the participants.

Results: According to the findings, all NTTM types have shown significant correlation with at least one personality disorder. According to the regression analysis results, it was determined that the NTTM types were explained by personality disorders at a rate of 19-41%.

Conclusions: In this study, it is found that knowing the temperament features that form the basis of an individual's personality structure is helpful to diagnose and to determine the tendency to develop personality disorders that are pathological responses to personality characteristics. In addition, this study brings up questions such as whether the individual differences between patients with the same personality disorders can be evaluated on the basis of temperament and whether it is possible to determine therapy and treatment approaches according to an individual's temperament type.

Keywords: Nine types temperament model, nine types temperament scale, personality, personality disorder, temperament

ÖZET

Dokuz Tip Mizaç Modeli'nin kişilik bozukluklarıyla ilişkisi

Amaç: Bu çalışmanın amacı; kişilik bozukluklarını, mizaç özellikleri ve maladaptif kişilik özellikleri bağlamında değerlendiren yeni bir mizaç modeli olan Dokuz Tip Mizaç Modeli (DTMM) tiplerinin hangi kişilik kategorilerine karşılık geldiğinin ve kavramlaştığının saptanmasıdır.

Yöntem: Örneklem, herhangi bir kişilik bozukluğu saptanmış 117 katılımcıdan oluşmaktadır. Katılımcılara SCID II ve Dokuz Tip Mizaç Ölçeği (DTMÖ) uygulanmıştır.

Bulgular: Bulgulara göre tüm DTMM tipleri en az bir kişilik bozukluğuyla anlamlı korelasyon göstermiştir. Regresyon analizi sonuçlarına göre DTMM tiplerinin kişilik bozuklukları tarafından %19-41 oranında açıklandığı saptanmıştır.

Sonuç: Bu çalışmada, bireylerin kişilik yapısının temelini oluşturan mizaç özelliklerinin bilinmesinin, kişilik özelliklerinin patolojik karşılığı olan kişilik bozukluklarına yatkınlık açısından ve tanı koymada kolaylık sağlayabileceği sonucuna varılmıştır. Ayrıca aynı kişilik bozukluğuna sahip bireylerin bireysel farklılıklarının mizaç tipi temelinde değerlendirilmesi ve bireyin mizaç tipine uygun terapi ve tedavi yaklaşımları belirlenmesinin mümkün olup olamayacağı sorusu gündeme getirilmiştir.

Anahtar kelimeler: Dokuz tip mizaç modeli, dokuz tip mizaç ölçeği, kişilik, kişilik bozukluğu, mizaç

Address reprint requests to / Yazışma adresi:
Omer Aydemir,
Uncubozkoy Mah., Mimarsinan Bulvari, No:173,
45030 Manisa, Turkey

Phone / Telefon: +90-212-543-3320

E-mail address / Elektronik posta adresi:
soaydemir@yahoo.com

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INTRODUCTION

Temperament and personality are essential terms to understand normal psychology and psychopathology. Clark (1) states that temperament is a uniting concept in defining the relation between personality disorder and psychopathology, while personality is composed of interaction of innate temperament features with biological and environmental factors; and extreme experiencing of personality features creates psychopathology. Mervielde et al. (2) emphasize the importance of temperament and personality features especially for the assessment of maladaptive personality and personality disorders.

In the literature, there are numerous studies focusing on the relation of temperament and personality models with personality disorders (PD). Studies investigating the relations between Five Factor Model (FFM) and PD find that PDs are maladaptive and extreme variants of the domains and facets that belong to FFM (3-6). Blais (7) determined that of the FFM dimensions, neuroticism is positively correlated with borderline, avoidant, and dependent PD; agreeableness has negative correlations with paranoid, avoidant, schizoid, and schizotypal PD; and extraversion is positively correlated with narcissistic and histrionic PD and negatively with schizoid PD. In another study that examines the relation between the Big Three Model and personality pathologies, it is found that neuroticism is an important component in borderline PD diagnosis and extraversion is an important component in schizoid and avoidant PD diagnoses (8). In a study that assesses the ability of the Psychobiological Personality Model (PPM) to predict PD, Richter and Brandström (9) determined that individuals with PD have often higher scores in Novelty Seeking (NS), Harm Avoidance (HA) and Reward Dependence (RD) temperament and low character dimension scores, compared to individuals without PD. On the other hand, Svrakic et al. (10) stated that cluster A, B and C PDs are predicted by low RD, high NS and high HA scores, respectively; while low Self Directedness (SD) and Cooperativeness (C) scores are the basic features of the presence of PD.

The Nine Types of Temperament Model (NTTM), which explains the temperament-personality relation both in normal psychology and in contexts of psychopathology, propounds that normal and psychopathological human behavior can be explained on the basis of temperament (11,12). According to the approach of NTTM, temperament is composed of traits that are innate and unchanging, composing the constituents of personality (1,2,13,14), while traits that constitute the temperament types also comprise the core traits of the personality. Personality may effect the emergence and manifestation of psychopathology. In addition, there is a pathoplastic relationship between personality and psychopathologies, which may share a common etiology or play a role in each other's etiologies (15). Accordingly, temperament constitutes the origin of normal personality development as well as generating personality disorders and psychopathologies. By knowing the temperament types, it is possible to distinguish normal personality features and personality pathologies (11,12).

