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Comparison of the intensity of temperament and character traits in adolescents diagnosed with inter – and externalizing disorders

Renata Modrzejewska[1], Anna Wasik[1],
Paulina Cofór-Pinkowska[2], Agnieszka Pac[3], Marcin Siwek[1]

[1] Department of Affective Disorders, Chair of Psychiatry, Jagiellonian University Medical College
[2] Department of Family Therapy and Psychosomatics Chair of Psychiatry, Jagiellonian University Medical College
[3] Environmental Epidemiology Laboratory, Department of Epidemiology, Chair of Epidemiology and Preventive Medicine, Jagiellonian University Medical College

Summary

Aim. To compare the intensity of temperament and character traits in a group of outpatients with different types of disorders, age and gender staying at daily unit.

Material and method. Group consisted of 108 outpatients with externalizing (ED) or internalizing disorders (ID), aged 14–20, treated in the Department of Psychiatry. Temperament and Character Inventory (TCI) was used in the study.

Results. Subjects diagnosed with ED demonstrated higher intensities of novelty seeking and its subscale, NS1, than those with ID. Women diagnosed with ED scored significantly higher on the following subscales: harm avoidance HA1, the reward dependence RD1, and the self-transcendence ST3 compared to men. Women with ID scored significantly higher than men on the following subscales: harm avoidance HA4, the reward dependence RD1, and the self-transcendence compared ST1 to men. Significant differences were also observed in the intensity of the cooperativeness subscales in the ED group depending on age. No significant differences were found in the ID group depending on age.

Conclusions. The study partially confirmed differences in the intensity of temperament and character traits depending on the type of disorder, gender and age. Patients with ED demonstrated more novelty seeking, which may increase a tendency to engage in risky and criminal behaviors. Women in both groups demonstrated a higher intensity of harm avoidance, reward dependence, and self-transcendence, which makes them more susceptible to anxiety and depressive disorders, and increases their ability to benefit from therapy and social support. Finally, younger participants with ED were more cooperative, which may have practical implications for treatment planning.

Key words: externalizing vs. internalizing disorders, Temperament and Character Inventory (TCI), adolescent psychiatric day care unit

Introduction

There are a number of concepts describing/classifying human temperament and character, i.e., Sterlau's regulatory theory of temperament, the Big Five model and its variants [1, 2]. One of them is Cloninger's psychobiological model, which describes temperament as a set of four traits – novelty seeking (NS), i.e., behaviors focused on exploration and seeking experiences; harm avoidance (HA), i.e., the ability to inhibit one's behavior in the face of potential punishment or frustration; reward dependence (RD), i.e., maintaining behavior associated with social reward; persistence (P), i.e., the ability to maintain behavior despite frustration, fatigue, and intermittent reinforcement. Character, in turn, is described in three dimensions – self-directedness (SD), i.e., the ability to self-reflect, take responsibility, possess resources, be goal-oriented; cooperativeness (C), the ability to perceive oneself as part of a community, humanity; and self-transcendence (ST), i.e., the ability to experience oneself as part of a community, the universe, and spirituality [3]. Due to its established position in literature and scientific research, the biological basis (the connection of individual temperament domains with neurotransmitter systems – dopaminergic, serotonergic, adrenergic) is widely used in scientific research seeking temperamental and characterological descriptions of various diseases or mental disorders, mood disorders (depression), anxiety disorders, behavioral disorders, eating disorders, and others [4]. Among other things, it has been observed that that high levels of novelty-seeking correlate with impulsivity as well as alcohol and psychoactive substance abuse [5]. Significant differences were observed in the temperament and character profile not only for individual symptom complexes or disorders but also for groups of disorders, i.e., internalizing and externalizing disorders. Tschan et al. [6] demonstrated that patients with a history of self-harm scored higher on scales of novelty seeking and harm avoidance and lower on those describing self-direction and persistence.

High harm avoidance, low reward dependence, high self-transcendence, and low self-direction were significant predictors of social withdrawal, somatic symptoms, and depression measured by the YRS (internalizing disorders) scale. On the other hand high novelty seeking, harm avoidance, self-transcendence, as well as low cooperativeness and self-directedness were significant predictors of aggressive and criminal behavior among Korean adolescents [7].

