

# The Comparison of Temperamental and Characterological Traits of Patients with Sexual Dysfunctions with and without Comorbid Anxiety Disorders: Comorbidity is related to maladaptive temperament

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## Abstract

**Aim of the study:** The study aimed to test the hypothesis that biological, temperamental traits differ between patients with sexual dysfunctions only and those with sexual dysfunctions comorbid with anxiety disorders, whereas characterological differences are less pronounced.

**Material and methods:** The study included 103 patients (38 men and 65 women; aged 20-58 years;  $M = 30.42$ ,  $SD = 7.06$ ) undergoing group psychotherapy for anxiety disorders and 73 patients (30 men and 43 women; aged 20-57 years;  $M = 30.16$ ,  $SD = 6.85$ ) from an outpatient sexology clinic. The Mini-International Neuropsychiatric Interview (M.I.N.I.) was used for psychiatric diagnosis. All participants completed a questionnaire screening for symptoms of sexual dysfunctions and Cloninger's Temperament and Character Inventory (TCI).

**Results:** The group with sexual dysfunctions comorbid with anxiety disorders scored significantly lower on the novelty seeking and persistence scales and significantly higher on harm avoidance and reward dependence. Regarding character dimensions, the comorbid group scored significantly lower on self-directedness and significantly higher on cooperativeness.

**Discussion:** Individuals with comorbid anxiety disorder(s) and sexual dysfunction(s) showed more maladaptive temperamental traits than those with sexual dysfunction(s) only and than the general population. This may hinder self-management and complicate therapy. In the group with sexual dysfunction(s) only, lower cooperativeness may play a role in symptom formation.

**Conclusions:** The findings confirm the usefulness of Cloninger's inventory in describing clinical groups and suggest that, in some cases, sexual dysfunction may be part of broader psychopathology rather than a distinct disorder.

**sexual dysfunctions; anxiety disorders; temperament; character; personality**

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## 1. INTRODUCTION

The present study was designed to determine to what extent personality traits – specifically tem-

perament and character – differentiate individuals with isolated sexual dysfunctions from those with sexual dysfunctions co-occurring with anxiety disorders. An additional aim was to assess whether innate temperamental traits may constitute a common factor underlying both anxiety symptoms and sexual difficulties to a greater extent than character traits acquired through socialization.

Sexual dysfunctions are characterized by an inability to respond adequately to sexual stimulation or by the experience of pain during sexual activity [1]. Such symptoms may be common, transient, and short-lived; however, when they persist for a sufficiently long period and additional diagnostic criteria are met, they may constitute specific mental disorders (e.g., erectile disorder, premature ejaculation, hypoactive sexual desire disorder, female orgasmic disorder, or genito-pelvic pain/penetration disorder).

Symptoms of sexual dysfunction may also arise in the course of other, non-sexual mental disorders, including anxiety disorders and mood disorders. Contemporary reports indicate that approximately 40% of women and 30% of men experience symptoms of sexual dysfunction [2]. A systematic review of psychotropic-free and physically healthy psychiatric patients found that the prevalence of sexual dysfunctions among individuals with anxiety disorders ranges from 33% to 75% [3].

The relationship between sexual dysfunctions and anxiety disorders remains a challenge for contemporary sexology and psychiatry. Historically, sexual problems were considered part of the psychopathology of other mental disorders rather than distinct sexual disorders, at least until the publication of DSM-III in 1980. They are still viewed by many psychoanalysts and psychodynamic psychotherapists as neurotic symptoms. At present, it is well established that sexual dysfunctions constitute a distinct group of disorders, although their symptoms may also occur as part of other mental disorders. Nevertheless, the similarities and differences between these two clinical groups remain insufficiently understood.

In a previous study conducted among 103 individuals (38 men and 65 women) receiving psychotherapy for anxiety disorders in a psychiatric day ward, participants were asked about symp-

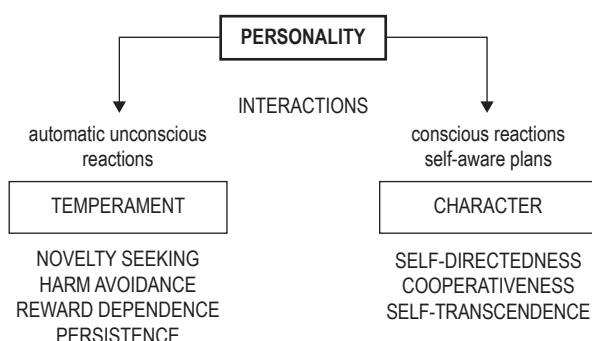
toms of sexual dysfunctions and whether they had reported such symptoms during group or individual therapy. Symptoms of at least one sexual dysfunction were reported by 99% of respondents; three or more dysfunctions were reported by 49%, two dysfunctions by 21.2%, and one dysfunction by 3.8%, whereas only one respondent reported no symptoms. Among the respondents, 80% had not reported sexological symptoms during group therapy, and nearly 80% of women and more than 60% of men had not reported them during individual consultations [6].