The traits of NTTM types are summarized here briefly. NTT 1: Serious, meticulous, neat, detailed, perfectionist, disciplined, principled, responsible, formalist, strict, tense, controlled, and temperate (11,13). NTT 2: Warm-hearted, extroverted, sincere, talkative, sympathetic, having strong communication skills, relation oriented, full of love, very emotional, touchy, reproachful and manipulative (12,16). NTT 3: Success- and career- oriented, ambitious, competitive, goal-oriented, pragmatic, practical, diplomatic, adaptable, popular, and self-seeking (17). NTT 4: Individualist, unique, romantic, fragile, melancholic, melodramatic, passionate, marginal, and extraordinary (13,17). NTT 5: Introverted, quiet, asocial, avoiding physical contact, distant from emotions, cold, absolutely rationalistic, objective, analytical observer, sceptic, abstracting, conceptualizing, and specializing in knowledge (11,12,16). NTT 6: Safety and security oriented, authority seeker, controller, meticulous, neat, obsessive, thrifty, precautious, anxious, having paranoid touchiness, pessimistic, distrustful, opponent, ambivalent, covering all bases, indecisive, and

suspicious (11-13,16,17). NTT 7: Talkative, extroverted, enterprising, quickly establishing relations, fun-loving, cheerful, witty, very active, impulsive, seeking excitement, prone to novelty, avoiding boredom, having superficial curiosity, avoiding restrictions, impatient, and easily bored (13,16). NTT 8: Dominating, leader, authoritarian, oppressive, grandiose, tough, intervening, intolerant, challenging, furious, quick tempered, aggressive, and quick to get into action (1,14). NTT 9: Calm, harmonious, peaceable, not getting involved, integrating, avoiding conflicts, suppressing anger, showing passive resistance, not able to get into action, and postponing (11,17).

Yilmaz et al. (12) previously made a theoretical proposal on the relation between NTTM types and some categories of symptoms, diagnosis, and personality disorder. Later, Yilmaz et al. (18) determined that some temperament types were more frequent in a sample group diagnosed as attention deficit and hyperactivity disorder, and propounded that some temperament types may predispose to certain psychopathologies. However, in the literature there is no study investigating the relation between NTTM that propounds that temperament types may predispose to some personality disorders, and personality disorders. The aim of this study is to determine which personality categories NTTM types correspond to and how they are conceptualized according to NTTM. In addition, as this is the first study to investigate the relations between NTTM and personality disorders based on evidence, it is a preliminary study for a future research project that will analyze the etiological relations between NTTM types and personality disorders.

METHOD

Structured Clinical Interview for DSM-IV (SCID-I): SCID I is a semi-structured clinical interview tool, developed by First et al. (19) to investigate whether the participant has any Axis I psychopathology. The validity and reliability study of its Turkish form was established by Ozkurkcugil et al. (20).

Structured Clinical Interview for DSM-III-R Personality Disorders (SCID-II): The SCID II inventory is a structured interview tool developed by Spitzer and Williams (21) to make a more reliable diagnosis for personality disorders. It is used to determine 12 personality disorders identified in DSM-III-R. A reliability study of its Turkish version was conducted by Coskunol et al. (22).

Nine Types of Temperament Scale (NTTS): NTTS is a self-report scale developed by Yilmaz et al. (13) to evaluate temperament types defined by NTTM. NTTS is composed of 91 items in total to be scored with a three-point Likert scale as "yes," "sometimes", and "no". The scale's Comparative Fit Index (CFI) is 0.88, Goodness of Fit Index (GFI) is 0.845, Incremental Fit Index (IFI) is 0.88, and Root Mean Square Error of Approximation (RMSEA) is 0.054. The Cronbach alpha value for the complete scale is 0.75 and for the nine types 0.77, 0.79, 0.68, 0.71, 0.80, 0.74, 0.71, 0.83, 0.77, respectively.

Application

Ethics board approval for this study was obtained from Bezmialem Vakif University Faculty of Medicine. Hundred and fifty nine people who presented to Bezmialem Vakif University Faculty of Medicine Psychiatry Polyclinics Outpatient Service between March-May 2014 and had been diagnosed with a personality pathology according to DSM IV TR except any Axis I diagnosis were informed about the contents of this study and assured that it will be conducted on a voluntary basis. A written informed consent form and a sociodemographic information form were given consecutively to 149 voluntary participants who had accepted to participate in this study. Later, SCID-I was administered to the participants by two investigators (E.D.Y. and A.G.G.) through face-to-face interviews. Thirty two participants who declared to be diagnosed with a chronic physical illness and/or with an Axis I disorder were excluded from the study to create a homogeneous group. For the remaining 117 participants, first the necessary directions for filling in the NTTS were given, and subsequently NTTM and SCID-II were administered.