Thus, internalizing and externalizing disorders differ in terms of temperament and character traits and in terms of response to treatment (possible different developmental trajectories). An article by Modrzejewska et al. [8] described a different pattern of change in temperament and character traits in response to psychotherapeutic treatment in adolescents treated in a psychiatric day care unit, depending on the type of disorder – externalizing versus internalizing. It was observed that as a result of 6 months of treatment, patients with symptoms of anxiety, withdrawal, and depression showed a statistically significant increase in two reward dependence scales (RD2 and 3) and a decrease in one, RD1. In the group of patients who externalized their suffering, only a slight decrease in the intensity of one of the harm avoidance scales was noted, at the level of a statistical trend [8]. The intensity of temperament and character

traits may also have prognostic value, communicating not just the risk of developing specific psychopathological symptoms, but also the prognosis of response to treatment. In a study by Lee et al. [9] conducted in a group of young people addicted to gaming, the ability to achieve remission over the following months was observed. It was shown that the subjects in the group that did not show improvement in terms of addiction remission exhibited a higher intensity of reward avoidance, leading to the conclusion that a higher intensity of harm avoidance in adolescents and young adults addicted to computer games may be associated with a poorer prognosis for remission and require more active therapeutic methods [9]

The aim of this study was to examine not only differences in the intensity of temperament and character traits between types of disorders, but also differences depending on gender and age within each disorder subgroup.

Material and method

TCI scales

The Temperament and Character Inventory (TCI), which is an operationalization of Cloninger's psychobiological model of personality, is a battery of scales used to measure various dimensions of temperament and character [10]. It consists of 240 statements to which the participant responds by choosing one of two possible answers: 'true' or 'false'. Fourteen items in this questionnaire do not fall into any of the scales and, according to the creators of the method, are intended to provide a basis for estimating the likelihood of personality disorders in the respondent. Thus, the actual questionnaire consists of 226 items.

The TCI measures four basic dimensions of temperament:

(a) novelty seeking – the tendency to actively respond to new stimuli. The novelty seeking dimension consists of the following sub-dimensions: exploratory excitability (NS1) vs. stoic rigidity, impulsiveness (NS2) vs. reflection, extravagance (NS3) vs. reserve, and disorderliness (NS4) vs. regimentation;
(b) harm avoidance – the tendency to inhibit actions in response to negative stimuli. The harm avoidance scale is a multidimensional higher-order temperament trait consisting of four sub-dimensions such as: anticipatory worry HA1 vs. uninhibited optimism, fear of uncertainty HA2 vs. confidence, shyness with strangers HA3 vs. gregariousness, as well as fatigability and asthenia HA4 vs. vigor;
(c) reward dependence – the tendency to maintain behavior in response to positive reinforcement. Reward dependence is a multidimensional higher-order temperament trait consisting of the following three sub-dimensions: sentimentality RD1 vs. insensitivity, attachment RD2 vs. detachment, and dependence RD3 vs. independence;
(d) persistence – ability to independently maintain a given type of activity, including behaviors such as: positive response to signals heralding an expected reward, intensifying work in response to sporadic punishment and maintaining behavior in response to the appearance of a reward; and the following three

dimensions of character used to measure personality traits acquired during individual development:

(e) self-directedness – a person's ability to control, regulate, and adjust their own behavior in order to adapt to a situation. Self-directedness is a multidimensional higher-order trait consisting of the following sub-dimensions: responsibility SD1 vs. blaming, purposefulness SD2 vs. lack of goal direction, resourcefulness SD3, self-acceptance SD4 vs. self-striving, and congruent second nature SD5;
(f) cooperativeness – a person's ability to identify and accept the behavior of others. Cooperativeness is a multidimensional, higher-order character trait consisting of the following five sub-dimensions: social acceptance C1 vs. social intolerance, empathy C2 vs. social disinterest, helpfulness C3 vs. unhelpfulness, compassion C4 vs. revengefulness, and integrated conscience C5;
(g) self-transcendence (the ability to detach from onself) – a person's sense of being part of the universe (this dimension is related to spirituality). Like other character dimensions, self-transcendence is also a multidimensional higher-order trait consisting of three sub-dimensions: self-forgetfulness ST1 vs. self-conscious experience, transpersonal identification ST2 vs. self-isolation, and spiritual acceptance ST3 vs. rational materialism.