There are relatively few studies on the relationship between temperament and sexual dysfunctions. Men with premature ejaculation, compared with men without this problem, scored higher on harm avoidance and lower on novelty seeking and self-transcendence in the revised version of the TCI-R [4], particularly in the lifelong and variable subtypes of premature ejaculation. Harm avoidance was positively correlated with premature ejaculation-related distress, whereas novelty seeking and self-transcendence were inversely correlated, suggesting that personality traits influence both the experience of premature ejaculation and treatment needs [5].

To the best of our knowledge, there are no published studies comparing temperament and character traits in people with sexual dysfunctions with and without comorbid anxiety disorders. Advances in contemporary psychiatry and sexology increasingly emphasize the role of biological predispositions in the etiology of mental disorders. Therefore, Cloninger's Temperament and Character Inventory appears to be a useful tool for comparing individuals with sexual dysfunctions with and without comorbid mental disorders.

Traditional psychoanalytic concepts, as well as modern psychodynamic accounts of the emergence of sexual dysfunction symptoms, usually conceptualize them within the framework of neurotic disorders, many of which meet criteria for anxiety disorders. Contemporary findings confirm the high frequency of co-occurrence of sexual dysfunctions and anxiety disorders [6-19]. For this reason, comparing personality traits, and temperament in particular, in these groups appears justified.

Cloninger’s psychobiological model of personality [20], presented in Diagram 1 in the Supplementary Material, assumes that personality results from the interaction between a biological foundation, genetically determined temperament, and environmentally shaped character. Temperament, understood as a biologically based set of emotional predispositions, competencies, and resources, is manifested in contact with the environment through automatic and largely unconscious reactions. Character, in contrast, comprises traits shaped during ontogenetic development and related to an individual’s perception of the self; it is therefore more strongly influenced by conscious psychological processes.



**Diagram 1.** Psychological model of personality by R. Cloninger [17]

Theories of temperament emphasize its emotional, motivational, and adaptive functions. The dimensions describing temperament include novelty seeking (NS), i.e., a tendency to respond actively to novel stimuli; harm avoidance (HA), i.e., a tendency to inhibit behavior in response to aversive stimuli; reward dependence (RD), i.e., a tendency to maintain behavior in response to positive reinforcement; and persistence (P), i.e., the ability to sustain activity independently of immediate reinforcement.

Character is described as rational and volitional. Unlike temperament, which is expressed through basic emotions such as fear or anger, character is represented by more complex phenomena such as empathy, patience, hope, love, and faith. Character is assessed in three dimensions of the personality model: self-directedness (SD), that is, the ability to adapt one’s behavior to consciously chosen goals; cooperativeness (C),

that is, the ability to maintain harmonious and balanced interpersonal relationships; and self-transcendence (ST), that is, the extent to which individuals perceive themselves as integral parts of the universe as a whole.

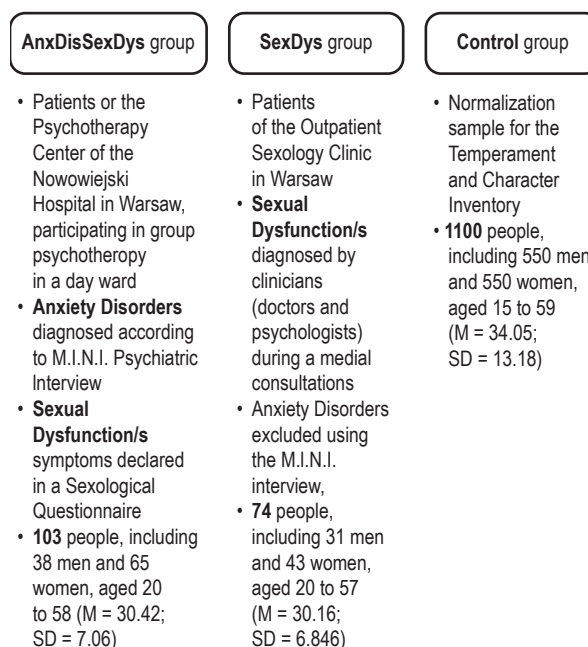
The study was designed to verify two hypotheses:

Hypothesis 1. Individuals with sexual dysfunction(s) and comorbid anxiety disorder(s) have more maladaptive temperamental traits than those with sexual dysfunction(s) without anxiety disorders.