Statistical Analyses

SPSS 16.00 software was used to analyze the data. In order to determine the correspondence of the 12 personality disorder categories measured by the SCID II inventory with the NTTM temperament types, first SCID II items were scored as present/absent, then participants' total scores for each personality disorder category were calculated. Pearson correlation analysis was conducted between scores of NTTS and SCID II. In addition, for every personality disorder category, a comparison was made for temperament types. For the evaluation of correlation coefficients, the following ranges were accepted: 0.0-0.2 absent, 0.2-0.4 weak, 0.4-0.6 medium, 0.6-0.8 good, 0.8-1.0 very good correlation (23). Furthermore, the relations between personality disorders and temperament types were evaluated with Multi-Linear Regression Analysis Method. The temperament types were selected as the predicted variable, and the personality disorders were selected as the predictor variables in the analyses. In the study, $p<0.05$ was accepted as statistically significant.

RESULTS

The study group consisted of 43% males (n=50) and 57% females (n=67) with an average age of 31.68±9.29 years. 52% of the participants were single, 48% married, 27% had graduated from primary school, while 32% were from high school and 41% from a university. Furthermore, 58% of the participants were working and 42% were unemployed, housewives, or retired.

Correlation Results

Looking at correlations between NTTM types and SCID II categories at the chosen significance level ($p<0.05$), the following results become significant: NTT1 and Obsessive Compulsive Personality Disorder (OCPD) (r=0.37), NTT2 and dependent personality disorder (DPD) (r=0.45), histrionic personality disorder (HPD) (r=0.50) and borderline personality disorder (BPD) (r=0.30), NTT3 and narcissistic personality disorder (NPD) (r=0.46), NTT4 and passive aggressive personality disorder (PAPD) (r=0.36), self-defeating personality disorder (SDPD) (r=0.42), HPD (r=0.37) and BPD (r=0.53), NTT5 and avoidant personality disorder (APD) (r=0.34), paranoid personality disorder (PPD) (r=0.35) and schizoid personality disorder (SPD) (r=0.50), NTT6 and APD (r=0.38), DPD (r=0.40), OCPD (r=0.40), PAPD (r=0.39), PPD (r=0.33) and schizotypal personality disorder (STPD) (r=0.35), NTT7 and HPD (r=0.35), BPD (r=0.33), APD (r=-0.25) and SPD (r=-0.25), NTT8 and antisocial personality disorder (ASPD) (r=0.36), NPD (r=0.27) and APD (r=-0.25) (Table 1).

Table 1: Correlation coefficients between NTTS and SCID II

n=117	APD n=45	DPD n=22	OCPD n=49	PAPD n=39	SDPD n=39	PPD n=85	STPD n=21	SPD n=2	HPD n=90	NPD n=53	BPD n=76	ASPD n=42
NTT1	0.12	0.01	0.37**	-0.03	0.03	0.12	-0.08	0.10	-0.17	0.08	-0.22*	-0.10
NTT2	0.03	0.45**	0.04	0.27**	0.23*	0.08	0.19*	-0.19*	0.50**	-0.11	0.30**	-0.16
NTT3	-0.13	-0.02	-0.10	0.04	0.03	0.19*	-0.16	-0.07	0.21*	0.46**	0.00	0.11
NTT4	0.19*	0.14	0.07	0.36**	0.42**	0.27**	0.27**	0.13	0.37**	0.24**	0.53**	0.07
NTT5	0.34**	-0.09	0.28**	0.09	0.20*	0.35**	0.18	0.50**	-0.18	0.09	0.11	0.08
NTT6	0.38**	0.40**	0.40**	0.39**	0.27**	0.33**	0.35**	0.07	0.28**	-0.07	0.29**	-0.13
NTT7	-0.25**	0.20*	-0.17	0.21*	0.16	-0.05	0.10	-0.25**	0.35**	0.04	0.33**	0.12
NTT8	-0.25**	-0.05	0.13	0.12	0.21*	0.16	0.08	-0.09	0.21*	0.27**	0.15	0.36**
NTT9	0.23*	0.24**	0.02	0.09	-0.02	-0.03	-0.09	0.11	-0.04	-0.22*	-0.04	-0.29**

*p<0.05, **p<0.01, APD: Avoidant Personality Disorder, DPD: Dependent Personality Disorder, OCPD: Obsessive-Compulsive Personality Disorder,
PAPD: Passive-Aggressive Personality Disorder, SDPD: Self-Defeating Personality Disorder, PPD: Paranoid Personality Disorder, STPD: Schizotypal Personality Disorder,
SPD: Schizoid Personality Disorder, HPD: Histrionic Personality Disorder, NPD: Narcissistic Personality Disorder, BPD: Borderline Personality Disorder,
ASPD: Antisocial Personality Disorder, NTT: Nine Types of Temperament, NTTS: Nine Types of Temperament Scale,
SCID II: Structured Clinical Interview for DSM-III-R Personality Disorders