Study group

Statistical analysis

The distributions of variables (respective scale scores) were described using mean values, standard deviation (SD), and median. Comparison of the results of individual scales was conducted using the Anova test. The statistical analysis was performed using SPSS ver. 26 (IMAGO PRO 6, Predictive Solutions Sp. z o.o.). Relationships for which $p < 0.05$ were considered statistically significant.

Results

Descriptive statistics

The study included 108 adolescents treated at the Day Care Unit of the Adult, Child, and Adolescent Psychiatry Clinic of the University Hospital in Krakow between 2014 and 2021 with diagnoses of internalizing and externalizing disorders. The internalizing disorders group included symptoms such as depressive and anxiety disorders as well as difficulties with adaptation, while the externalizing disorders group included individuals presenting with behavioral and emotional disorders. The diagnosis was made by a child and adolescent psychiatrist during the initial qualification for treatment at the unit. The hospitalized individuals had failed their outpatient treatment. The study involved 73 girls (including 45 with externalizing disorders and 28 with internalizing disorders) and 35 boys (including 20 with externalizing disorders and 15 with internalizing disorders) aged 14–20. Among the participants diagnosed with internalizing

disorders, 75% were treated using pharmacotherapy (including: 36.5% were treated with an antidepressant alone, most often an SSRI, 29.5% with polytherapy using an antidepressant and an antipsychotic, 4.5% with an antipsychotic, and 4.5% with polytherapy using an antidepressant and a mood stabilizer). In the group of participants diagnosed with externalizing disorders, 67.25% were treated using pharmacotherapy (including 20.3% using an antidepressant, 18.8% using a combination of an antidepressant and an antipsychotic, 7.8% using an antipsychotic, 6.25% using an antidepressant, an antipsychotic, and a mood stabilizer, 4.7% using an antipsychotic and a mood stabilizer, 3.1% using an antidepressant and a mood stabilizer, 1.6% using an antidepressant and methylphenidate, and 1.6% using an antidepressant, an antipsychotic, and methylphenidate). In this group, information on pharmacotherapy was missing for two individuals.

Patients completed the TCI questionnaires within the first two weeks of admission to the ward. Written consent to participate in the questionnaire survey was obtained from each adult patient and, in the case of minors, also from their parents.

Comparison of temperament and character traits by disorder type

Table 1. **Mean values for the TCI scales by disorder type**

Scale/subscale	Scale range	Externalizing disorders (F92) *N* = 65	Internalizing disorders (F41–F43) *N* = 43	*p*-value
Temperament scales				
NS scale	0–80	**22.3 (5.8)**	**19.5 (6.6)**	**0.036***
NS1	0–11	**5.6 (2.1)**	**4.5 (2.3)**	**0.011***
NS2	0–10	4.6 (2.4)	4.1 (1.9)	0.284
NS3	0–9	6.2 (2.5)	5.1 (2.8)	0.051
NS4	0–10	6 (1.8)	5.8 (1.8)	0.573
HA scale	0–35	24.4 (6.9)	24.9 (7.6)	0.534
HA1	0–11	7.8 (2.3)	7.6 (2.9)	0.939
HA2	0–7	4.4 (1.9)	4.9 (1.9)	0.187
HA3	0–8	5.9 (2.2)	6 (2.3)	0.688
HA4	0–9	6.2 (2.4)	6.5 (2.5)	0.434
RD scale	0–24	12.7 (5.1)	13.3 (4.4)	0.685
RD1	0–10	5.7 (2.7)	6.4 (2)	0.187
RD2	0–8	4.1 (2.6)	3.5 (2.3)	0.263
RD3	0–6	2.9 (1.5)	3.4 (1.7)	0.105
P scale	0–8	4 (1.7)	4.2 (1.7)	0.572