Hypothesis 2. Temperamental and/or characterological traits of individuals with sexual dysfunction(s) and comorbid anxiety disorder(s) differ from those of the general population to a greater extent than do the traits of individuals with sexual dysfunction(s) without comorbid anxiety disorders.

## 2.1. Materials

Three groups were compared in the study (details are presented in Diagram 2 in the Supplementary Material).



**Diagram 2.** Data on groups compared in the study.

1. AnxDisSexDys group: 103 individuals (38 men and 65 women), aged 20-58 years (M = 30.42, SD = 7.06), selected from 119 in-

vited participants; 16 were excluded because of missing data. All participants had sexual dysfunction(s) comorbid with anxiety disorder(s) and were undergoing psychotherapy in a day-unit setting.

2. SexDys group: 73 individuals (30 men and 43 women), aged 20-57 years ( $M = 30.16$ ,  $SD = 6.85$ ), with sexual dysfunction(s) and without comorbid anxiety disorder(s); these participants were patients of an outpatient sexology clinic.
3. Control group: a normalization sample from the general population comprising 1,100 participants from the Polish adaptation study of the Temperament and Character Inventory.

### 2.1.1. Descriptive statistics of the studied groups

In the AnxDisSexDys group, 103 individuals aged 20 to 58 years were assessed; the mean age was 30.42 years ( $SD = 7.06$ ). The group comprised 65 women (63.1%) and 38 men (36.9%). Sixty-three participants were single (61.2%), 17 were married (16.5%), 20 were separated or divorced (19.4%), and 3 were widowed (2.9%). Most participants had higher education ( $N = 58$ , 56.3%), 38 had secondary education (36.9%), and 7 had primary or vocational education (6.8%). All participants reported symptoms of at least one sexual dysfunction: symptoms of one dysfunction were reported by 3 individuals (2.9%), symptoms of two dysfunctions by 31 (30.4%), and symptoms of three or more dysfunctions by 69 (66.7%).

In the SexDys group, 73 individuals aged 20 to 57 years were assessed; the mean age was 30.16 years ( $SD = 6.85$ ). The group comprised 43 women (58.9%) and 30 men (41.1%). Thirty-nine participants were single (53.4%), 19 were married (26.1%), 13 were separated or divorced (17.8%), and 2 were widowed (2.7%). Most had higher education ( $N = 43$ , 58.9%), 27 had secondary education (37.0%), and 3 had primary or vocational education (4.1%).

## 2.2. Methods

### 2.2.1. Sociodemographic inventory

The inventory consisted of questions concerning gender, level of education (primary, secondary,

higher), place of residence, and marital status. It also included a section used to record the diagnosis (classification code assigned to the patient by the clinician).

### 2.2.2. Sexological Questionnaire for Screening Research

To assess the occurrence of symptoms of sexual dysfunctions, the original version of the Sexological Questionnaire for Screening Research [21], developed for the purposes of this study, was used to identify individuals who subjectively experienced symptoms of sexual dysfunction. Later studies examining the psychometric properties of the tool demonstrated a sensitivity of 78% and a specificity of 86% for screening sexual dysfunctions [21]. The questionnaire was constructed on the basis of ICD-10 criteria, as ICD-10 remains valid and is still used in Poland.

In the first part of the questionnaire, participants assessed whether, and if so how often, during the previous month they had experienced symptoms typical of each sexual dysfunction listed in the disease classification: lack or loss of sexual desire, sexual aversion and lack of sexual enjoyment, genital response disorders, premature ejaculation, orgasm disorders, vaginismus, dyspareunia, and excessive sexual drive. Respondents were also asked to indicate symptom frequency using the following categories: always, persistently (recurrently), sporadically, not at all, or not applicable.