Table 2: Multilinear regression analyses results

Variable	NTT1	NTT2	NTT3	NTT4	NTT5	NTT6	NTT7	NTT8	NTT9
Constant (B)	5.28	4.57	5.28	3.39	5.76	3.73	7.61	3.16	10.20
APD	0.06	-0.17	-0.18	0.04	0.14	0.20*	-0.42**	-0.52***	0.29*
DPD	0.04	0.22*	0.13	-0.17	-0.09	0.05	0.18	0.13	0.15
OCPD	0.50***	0.03	-0.06	-0.06	0.08	0.28*	-0.17	0.26*	-0.10
PAPD	-0.18	0.06	-0.05	0.21*	-0.00	0.17	0.15	-0.12	0.13
SDPD	0.24*	0.16	0.11	0.08	0.04	-0.01	0.10	0.39**	-0.11
PPD	0.17	0.05	0.26*	0.01	0.27*	0.18	-0.03	0.21*	-0.03
STPD	-0.31	0.09	-0.35*	-0.12	-0.11	0.03	0.08	-0.13	-0.15
SPD	-0.12	-0.14	0.03	-0.02	0.27*	-0.21*	-0.06	-0.05	0.06
HPD	-0.06	0.36***	0.13	0.06	-0.23*	0.09	0.13	0.17	-0.10
NPD	0.07	-0.19	0.43**	0.14	-0.01	-0.19*	-0.03	0.06	-0.12
BPD	-0.26	0.12	-0.11	0.60***	0.12	0.21	0.21	-0.28*	0.17
ASPD	0.07	-0.24**	0.08	-0.33***	-0.03	-0.25*	-0.01	0.43***	-0.27*
R^2	0.30	0.47	0.36	0.44	0.34	0.47	0.35	0.44	0.27
Adjusted R^2	0.22	0.41	0.29	0.38	0.27	0.41	0.28	0.38	0.19
Standard Error	3.98	4.50	3.53	3.85	5.53	3.67	3.70	4.32	4.50
F	3.76***	7.92***	5.09***	7.12***	4.66***	7.83***	4.80***	6.99***	3.33***

*p<0.05, **p<0.01, ***p<0.001, APD: Avoidant Personality Disorder, DPD: Dependent Personality Disorder, OCPD: Obsessive-Compulsive Personality Disorder, PAPD: Passive-Aggressive Personality Disorder, SDPD: Self-Defeating Personality Disorder, PPD: Paranoid Personality Disorder, STPD: Schizotypal Personality Disorder, SPD: Schizoid Personality Disorder, HPD: Histrionic Personality Disorder, NPD: Narcissistic Personality Disorder, BPD: Borderline Personality Disorder, ASPD: Antisocial Personality Disorder, NTT: Nine Types of Temperament

Results of Multilinear Regression Analyses

Considering the results of Multilinear Regression Analyses between the DTMM types and SCID II categories, all the models established have been found to be significant ($p<0.001$). The predictive power of OCPD for NTT1, which is one of the NTTM types ($R^2=0.30$, $\beta=0.50$; $p<0.001$); HDP for NTT2 ($R^2=0.47$, $\beta=0.36$; $p<0.001$); NPD for NTT3 ($R^2=0.36$, $\beta=0.43$; $p<0.01$); BDP and ASPD for NTT4 ($R^2=0.44$, $\beta=0.60$ and $\beta=-0.33$; $p<0.001$); PPD, SPD and HPD for NTT5 ($R^2=0.34$, $\beta=0.27$, $\beta=0.27$ and $\beta=-0.23$; $p<0.05$); APD, OCPD, SPD, NPD and ASPD for NTT6 ($R^2=0.47$, $\beta=0.20$, $\beta=0.28$, $\beta=-0.21$, $\beta=-0.19$ and $\beta=-0.25$; $p<0.05$); APD for NTT7 ($R^2=0.35$, $\beta=0.42$; $p<0.01$); APD and ASPD for NTT8 ($R^2=0.44$, $\beta=-0.52$ and $\beta=-0.43$; $p<0.001$); and APD and ASPD for NTT9 ($R^2=0.27$, $\beta=-0.29$ and $\beta=-0.27$; $p<0.05$) have been found significant (Table 2).

DISCUSSION

Relation Between Temperament, Personality, and Personality Disorder

Temperament forms the basis of personality differences between individuals, creating a predisposition for generating certain psychopathologies (24-26). In addition, it can come together with various other elements and change the clinical presentation of the same disease (27). All these facts prove the importance of temperament and personality – which develops on a temperament basis – for the evaluation of psychopathologies.

With the recent changes in DSM-V, Axis II, according to which personality disorders had been evaluated in DSM-IV, has been removed and all diagnostic categories are evaluated on the same axis (28). This new perspective might help clinicians and researchers to consider not only the relations of normal personality features with personality disorders, but also their relations with other psychiatric diagnoses.