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Character scales				
SD scale	0–44	25.6 (5.4)	26.3 (5.7)	0.519
SD1	0–8	4.9 (1.5)	5 (1.5)	0.712
SD2	0–8	5.1 (1.5)	4.8 (1.4)	0.370
SD3	0–5	3.2 (1.2)	3.3 (1.2)	0.696
SD4	0–11	6 (1.8)	6.3 (1.8)	0.418
SD5	0–12	6.4 (2.5)	6.9 (2.2)	0.409
C scale	0–42	23.7 (3.9)	24.2 (3.6)	0.571
C1	0–8	4.7 (1.1)	4.7 (1.1)	0.948
C2	0–7	4 (1.3)	4.2 (1.4)	0.396
C3	0–8	4.6 (1.5)	5 (1.3)	0.090
C4	0–10	5.1 (1.6)	4.9 (1.4)	0.358
C5	0–9	5.4 (1.3)	5.3 (1.5)	0.892
ST scale	0–35	14.5 (7.1)	14 (6.5)	0.624
ST1	0–11	5.7 (2.6)	5.4 (2.5)	0.503
ST2	0–9	3.4 (2.5)	3.5 (2.4)	0.810
ST3	0 – 13	5.4 (3.5)	5.1 (3.2)	0.810

* $p < 0.05$

Figure 1 and Table 1 present a comparison of the respondents' scores on the TCI scales between patients with externalizing disorders and those with internalizing disorders. A statistically significant difference was observed in the intensity of the novelty seeking scale and the NS1 subscale between subjects diagnosed with externalizing and internalizing disorders. Respondents with externalizing disorders had significantly higher scores on both scales (by 2.8; $p = 0.036$ and 1.1; $p = 0.011$, respectively).

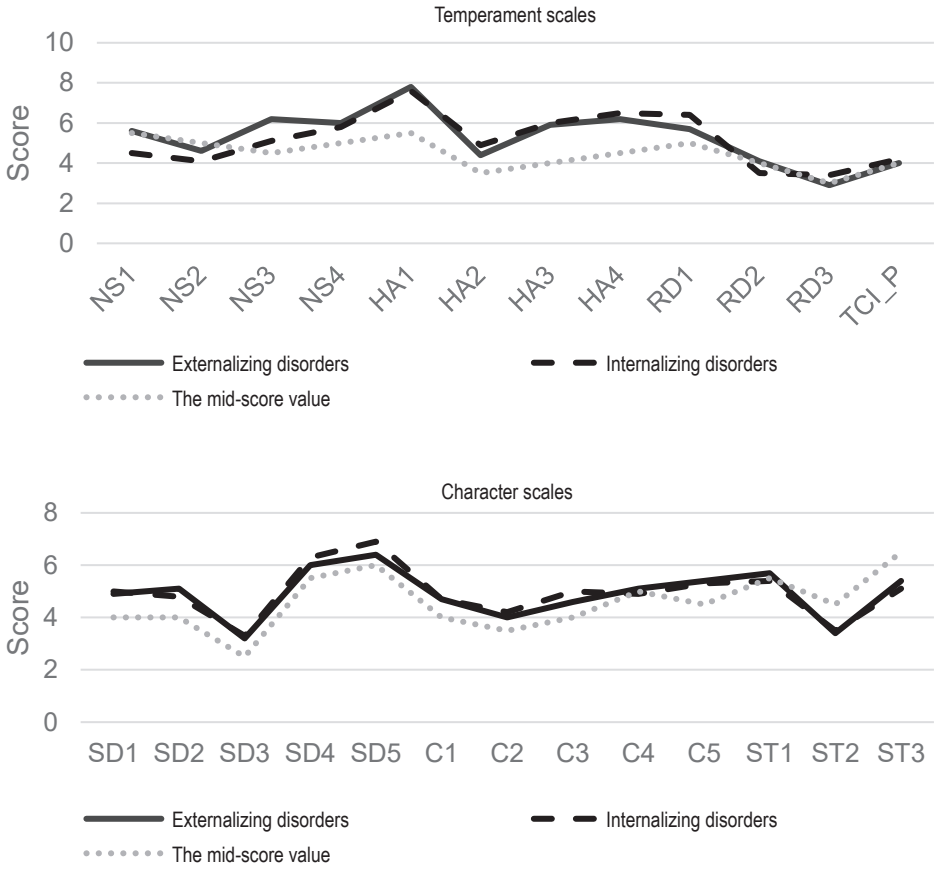

Figure 1. **Comparison of TCI subscale scores between adolescents with externalizing and internalizing disorders**