### 2.2.3. Mini-International Neuropsychiatric Interview (M.I.N.I.)

Psychiatric diagnoses, including anxiety disorders, were established using the Polish version of the Mini-International Neuropsychiatric Interview (M.I.N.I.), version 5.0.0 [22]. This structured interview is based on the criteria of the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) [23], and the International Classification of Diseases, Tenth Revision (ICD-10) [24]. The instrument was originally developed as a brief structured interview for diagnosing mental disorders according to DSM-III-R [25] and ICD-10 criteria [24]. It can be administered by clinicians after brief training, although non-professionals require more extensive preparation. The psychometric properties

of the original English-language version of the M.I.N.I. were evaluated as very good using the Composite International Diagnostic Interview (CIDI) as the reference standard.

#### 2.2.4. Temperament and Character Inventory – Polish adaptation

Temperament and character traits were assessed using Cloninger's Temperament and Character Inventory (TCI), adapted into Polish by Hornowska [26]. Polish standardization and normalization studies were conducted between 2000 and 2003. These studies verified the psychometric properties of the TCI, including the discriminatory power of individual items, absolute stability, the homogeneity of individual scales, and criterion-related and theoretical validity. The inventory meets the criteria for this type of tool and yields reliability indices comparable to those of the original version (the reliability of the main dimensions ranges from 0.50 for P to 0.87 for HA, whereas the reliability of the subscales ranges from 0.42 for C2 to 0.81 for RD4, using the KR-20 formula). The inventory is also characterized by high temporal stability (from 0.58 to 0.90 with a 2-week interval and from 0.35 to 0.84 with a 6-month interval; very low values were observed only for 2 of the 25 subscales). Regarding validity, factor-analytic results support the conclusion that the original and Polish versions of the TCI show convergent factor structures reflecting the theoretical assumptions of the model, and validation studies examining the relationships between temperament and character, as defined within the psychobiological model of personality, and other temperament dimensions indicate satisfactory convergent validity.

The inventory consists of 240 statements, for which respondents indicate whether each statement is true or false for them.

The TCI measures 7 main scales – four on the temperament dimension and three on the character dimension – together with 24 personality subscales. The temperament scales are novelty seeking (NS), harm avoidance (HA), reward dependence (RD), and persistence (P), whereas the character dimension comprises self-directedness (SD), cooperativeness (C), and self-transcendence (ST).

### 3. RESULTS

#### 3.1. Comparison of temperament and character in clinical groups with the general population

To compare the results obtained in both clinical groups with those of the general population, the findings were contrasted with the distribution of TCI scores in the normalization sample (N = 1,100). Statistically significant differences were observed for both clinical groups.

On the temperament scales, the AnxDisSexDys group differed significantly from the normalization sample on all dimensions: novelty seeking (2 SD below the mean), harm avoidance (2 SD above the mean), reward dependence (2 SD above the mean), and persistence (1 SD below the mean). In contrast, the SexDys group showed significantly lower mean scores only on reward dependence and persistence (both 1 SD below the mean of the general population).

Compared with the general population on the character scales, the AnxDisSexDys group scored significantly lower on self-directedness (1 SD below the mean) and significantly higher on cooperativeness (1 SD above the mean). The SexDys group scored significantly lower on all character scales: self-directedness (1 SD below the mean), cooperativeness (2 SD below the mean), and self-transcendence (1 SD below the mean).

These data indicate that the results of the AnxDisSexDys group deviated more strongly from the norm across all temperament scales, whereas the results of the SexDys group remained within 1 SD of the population mean. In the character domain, the most pronounced difference was observed for cooperativeness: the AnxDisSexDys group scored 1 SD above the norm, whereas the SexDys group scored 2 SD below the Polish norms.

Detailed results are presented in Tables 1 and 2. A comparison of the mean scores obtained in the studied groups with the results of the normalization procedure, together with a description of personality factors according to Cloninger [20], is presented in Table 3.

**Table 1.** Comparison of the results on the temperament scales and subscales in the study groups with the results from the normalization sample [21].