In current psychiatry, many researchers consider psychopathology as a layer of normal psychological functions (29-31). For example, Rovai et al. (32), brought up the question whether Akiskal's affective temperament categories belong to the psychopathologic field or fall into the range of normality. According to us, the answer to this question is related with handling the concepts of the temperament, which functions as the structural core in the formation of personality, and personality itself at the same level. That is to say, according to NTTM, temperament, the structural core of personality, is

neutral with its traits pointing likewise to positivity and negativity (11). For example, melodramatic, romantic, fragile, and melancholic traits of NTT4 can be a source of artistic creativity in the manifestation of a personality, while it can also be a potential source of personality pathology or depressive or dysthymic psychopathology. The severity of dynamic reflections on personality caused by static temperament traits determines normal or psychopathological appearances of personality (11,17). For example, slight reflections of traits like perfectionism, meticulousness and neatness on the personality of an NTT1 temperament type individual will not destroy his functionality, while experiencing these traits at the extreme ends of the spectrum can undermine functionality, leading him to be evaluated in the OCPD category. Hence, the finding of Rovai et al. (32), which states that a slight appearance of traits of Akiskal's temperament categories does not create a psychopathology, is parallel to the perspective of NTTM.

Samuel and Widiger (33) proposed that personality disorders are a variant of normal personality traits. If personality disorders are an extreme/unhealthy display of personality traits and temperament is accepted as the structural core that forms personality traits, then temperament can be indicative for a tendency towards personality disorders. Therefore, according to us, the relation between NTTM types and PD categories should be evaluated within this context.

Relation Between NTTM Types and Personality Disorder Categories

In our study, NTTM types have consistent and significant correlations with PD categories. All the findings will be discussed below according to each temperament type.

A positive correlation was determined between NTT1 and OCPD. It was also found that OCPD could predict NTT1 positively. Individuals with an NTT1 temperament type have such traits as being meticulous, neat, detailed; trying to carry out their responsibilities fully; becoming very uncomfortable when something they did is deficient/defective; being perfectionist, disciplined, strict, controlled; and having high self-control (11,17). Samuel and Widiger (33) stated that in individuals experiencing the self-control trait at a pathological level, OCPD may be present. Individuals diagnosed with OCPD are so addicted to their work that they do not care about other important activities; they are too much busy with order, details, tasks and organization; they are strict and perfectionist (33-35). In addition, Ayearst et al. (36) state that although perfectionism – one of the basic traits of individuals with an NTT1 temperament – can be seen in many personality disorders, it is characterized as OCPD. All these data can explain the prediction of NTT1 by OCPD and the positive correlation between NTT1 and OCPD.

NTT2 is positively correlated with HPD, DPD, and BPD. Besides, it was also found that HPD could predict NTT2 positively. Individuals with an NTT2 temperament type have such traits as being warm-hearted, sympathetic and very emotional; being quickly affected, relation-oriented; liking to be loved by others and being attractive; manipulating relations according to their wishes (11,13). Individuals diagnosed with HPD can show traits such as being kind and entertaining, manipulating others, showing exaggerated and arresting actions; displaying seductive and provocative behavior; being annoyed when they are not at the center of attention; and being over-dramatic (37,38). Therefore, it is an expected result that there is a positive correlation and predictive relationship between NTT2 and HPD. Individuals with NTT2 temperament type do not like to stay alone. Although they do not like to distance themselves from their relations, when they cannot find the attention, acceptance and love they expect, they can display reproachful and touchy behaviors. When relation problems become a stress factor, they can show traits such as accusing their life partner, self-mutilation, impulsivity, displaying manipulative behavior and anger fits, or going back and forth between feelings of love and hatred (12,13). Rosenberger and Miller (39) state that individuals with a potential of BPD can display traits such as being intolerant to loneliness, being impulsive, and showing emotional inconsistence, intense fury and self-mutilation. These similar traits can

explain the positive correlation between NTT2 and BPD. Individuals with an NTT2 temperament are relation-oriented and focus on each of their relations (11). For the sake of keeping the attention and love they get and for the continuation of their relation, they have a hard time refusing their partner and rather try to meet their expectations. Due to their intense need of love and attention, they can display viscous behavior (13,16). Bornstein (40) states that some individuals feel the need to take advice often and be approved; they are so dependent that they cannot make their own decisions, if this situation is intense and prevalent existence of DPD can be seen. In addition, DPD is characterized by being close to others and feeling a need for relation (41,42). For individuals with DPD, the need to be in close relation can reach such a level as to cause interpersonal problems (43). Individuals with an NTT2 temperament can become dependent due to their intense need for attention and love; therefore the positive correlation between NTT2 and DPD can be explained.

NTT3 has positive correlation with NPD. It was also determined that NPD can predict NTT3 positively. Individuals with an NTT3 temperament define themselves through their successes, and their feeling of being important, privileged and enviable is proportional to their success (11). They can display impertinent, arrogant and narcissist attitudes and behaviors towards others. They have weak emotional bonds in their relations and difficulties in empathizing with others (16). Because of their ambition and self-seeking, they can use their relations for their own interests (11,13). Individuals with NPD have traits such as arrogance, narcissism, feeling to be special and unique, insufficiency in empathizing, and self-seeking (28,44). They have a serious lack of emotional investment in their relations. Although from the outside they can be seen as part of a large network, they are not interested in keeping their friends and relations for a long time (45,46). All these data can explain the prediction of NTT3 by NPD and the positive correlation between NTT3 and NPD.