Comparison of temperament and character traits by disorder type and gender

Table 2. **Comparison of TCI scale scores between women and men across different disorder types**

Scale/ subscale	Externalizing disorders			Internalizing disorders		
	Women *N* = 45	Men *N* = 20	*p*-value	Women *N* = 28	Men *N* = 15	*p*-value
Temperament scales						
NS scale	22.4 (5.8)	22.2 (5.9)	0.989	20.5 (6.7)	17.5 (6.1)	0.160
NS1	5.6 (2.1)	5.6 (2)	0.925	4.9 (2.6)	3.9 (1.5)	0.168
NS2	4.5 (2.2)	4.7 (2.8)	0.683	4.2 (1.8)	3.9 (2)	0.815

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NS3	6.1 (2.5)	6.3 (2.5)	0.757	5.4 (2.9)	4.6 (2.6)	0.317
NS4	6.2 (2)	5.6 (1.5)	0.243	6.1 (1.5)	5.1 (2.1)	0.071
HA scale	25.1 (6.9)	22.9 (6.7)	0.163	26.5 (6.3)	21.8 (9.2)	0.139
HA1	**8.2 (2.3)**	**7 (2.2)**	**0.024***	8.1 (2.7)	6.5 (3)	0.085
HA2	4.5 (1.8)	4.4 (2)	0.902	5 (1.8)	4.7 (2.2)	0.704
HA3	6 (2.2)	5.7 (2.2)	0.523	6.1 (2.3)	5.7 (2.4)	0.537
HA4	6.4 (2.5)	5.8 (2)	0.163	**7.4 (1.6)**	**4.9 (3.1)**	**0.013***
RD scale	13.3 (5.3)	11.4 (4.5)	0.129	14.1 (4.2)	11.8 (4.5)	0.076
RD1	**6.2 (2.7)**	**4.7 (2.3)**	**0.024***	**6.9 (1.8)**	**5.4 (2.1)**	**0.027***
RD2	4.2 (2.6)	3.9 (2.5)	0.715	3.6 (2.3)	3.3 (2.5)	0.662
RD3	3 (1.7)	2.8 (1.2)	0.868	3.6 (1.7)	3.1 (1.5)	0.318
P scale	4.2 (1.7)	3.8 (1.7)	0.299	4.3 (1.5)	4.1 (2)	0.845
Character scales						
SD scale	26.1 (5.2)	24.6 (5.8)	0.242	26.9 (5.2)	25.3 (6.6)	0.414
SD1	4.9 (1.5)	4.8 (1.7)	0.804	4.8 (1.5)	5.4 (1.6)	0.148
SD2	5.1 (1.5)	5.1 (1.3)	0.954	4.9 (1.4)	4.7 (1.5)	0.714
SD3	3.2 (1.2)	3.2 (1.2)	0.781	3.5 (1.1)	3.1 (1.4)	0.313
SD4	6.3 (1.4)	5.4 (2.5)	0.093	6.7 (1.8)	5.7 (1.7)	0.079
SD5	6.6 (2.6)	6.2 (2.3)	0.461	7.1 (2.2)	6.5 (2.1)	0.360
C scale	24.1 (3.9)	22.7 (3.7)	0.180	24.6 (3.7)	23.3 (3.2)	0.299
C1	4.8 (1.1)	4.6 (0.9)	0.614	4.8 (1.2)	4.7 (1.1)	1.000
C2	4.1 (1.3)	3.7 (1.1)	0.384	4.1 (1.5)	4.2 (1.5)	0.845
C3	4.6 (1.5)	4.5 (1.4)	0.610	5 (1.3)	5 (1.3)	0.937
C4	5.2 (1.5)	4.9 (1.7)	0.295	5.3 (1.5)	4.3 (1)	0.067
C5	5.5 (1.1)	5.1 (1.7)	0.207	5.5 (1.3)	5.1 (1.8)	0.558
ST scale	15.8 (6.7)	11.8 (7.3)	0.058	**15.5 (6.6)**	**11.1 (5.1)**	**0.025***
ST1	6.1 (2.5)	4.8 (2.7)	0.055	**6 (2.5)**	**4.3 (2.2)**	**0.037***
ST2	3.5 (2.5)	3.2 (2.5)	0.552	4 (2.4)	2.5 (2)	0.061
ST3	**6.1 (3.5)**	**3.9 (3)**	**0.016***	5.5 (3.3)	4.3 (2.9)	0.243