Temperament Scales and Subscales	M and SD AnxDisSexDys N = 103	Power Test alfa = 0.01	t *	p **	d ***	M and SD SexDys N = 73	PowerTest alfa = 0.01	t *	p **	d ***	M and SD Control N = 1100
<b>NOVELTY SEEKING (NS)</b>	M 12.85 SD 6.678	1	12.97	0.001	1.335	M 20.21 SD 5.011	0.170	1.38	0.167	0.167	M 21.24 SD 6.24
<b>NS1: excitability</b>	M 3.11 SD 2.019	1	12.31	0.001	1.268	M 5.37 SD 1.845	0.470	2.29	0.022	0.277	M 6.0 SD 2.30
<b>NS2: impulsivity</b>	M 3.64 SD 2.266	0.98	4.39	0.001	0.452	M 5.84 SD 2.048	0.925	3.38	0.001	0.462	M 4.73 SD 2.42
<b>NS3: extravagance</b>	M 3.49 SD 2.072	1	9.53	0.001	0.981	M 3.53 SD 1.179	1	8.10	0.001	0.978	M 5.73 SD 2.30
<b>NS4: disorderly</b>	M 2.62 SD 2.147	1	10.85	0.001	1.117	M 5.47 SD 1.725	0.697	2.89	0.004	0.349	M 4.8 SD 1.93
<b>HARM AVOIDANCE (HA)</b>	M 27.55 SD 4.612	1	16.92	0.001	1.743	M 16.37 SD 5.626	0.079	0.93	0.353	0.112	M 15.59 SD 7.03
<b>HA1: pessimism</b>	M 8.31 SD 2.000	1	14.70	0.001	1.513	M 5.53 SD 2.014	0.854	3.44	0.001	0.416	M 4.47 SD 2.58
<b>HA2: fearfulness</b>	M 6.42 SD 0.891	1	11.90	0.001	1.225	M 3.55 SD 1.958	0.237	1.64	0.102	0.198	M 3.96 SD 2.08
<b>HA3: shyness</b>	M 6.11 SD 1.559	1	10.73	0.001	1.105	M 3.74 SD 1.625	0.012	0.08	0.938	0.009	M 3.76 SD 2.17
<b>HA4: fatigability</b>	M 6.73 SD 1.722	1	14.25	0.001	1.467	M 3.56 SD 2.021	0.042	0.61	0.541	0.074	M 3.39 SD 2.32
<b>REWARD DEPENDENCE (RD)</b>	M 19.54 SD 2.637	1	14.92	0.001	1.536	M 12.51 SD 3.042	0.916	3.77	0.001	0.455	M 14.13 SD 3.59
<b>RD1: sentimentality</b>	M 8.05 SD 1.729	1	8.13	0.001	0.837	M 5.71 SD 2.105	0.539	2.46	0.014	0.298	M 6.33 SD 2.08
<b>RD3: attachment</b>	M 7.2 SD 1.051	1	12.97	0.001	1.335	M 4.16 SD 1.354	0.599	2.62	0.009	0.317	M 4.75 SD 1.89
<b>RD4: dependence</b>	M 4.3 SD 1.364	1	9.29	0.001	0.957	M 2.63 SD 1.409	0.614	2.66	0.008	0.321	M 3.05 SD 1.30
<b>PERSISTENCE (P)</b>	M 2.8 SD 1.751	1	6.90	0.001	0.710	M 3.56 SD 1.598	0.524	2.43	0.015	0.293	M 4.09 SD 1.82

**Table 2.** Comparison of the results on the character scales and subscales in the study groups with the results from the normalization sample [21].

Character Scales and Subscales	M and SD AnxDisSexDys N = 103	Power Test alfa = 0.01	t *	p **	d ***	M and SD SexDys N = 73	PowerTest alfa = 0.01	t *	p **	d ***	M and SD Control N = 1100
<b>SELF-DIRECTEDNESS (SD)</b>	M 21.06 SD 7.27	1	6.61	0.001	0.681	M 21.59 SD 6.47	1	5.08	0.001	0.613	M 26.14 SD 7.47
<b>SD1: responsibility</b>	M 4.19 SD 2.09	0.97	4.42	0.001	0.455	M 3.38 SD 2.09	1	6.87	0.001	0.830	M 5.17 SD 2.16
<b>SD2: purposefulness</b>	M 3.9 SD 1.94	1	7.18	0.001	0.739	M 4.19 SD 1.19	1	4.91	0.001	0.593	M 5.24 SD 1.8
<b>SD3: resourcefulness</b>	M 3.03 SD 1.47	0.07	1.08	0.282	0.111	M 2.01 SD 1.21	1	6.47	0.001	0.781	M 3.2 SD 1.54