NTT4 has positive correlations with BPD, SDPD, HPD and PAPD. It has also been found that NTT4 was predicted positively by BPD and negatively by ASPD. Individuals with an NTT4 temperament have an intense urge to seek for their identity because of their traits, such as being different, unique, marginal, and individualistic (11). These individuals seek for the meaning of emotions and can have problems in their object relations at the real level while trying to form their identity at the supra-objective / intellectual level. Not experiencing the affect they have imagined when reaching their object of desire, which they have passionately wished to obtain, can result in losing the meaning of that object for themselves (16). This situation can cause them to feel an intense emptiness and alienation. Ambivalence and emotional lability they experience between opposite feelings (passion/hatred, sadness/happiness, etc.) can cause irritability, dysphoria, and anger fits (17). As a result, they can display opposite and impulsive actions (11-13). The emotional staggering and chronic feeling of emptiness in this process can result in self-mutilation and repetitive suicide attempts. Among individuals with BPD, emotional lability, instable relations, identity problems, feelings of emptiness, self-mutilation, and impulsive behavior can be seen (47,48). Because of these similar traits, prediction of NTT4 by BPD and positive correlation between NTT4 and BPD are an expected result. Individuals with NTT4 temperament tend to think that situations which can give pleasure to others are usually simple and ordinary, while they find it meaningful and valuable to be in intense emotional situations that can be painful for others. Therefore, they may want to stay in these painful situations as if punishing themselves and are blocking avenues towards relieving their pain. They like to have romantic dreams in their introverted and intense emotional world and they can have romantic interests in people who are difficult to be reached. When they reach these people, they might not feel the intense affect they desire and can lose their interest (13,16). According to Bradley (49), individuals with SDPD generally seem to wish to punish themselves, creating situations for unhappiness or actively blocking opportunities that would create pleasure or joy. They can have romantic interests and be attached to people whom they cannot reach or who are not appropriate. They tend to lose

their interest when they get a response from people whom they feel a romantic or sexual attraction to (49). All these data can explain the positive correlation between NTT4 and SDPD. Individuals with an NTT4 temperament can become peevish when feeling a deep emptiness or when others do not understand their intense moods, and they become introverted under the pain of not being understood (16). They can feel ambivalence between fury and avoidance of giving offense. In these times, they can postpone or neglect daily tasks which they find ordinary (13,16). The tendency of passive expression of aggressive impulses like combativeness, complaining of not being taken seriously by others and being misunderstood, and showing resistance to performing routine social and professional tasks among individuals with PAPD (50,51) can explain the positive correlation between NTT4 and PAPD. Under normal conditions, individuals with an NTT4 temperament establish relations via a romantic idealization at a supra-objective level. When they are under stress, they show traits like experiencing emotions directly over objects, behaving more closely to people, attracting people, establishing superficial and shallow relations, and showing over-dramatic emotionality (11). All these traits can explain the positive correlation between NTT4 and HPD. Individuals with an NTT4 temperament type who are intensely emotional, sensitive and emphatic try to stay away from violence and all behaviors, events and situations that include violence (16). The individuals who are ASPD, on the other hand, get angry easily, show impulsivity, aggressiveness, belligerence, criminal actions, and do not feel regret (52-56). These characteristics, which are opposite to each other, may explain the prediction of ASPD for NTT4 negatively.

NTT5 is predicted negatively by HPD and has positive correlations with SPD, APD and PPD. Individuals with an NTT5 temperament display traits like being introverted, quiet and distant in their relationship; avoiding physical affinity and preferring to be alone (13). They can display cold attitudes and be distant from emotions, because of being too busy with their thoughts, their absolute rationalism and their belief that emotions can disrupt objectivity (11,13). Individuals with SPD are introverted, avoiding to establish social relations, preferring loneliness, not revealing emotions, and appearing cold (57-59). Predicting SPD for NTT5 and determining a positive correlation between NTT5 and SPD, which are very compatible, are results expected to be found. Individuals with NTT5 show traits like being introverted, feeling uneasy in crowds, finding themselves lacking of social skills, disliking to be in the spot light, and preferring loneliness (12,16). The fact that individuals diagnosed with HDP are being lovely and joyful, manipulating others, behaving in a certain way to attract attention, behaving exaggeratedly, displaying tempting or provoking behaviors and too dramatic emotionalist characters and being irritated in situations where they are not the focus of interest (37,38) may explain the negative prediction of HDP for NTT5. Individuals with APD find themselves inept in social relations and feel uncomfortable in a crowd (55,56). They can be withdrawn from social relations because they are shy and timid, and they do not like speaking in public (58,60,61). All these data can explain the positive correlation between NTT5 and APD. Individuals with an NTT5 temperament are emotionally cold and stiff, they feel that absolute rationalism and objective thinking are valuable in life. Because of their abstracting, conceptualizing nature that focuses on specialization on knowledge, they believe that others would not understand their deep knowledge; they do not value thoughts and criticisms of others which are not deep (16). They are sceptical and do not trust people easily. Their minds are apt to observe their surroundings objectively and fictionalize the data they obtain in a pessimistic and paranoid fashion (13,16,17). Individuals with PPD are emotionally cold, stiff and serious. They boast about always being objective. They cannot tolerate being criticized. Their basic features are prevalent skepticism and distrust. They cannot trust others easily and they cannot sustain relations that depend on mutual trust (55,56,62,63). All these traits can explain the positive correlation and prediction between NTT5 and PPD.