* $p < 0.05$

Significant differences in the intensity of temperament and character traits were observed by gender in both the internalizing and externalizing disorder groups. Within the externalizing disorders, women scored significantly higher on the harm avoidance subscale HA1 ($p = 0.024$), the reward dependence subscale RD1 ($p = 0.024$), and the self-transcendence subscale ST3 ($p = 0.016$). A similar relationship was observed in

the internalizing disorder group. Women in this group scored significantly higher than men on the harm avoidance subscale HA4 (p = 0.013), the reward dependence RD1 ($p = 0.027$), and self-transcendence subscale ST1 ($p = 0.037$), as well as on the entire self-transcendence scale ($p = 0.025$). All results are presented in Table 2.

Comparison of temperament and character traits by disorder type and age

Table 3. **Comparison of TCI scale scores between individuals aged ≤16 and ≥17 in different disorder types**

Scale/ subscale	Externalizing disorders			Internalizing disorders		
	≤16 years *N* = 39	≥17 years *N* = 26	*p*-value	≤16 years *N* = 16	≥17 years *N* = 27	*p*-value
Temperament scales						
NS scale	22 (5.8)	22.8 (5.9)	0.469	19.6 (6.6)	19.4 (6.7)	0.880
NS1	5.4 (2.2)	6 (1.8)	0.229	4.3 (1.8)	4.7 (2.6)	0.666
NS2	4.5 (2.1)	4.8 (2.7)	0.566	4.4 (2.3)	3.9 (1.6)	0.618
NS3	6.1 (2.5)	6.3 (2.5)	0.546	4.8 (2.8)	5.3 (2.9)	0.586
NS4	6.1 (1.9)	5.8 (1.8)	0.596	6.1 (1.7)	5.6 (1.8)	0.318
HA scale	24.3 (7.2)	24.5 (6.4)	0.973	24.8 (7.8)	24.9 (7.7)	0.980
HA1	7.7 (2.4)	8 (2.1)	0.725	7.4 (2.9)	7.6 (2.9)	0.819
HA2	4.6 (1.9)	4.2 (1.9)	0.267	5.1 (1.8)	4.7 (1.9)	0.633
HA3	6 (2.2)	5.8 (2.1)	0.575	6.1 (2.4)	5.9 (2.3)	0.688
HA4	6 (2.6)	6.5 (2.1)	0.650	6.3 (2.6)	6.7 (2.5)	0.540
RD scale	12.9 (5.2)	12.4 (5.1)	0.629	13.1 (4.2)	13.5 (4.6)	0.920
RD1	6.2 (2.6)	5 (2.6)	0.113	6.1 (2.1)	6.6 (2)	0.436
RD2	3.8 (2.6)	4.5 (2.5)	0.255	3.1 (2)	3.8 (2.5)	0.439
RD3	2.9 (1.6)	2.8 (1.5)	0.875	3.9 (1.6)	3.1 (1.6)	0.119
P scale	4.1 (1.7)	4 (1.7)	0.644	4.1 (2.2)	4.3 (1.4)	0.496
Character scales						
SD scale	25.6 (5.5)	25.7 (5.3)	0.957	25.9 (5.1)	26.6 (6.1)	0.633
SD1	5.1 (1.4)	4.6 (1.7)	0.337	5 (1.5)	5 (1.5)	0.949
SD2	4.9 (1.5)	5.3 (1.3)	0.285	4.6 (1.3)	4.9 (1.5)	0.380
SD3	3.2 (1.2)	3.2 (1.1)	0.724	3 (0.9)	3.6 (1.3)	0.112
SD4	6.1 (1.7)	5.9 (2)	0.854	6.2 (1.8)	6.4 (1.9)	0.665
SD5	6.3 (2.4)	6.7 (2.6)	0.562	7.1 (2.2)	6.7 (2.2)	0.533
C scale	24.3 (4)	22.8 (3.7)	0.146	23.8 (2.6)	24.4 (4)	0.411