<b>SD4: self-acceptance</b>	M 3.1 SD 2.35	1	8.57	0.001	0.882	M 5.48 SD 2.13	0.05	0.82	0.411	0.099	M 5.24 SD 2.43
<b>SD5: enlightened second nature</b>	M 6.83 SD 2.35	0.25	1.76	0.078	0.181	M 6.52 SD 2.15	0.63	2.50	0.013	0.302	M 7.3 SD 2.61
<b>COOPERATIVENESS (C)</b>	M 35.86 SD 4.66	1	8.00	0.001	0.824	M 22.53 SD 4.00	1	10.44	0.001	1.261	M 30.6 SD 6.52
<b>C1: social acceptance</b>	M 6.55 SD 1.41	0.13	0.24	0.810	0.025	M 4.38 SD 0.79	1	11.08	0.001	1.338	M 6.51 SD 1.63
<b>C2: empathy</b>	M 6.16 SD 1.06	1	11.85	0.001	1.221	M 3.68 SD 1.21	1	4.67	0.001	0.564	M 4.47 SD 1.41
<b>C3: helpfulness</b>	M 6.57 SD 1.51	1	5.83	0.001	0.600	M 5.01 SD 1.41	0.9	3.76	0.001	0.454	M 5.68 SD 1.48
<b>C4: compassion</b>	M 7.96 SD 1.49	0.99	3.02	0.003	0.311	M 4.84 SD 1.55	1	7.28	0.001	0.880	M 7.15 SD 2.68
<b>C5: pure-hearted conscience</b>	M 5.62 SD 2.01	1	6.39	0.001	0.658	M 4.67 SD 1.13	1	10.14	0.001	1.225	M 6.8 SD 1.77
<b>SELF-TRANSCENDENCE (ST)</b>	M 14.96 SD 5.83	0.08	1.11	0.266	0.114	M 13.62 SD 6.19	0.54	2.72	0.007	0.329	M 15.67 SD 6.23
<b>ST1: self-forgetful</b>	M 5.06 SD 2.24	0.01	0.31	0.759	0.032	M 5.04 SD 2.55	0.01	0.32	0.747	0.039	M 5.14 SD 2.56
<b>ST2: transpersonal identification</b>	M 3.81 SD 2.17	0.05	0.88	0.379	0.091	M 3.26 SD 2.47	0.08	1.30	0.194	0.157	M 3.61 SD 2.21
<b>ST3: spiritual acceptance</b>	M 6.08 SD 2.54	0.72	2.71	0.007	0.279	M 5.27 SD 2.35	1	4.50	0.001	0.544	M 6.93 SD 3.09

**Table 3.** Comparison of the mean results obtained on the temperament and character scales in the studied groups with the results obtained in the normalization procedure. Description of personality factors according to R. Cloninger [17].

TEMPERAMENT	TEMPERAMENT	TEMPERAMENT	TEMPERAMENT
Temperament Scales and Subscales	M and SD AnxDisSexDys N = 103	M and SD SexDys N = 73	M and SD Control N = 1100
NOVELTY SEEKING (NS)	M 12.85 2nd SD below M	M 20.21 1st SD below M	M 21.24 SD 6.24
Low scorers are more withdrawn, have a lesser interest in taking on challenges, prefer the familiar, are inclined to routine, have a higher tolerance to boredom, and are rigid and conventional.	Low scorers are more withdrawn, have a lesser interest in taking on challenges, prefer the familiar, are inclined to routine, have a higher tolerance to boredom, and are rigid and conventional.	Low scorers are more withdrawn, have a lesser interest in taking on challenges, prefer the familiar, are inclined to routine, have a higher tolerance to boredom, and are rigid and conventional.	Low scorers are more withdrawn, have a lesser interest in taking on challenges, prefer the familiar, are inclined to routine, have a higher tolerance to boredom, and are rigid and conventional.
HARM AVOIDANCE (HA)	M 27.55 2nd SD above M	M 16.37 1st SD above M	M 15.59 SD 7.03
High scorers are less enthusiastic, they are more timid, tense, and discouraged, they are shy and closed, tiring, and less resistant.	High scorers are less enthusiastic, they are more timid, tense, and discouraged, they are shy and closed, tiring, and less resistant.	High scorers are less enthusiastic, they are more timid, tense, and discouraged, they are shy and closed, tiring, and less resistant.	High scorers are less enthusiastic, they are more timid, tense, and discouraged, they are shy and closed, tiring, and less resistant.