NTT6 has positive correlations with OCPD, DPD, APD, PAPD, PPD and STPD. Also, NTT6 is predicted

by OCPD and APD positively while it is predicted by SPD, NPD and ASPD negatively. Individuals with NTT6 are meticulous, neat, and obsessive (13). They do not want to make mistakes and be criticized; therefore, they try to carry out their responsibilities and duties completely, down to the last detail (13). They are either indecisive or they are unsure of their decisions because they try to cover all bases at the same time and control everything due to their security and safety concerns (13,16). Traits of individuals with OCPD, such as being neat, and detailed as well as being indecisive (35,58,64) can explain the positive correlation and prediction between NTT6 and OCPD. For intellectual satisfaction free from anxiety, individuals with NTT6 need to place their trust in someone that will be a support for them (17). In situations of uncertainty, situations when they have to make a decision, or when they do not have enough trust in their knowledge, they often consult their trusted person and want to get their approval (13,17). Because of these traits, they have a tendency/potential to become strongly dependent on their confidant (11,16,17). All these data can explain the positive correlation determined between NTT6 and DPD. Because of their safety- and security-oriented nature, individuals with an NTT6 temperament do not like to shine in social environments until they feel secure, and they cannot feel at ease until they are sure of being accepted (16). Individuals with an NTT6 temperament may have self-confidence problems and often feel anxious about being rejected or criticized. On the one hand, they want to be in social relations with the need of being accepted and approved, while on the other hand they may avoid social relations out of fear of being criticized and rejected (11,16). Individuals with APD tend to have low self-esteem (55). They experience fear of incompetence, fear of being disapproved in interpersonal relations, criticized and rejected (65). Although they want to communicate with others, they avoid being in social relations because they fear being evaluated/judged negatively (61). All these traits can be considered to explain the positive correlation and prediction determined between NTT6 and APD. Individuals with an NTT6 type tend to be anxious, pessimistic, and distrustful (11,17). They are watchful for negativities with the anxiety of getting hurt. Because of their skeptic nature, trying to cover all bases, they develop a cognitive process prone to paranoid fictionalization. They do not trust people easily (11). Individuals with an NTT6 temperament secretly test their respondent and are prone to give negative interpretations of their partner's words, glances, and gestures (13,16). Therefore, they can show a paranoid touchiness (11). Individuals with PPD can have traits like being suspicious and distrustful, not being able to trust people easily. They believe that words, glances and behaviors of others have negative intentions, and they are prone to interpret them negatively on their behalf (63,66,67). All these data can explain the positive correlation between NTT6 and PPD. Individuals with NTT6 temperament adjust their relations to their surroundings on the basis of being safe and avoiding harm, because they are security- and safety-oriented (13). When expressing negative emotions and thoughts directly, they believe that they might be harmed or lose their trusted figure; thus they can express their negative emotions and thought with passive aggressive behavior. All these traits seem to explain the positive correlation determined between NTT6 and PAPD. Schizotypal personality disorder (STPD) is a personality disorder characterized with magical thoughts, superstitious beliefs, weird ideas, cognitive or perceptive distortion, eccentric behavior, and depersonalization (34,68,69). On the other hand, individuals with an NTT6 temperament show traits like not standing out from the crowd, trying to act compliantly, prioritizing intelligence and logic, and accumulating data (11,13). According to us, there is no positive or negative correlation between NTT6 and STPD. The positive correlation determined between these two parameters in our study can be due to a misunderstanding of SCID questions because of cultural differences. In addition, properties of individuals with an NTT6 temperament type, like having difficulty in trusting oneself and the need for a focus on trust and approval from which they can receive support, may be opposite to NPD (18); and properties like trying to obey the rules and avoiding

being prominent, which may be considered as being opposite to ASPD (17), may explain the negative prediction between the ASPD, NPD and SDP.