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C1	4.5 (0.9)	5 (1.2)	0.140	4.6 (1.3)	4.9 (1.1)	0.428
C2	**4.3 (1.2)**	**3.4 (1.1)**	**0.008***	4.3 (1.7)	4.1 (1.3)	0.662
C3	4.5 (1.6)	4.6 (1.3)	0.874	4.7 (1.1)	5.1 (1.4)	0.185
C4	**5.4 (1.6)**	**4.6 (1.4)**	**0.032***	4.9 (1.7)	5 (1.3)	0.714
C5	5.5 (1.2)	5.2 (1.4)	0.415	5.4 (1.1)	5.3 (1.7)	0.990
ST scale	15.5 (6.9)	13.1 (7.2)	0.189	12.9 (6)	14.6 (6.8)	0.450
ST1	5.8 (2.5)	5.5 (2.7)	0.603	5.6 (2)	5.3 (2.9)	0.586
ST2	3.7 (2.6)	2.9 (2.4)	0.214	3.3 (2.4)	3.6 (2.4)	0.675
ST3	5.9 (3.6)	4.7 (3.3)	0.171	4.1 (3)	5.7 (3.2)	0.092

* $p < 0.05$

Significant differences were noted in the intensity of temperament and character traits by age in the group of patients with externalizing disorders. It was shown that younger subjects, under 17 years of age, scored higher on the cooperativeness subscales C2 and C4 than older subjects (by 0.9; $p = 0.008$, and 0.8; $p = 0.032$, respectively). In the group of subjects with internalizing disorders, no significant differences were found in the scores achieved by younger and older subjects. Detailed data is presented in Table 3.

Discussion

This study found that patients with externalizing disorders differed statistically significantly in the intensity of novelty-seeking scales and subscales from patients with internalizing disorders. These results are consistent with reports in the literature on the relationship between novelty seeking and the occurrence of externalizing disorders. Ruchkin et al. [11] described factors influencing/mediating the development of criminal behavior among adolescents detained in correctional facilities in Russia. The study showed that high novelty seeking was a significant predictor of antisocial behavior [11]. A study conducted by Hink et al. [12] found that the intensity of novelty seeking significantly differentiates externalising disorders from internalising disorders (when controlling for genetic and environmental factors). Kang et al. [13] demonstrated that higher scores on the novelty seeking scale significantly increase the risk of a depressive episode. In addition, they observed that higher scores on the novelty seeking scale translated to a statistically significant increase in the risk of alcohol and drug addiction, behavioral disorders, and antisocial personality disorders (from 37 to 83%) – which are classed as externalizing disorders [13]. Studies conducted in a subpopulation of individuals diagnosed with ADHD and comorbid disorders have shown that patients with comorbid externalizing disorders displayed a significantly higher intensity of novelty seeking than those with internalizing disorders and those without disorders [13]. A study conducted on a group of 946 Japanese children in 5th to 9th primary school classes examined the relationship between character traits, temperament, and parental

care and aggressive and criminal behavior (externalizing disorders). It showed that a high intensity of novelty seeking was a significant predictor of aggressive behavior in children, while high novelty seeking combined with a lower intensity of harm avoidance increased the likelihood of criminal behavior in the studied children [14]. Kim et al. [15] studied temperament and character traits among individuals with internalizing and externalizing disorders. Compared to the control group, patients in the first group exhibited a higher intensity of harm avoidance, while patients in the second group showed higher intensities of harm avoidance and novelty seeking [15].

In this study, no differences in the intensity of harm avoidance were observed between the studied groups. Some patients with externalizing disorders who exhibit aggressive, self-aggressive, and norm-defying behaviors additionally experience symptoms of depression, withdrawal, and anxiety – symptoms typical of internalizing disorders [16]. This may explain the lack of differences in harm avoidance. Furthermore, studies on the impact of maladaptive cognitive schemas point to a common predictor of both disorders in adolescence – the schema of detachment from people and fear of rejection [17].