<b>REWARD DEPENDENCE (RD)</b>	M 19.54 2nd SD above M	M 12.51 1st SD below M	M 14.13 SD 3.59
High scorers are characterized by dependence to others, sensitivity to social stimuli, easy attachment, frequent seeking of support, and sensitivity to criticism and submission.	High scorers are characterized by dependence to others, sensitivity to social stimuli, easy attachment, frequent seeking of support, and sensitivity to criticism and submission.	High scorers are characterized by dependence to others, sensitivity to social stimuli, easy attachment, frequent seeking of support, and sensitivity to criticism and submission.	High scorers are characterized by dependence to others, sensitivity to social stimuli, easy attachment, frequent seeking of support, and sensitivity to criticism and submission.
Individuals with high scores are self-reliant, self-sufficient, alienated, and indifferent to lack of acceptance and cold.	Individuals with high scores are self-reliant, self-sufficient, alienated, and indifferent to lack of acceptance and cold.	Individuals with high scores are self-reliant, self-sufficient, alienated, and indifferent to lack of acceptance and cold.	Individuals with high scores are self-reliant, self-sufficient, alienated, and indifferent to lack of acceptance and cold.
<b>PERSISTENCE (P)</b>	M 2.8 1st SD below M	M 3.56 1st SD below M	M 4.09 SD 1.82
Low scorers are described as unreliable, inconsistent, sensitive to obstacles, underperforming, and perceived as unambitious.	Low scorers are described as unreliable, inconsistent, sensitive to obstacles, underperforming, and perceived as unambitious.	Low scorers are described as unreliable, inconsistent, sensitive to obstacles, underperforming, and perceived as unambitious.	Low scorers are described as unreliable, inconsistent, sensitive to obstacles, underperforming, and perceived as unambitious.
<b>CHARACTER</b>	CHARACTER	CHARACTER	CHARACTER
<b>Character Scales and Subscales</b>	M and SD AnxDisSexDys N = 103	M and SD SexDys N = 73	M and SD Control N = 1100
<b>SELF-DIRECTEDNESS (SD)</b>	M 21.06 1st SD below M	M 21.59 1st SD below M	M 26.14 SD 7.47
Low scorers are outwardly steered, insecure, indecisive, unable to defer gratification, helpless, ineffective, passive, without initiative, disbelieving in their abilities, habits inconsistent with goals, succumbing to persuasion and temptation.	Low scorers are outwardly steered, insecure, indecisive, unable to defer gratification, helpless, ineffective, passive, without initiative, disbelieving in their abilities, habits inconsistent with goals, succumbing to persuasion and temptation.	Low scorers are outwardly steered, insecure, indecisive, unable to defer gratification, helpless, ineffective, passive, without initiative, disbelieving in their abilities, habits inconsistent with goals, succumbing to persuasion and temptation.	Low scorers are outwardly steered, insecure, indecisive, unable to defer gratification, helpless, ineffective, passive, without initiative, disbelieving in their abilities, habits inconsistent with goals, succumbing to persuasion and temptation.
<b>COOPERATIVENESS (C)</b>	M 32.86 1st SD above M	M 22.53 2nd SD below M	M 30.6 SD 6.52
High scorers are tolerant and decentralized, they are also empathetic, compassionate, sensitive to the needs of others, respecting and understanding others, helping, supporting, caring, understanding, forgiving.	High scorers are tolerant and decentralized, they are also empathetic, compassionate, sensitive to the needs of others, respecting and understanding others, helping, supporting, caring, understanding, forgiving.	High scorers are tolerant and decentralized, they are also empathetic, compassionate, sensitive to the needs of others, respecting and understanding others, helping, supporting, caring, understanding, forgiving.	High scorers are tolerant and decentralized, they are also empathetic, compassionate, sensitive to the needs of others, respecting and understanding others, helping, supporting, caring, understanding, forgiving.
Low results indicate insensitivity to the feelings of others, egocentrism, reluctance to cooperate, tendency to hold grudges, and criticism of otherness.	Low results indicate insensitivity to the feelings of others, egocentrism, reluctance to cooperate, tendency to hold grudges, and criticism of otherness.	Low results indicate insensitivity to the feelings of others, egocentrism, reluctance to cooperate, tendency to hold grudges, and criticism of otherness.	Low results indicate insensitivity to the feelings of others, egocentrism, reluctance to cooperate, tendency to hold grudges, and criticism of otherness.