NTT7 has positive correlations with HPD and BPD and negative correlations with APD and SPD. In addition, negative prediction of NTT7 by APD has been determined. Individuals with an NTT7 temperament type show the traits of being lively and enterprising, establishing quick relations with their surroundings (11,17). Because of their highly energetic and active nature, occasionally they can display exaggerated and impulsive behaviors (11). Their fun-loving nature with their jokes and wittiness can easily catch others' attention, activating others around them and directing them according to their own wishes (16). Due to their affinity to sexual experience and pleasure, they can display seductive or provocative behavior (16). All these data can explain the positive correlation determined between NTT7 and HPD. Individuals with an NTT7 temperament type prefer relations in which they can have fun and gain new experiences instead of being lonely (13). At the same time, because of their nature that avoids being attached, they easily get bored and are constantly seeking excitement and novelty. Thus, they can quickly end their relations and establish new ones. They experience feelings intensely and quickly (desiring too much – giving up quickly, contemplating very much – losing interest, etc.) (13). Because of their impatient and impulsive nature, they cannot tolerate waiting and rejection of their wishes and become angry (11,12). These traits can explain the positive correlation between NTT7 and BPD. The traits of NTT7 which can be opposite to APD and SPD traits, such as being extroverted, enterprising, talkative, having pleasure being in new environments and meeting with new people, can explain the negative prediction of APD to NTT7 and the negative correlation between NTT7, APD and SPD.

NTT8 has positive correlations with ASPD and NPD and negative correlations with APD. On the other hand, NTT8 is predicted positively by ASPD and negatively by APD. With their absolute power-seeking nature, NTT8 individuals are prone to show their power in every situation and condition (13). Because of their frantic and quick-tempered nature, they can quickly get into action without thinking, which can lead them to commit violence and fight impulsively (11). Because they believe that having absolute power is their right, they can behave oppressively to others and usually do not regret committing violent acts in such cases (17). Individuals with ASPD display traits like being quick-tempered, impulsive, aggressive, and combative; they can perform criminal actions without any regrets and manipulate others for their personal benefits (52-56,70). All these data can explain the positive correlation between DTM8 and ASPD. Individuals with an NTT8 temperament show traits like having power and authority over their environment, as well as being grandiose, dominating, and oppressive (11,13). As Levy states (45), the traits of NTT8, such as being grandiose, arrogant, and despising people around them, can explain the positive correlation and prediction between NMT8 and NPD. Traits of individuals with an NTT8 temperament, such as being enterprising, self-confident, brave and fearless can explain the negative prediction of APD for NTT8 and the negative correlation between NMT8 and APD.

NTT9 has negative correlations with ASPD. Besides, it has been determined that APD may predict NTT9. Individuals with an NTT9 temperament have traits like being harmonious, calm, soft, pliant, and peaceable (17). They may act shamefacedly in crowded social environments, avoid conflicts and suppress their anger (13,17). In situations where they get angry, they tend to let their problems go with the flow instead of getting into action directly (11,16). Such traits of NTT9 – similar to APD – mentioned above, which are opposite to ASPD, can explain the positive prediction of APD for NTT9 and the negative correlation between NTT9 and ASPD. Individuals with an NTT9 temperament can display traits like avoiding conflicts, being stubborn and showing their anger in passive aggressive behavior (16,17). Although they have similar features, a positive correlation between NTT9 and PAPD was not established in our study, which is an unexpected result according to us. This result may arise from the low number of individuals with an NTT9 temperament among the participants.

As a result, consistent and significant correlations were found between NTTM types and personality disorder categories. The approach of NTTM to personality disorders, the way it considers normal personality and personality disorders with underlying temperament traits, can offer a wider perspective and an advantage for researchers' and clinicians' understanding. Considering personality traits through the perspective of temperament can be helpful for clinicians when making diagnoses, because the difficulties that can be experienced in diagnosing due to various factors can be reduced to a minimum. Knowing an individual's temperament type means knowing the traits that form the basis of the personality. Therefore, the NTTM approach that evaluates personality and personality disorders on the basis of temperament, can be useful for clinicians when determining the tendency to personality disorders, which are pathological responses to personality traits, and for making diagnoses. In addition, knowing the temperament type of an individual means knowing the underlying motives of his or her behavior. Thus, it may be possible to consider individual differences and motives of individuals of different temperament types who are evaluated within the same personality disorder category. For example, as mentioned in the discussion, individuals with an NTT2 temperament type who are evaluated under DPD feel the need to have relations, while the motivation of individuals with NTT6 temperament type evaluated under the same category is the need to be approved due to their search for security and safety. This new perspective brings up the question whether it is possible to determine therapy and treatment approaches according to an individual's temperament type. Our study is an initial step towards the evaluation of relations between NTTM and personality disorders. In our study, because the size of the sample group was not large enough, there are some limitations in determining possible relations between certain personality disorder categories and temperament types. Future studies to be conducted with more participants and advanced statistical methods, in which the effect of age, gender and education level will be controlled, can contribute to the literature on evaluation of the tendency of NTTM temperament types to develop certain personality disorders. In addition, treatment studies conducted with participants of different temperament types with the diagnosis of the same personality disorder can test the perspective on whether it is possible to determine therapy and treatment approaches according to an individual's temperament type.

Contribution Categories	Name of Author
Development of study idea	E.D.Y., G.G., O.A.
Methodological design of the study	E.D.Y., O.A., M.P., M.K., Z.S.
Data acquisition and process	E.D.Y., G.G.
Data analysis and interpretation	O.A., M.P., M.K., O.U.
Literature review	M.P., M.K., O.U.
Manuscript writing	E.D., Z.S., G. G., O.U.
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