The study revealed gender differences for some temperament and character traits in the group of subjects with externalizing and internalizing disorders. Girls from both groups displayed significantly higher levels of specific harm avoidance scales (those with externalizing disorders – the general scale, those with internalizing disorders – the asthenia and fatigue subscales), reward dependence – the sentimentality scale, and self-transcendence. Girls from both groups were significantly more capable of experiencing sentimentality than boys. The above observations are consistent with data from clinical and non-clinical populations (people without diagnosed mental disorders). A meta-analysis of 32 studies comparing the intensity of temperament and character traits between male and female subjects in the general population (healthy participants) showed that women scored significantly higher on the harm avoidance and reward dependence scales [18]. Despite similar psychopathology, distinctive temperament and character profiles for different genders were demonstrated in studies such as those by Gierski et al. [19]. They demonstrated that women and men who abuse alcohol differ significantly in terms of the intensity of two temperament scales – women scored higher on harm avoidance, while men scored higher on novelty seeking [19]. A study conducted on a group of subjects with anxiety-depressive disorders, metabolic syndrome, and colon adenomas showed that women had a higher intensity of reward dependence than men [20].

The result pointing to a difference in the intensity of two dimensions of cooperativeness between younger and older subjects diagnosed with externalizing disorders is not surprising; younger subjects displayed more cooperativeness, empathy, and a propensity for understanding. In the group of subjects with internalizing disorders, no significant score differences were found between younger and older subjects. Studies conducted in the general population on healthy volunteers indicate significant changes in terms of independence, self-directedness, dependence on others, and cooperativeness throughout life (from childhood through adolescence to old age). Differences in changes in the intensity of temperament and character traits were noted between

healthy participants (control group) and those receiving psychiatric treatment – the trajectories of change differ significantly. This may suggest that not only do patients with mental disorders differ in temperament and character from healthy individuals, but these traits may also change differently over time.

In a study by Trouillet et al. [21] conducted on a group of healthy volunteers aged 18–94, changes in the intensity of temperament and character traits were observed as they aged. Younger participants demonstrated a significantly higher intensity of cooperativeness than older participants. With age, a decrease in novelty seeking was noted [21]. Zohar et al. [22] examined how the personal characteristics of young people change during adolescence, between the ages of 12 and 16 (three measurement points were selected, at ages 12, 14, and 16). The researcher and her team showed that the intensity of persistence and harm avoidance dropped between the ages of 12 and 16, while self-directedness and cooperativeness increased [22]. Temperament and character traits change differently in clinical groups. For example, in a study by Ha et al. [23], the trajectory of temperament and character changes over three years was compared in subjects with borderline personality disorder and healthy participants in the first year of secondary school at the start of the study. At the beginning of the study, patients with BPD demonstrated a significantly higher intensity of harm avoidance and novelty seeking, and lower self-directedness. Significant differences in changes in the three studied parameters (self-directedness, self-transcendence and cooperativeness) were observed with age between the two groups. In the healthy volunteers group, cooperativeness changed significantly between the measurements, while no significant changes with age were observed in the group of patients with BPD [23].

This study examined whether patients within the same disorder group would differ from each other depending on their age and type of disorder. The differences in the obtained results can also be explained by the fact that younger subjects were more likely to have experienced symptoms for a shorter period of time. Psychopathological symptoms may not have become entrenched and rigid as they were already receiving treatment, and greater cooperativeness made them more susceptible to changes and to the treatment.

Conclusions

The study partially confirmed differences in the intensity of temperament and character traits depending on the type of disorder – patients with externalizing disorders showed more novelty-seeking, which may translate into a greater tendency to engage in risky behavior and problems with the law. Significant gender differences were also observed, with women exhibiting higher levels of harm avoidance, reward dependence and self-transcendence, which on the one hand makes them more susceptible to anxiety and depressive disorders, but on the other hand increases their ability to benefit from therapy and social support. In addition, it was shown that younger participants with externalizing disorders scored higher on two subscales of cooperativeness, which may have practical implications for treatment planning – therapeutic interventions should be initiated as soon as possible after diagnosis to reduce the risk of rigidity and reinforcement of destructive behavior patterns.

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Corresponding author: Renata Modrzejewska
e-mail: renatam@cm-uj.krakow.pl