SELF-TRANSCENDENCE (ST)	M 14.96 1st SD below M	M 13.62 1st SD below M	M 15.67 SD 6.23
Obtaining low results is typical for people described as: practical, prosaic, unimaginative, not recognizing irrational phenomena, focused on one's own goals.	Obtaining low results is typical for people described as: practical, prosaic, unimaginative, not recognizing irrational phenomena, focused on one's own goals.	Obtaining low results is typical for people described as: practical, prosaic, unimaginative, not recognizing irrational phenomena, focused on one's own goals.	Obtaining low results is typical for people described as: practical, prosaic, unimaginative, not recognizing irrational phenomena, focused on one's own goals.

### 3.2. Comparison of temperament and character between persons with comorbid sexual dysfunction(s) and anxiety disorder(s) and those with sexual dysfunctions only

Means (M) and standard deviations (SD) were calculated for the scales and subscales of temperament and character in the studied groups, with additional analyses stratified by gender.

To verify whether the groups differed in their scores on the scales and subscales of temperament and character, the Mann-Whitney U test was used. Analyses with the chi-square test and the Kolmogorov-Smirnov test indicated that the groups were not equivalent and that the distributions within the groups were not normal.

In the temperament domain, compared with the SexDys group, the AnxDisSexDys group had significantly lower scores on novelty seeking and three of its subscales (excitability, im-

pulsivity, and disorderliness), significantly higher scores on harm avoidance and all of its subscales (pessimism, fearfulness, shyness, and fatigability), significantly higher scores on reward dependence and all of its subscales (sentimentality, attachment, and dependence), as well as a significantly lower score on persistence.

In the character domain, no statistically significant difference was found on the overall self-directedness scale, although three subscales – responsibility, resourcefulness, and self-acceptance – differed significantly between the groups. The AnxDisSexDys group also scored significantly higher on cooperativeness and all of its subscales (social acceptance, empathy, helpfulness, compassion, and pure-hearted conscience). No significant differences were observed on the self-transcendence scale.

The results are presented in Tables 4 and 5.

**Table 4.** Comparison of the average results on the temperament scales and subscales in a AnxDisSexDys and SexDys groups.

d ***	p **	t *	Power Test alfa = 0.01	SD	M SexDys N = 73	SD	M AnxDisSexDys N = 103	Temperament Scales and Subscales
1.211	0.0000	7.96	1	5.011	20.21	6.678	12.85	NOVELTY SEEKING (NS)
1.153	0.0000	7.58	1	1.845	5.37	2.019	3.11	NS1: excitability
1.004	0.0000	6.6	1	2.048	5.84	2.266	3.64	NS2: impulsivity
0.023	0.8819	0.15	0.015	1.179	3.53	2.072	3.49	NS3: extravagance
1.429	0.0000	9.39	1	1.725	5.47	2.147	2.62	NS4: disorderly
2.198	0.0000	14.45	1	5.626	16.37	4.612	27.55	HARM AVOIDANCE (HA)
1.378	0.0000	9.06	1	2.014	5.53	2.000	8.31	HA1: pessimism
1.991	0.0000	13.10	1	1.958	3.55	0.891	6.42	HA2: fearfulness
1.485	0.0000	9.76	1	1.625	3.74	1.559	6.11	HA3: shyness
1.702	0.0000	11.19	1	2.021	3.56	1.722	6.73	HA4: fatigability

2.486	0.0000	16.34	1	3.042	12.51	2.637	19.54	REWARD DEPENDENCE (RD)
1.228	0.0000	8.08	1	2.105	5.71	1.729	8.05	RD1: sentimentality
2.548	0.0000	16.76	1	1.354	4.16	1.051	7.2	RD3: attachment
1.201	0.0000	7.89	1	1.409	2.63	1.364	4.3	RD4: dependence
0.447	0.0034	2.94	0.737	1.598	3.56	1.751	2.8	PERSISTENCE (P)

**Table 5.** Comparison of the average results on the character scales and subscales in a AnxDisSexDys and SexDys groups.

d <sup>***</sup>	p <sup>**</sup>	t <sup>*</sup>	Power Test alfa = 0.01	SD	M SexDys N = 73	SD	M AnxDisSexDys N = 103	Character Scales and Subscales
0.076	0.619	0.50	0.020	6.47	21.59	7.27	21.06	SELF-DIRECTEDNESS (SD)
0.385	0.012	2.53	0.473	2.09	3.38	2.09	4.19	SD1: responsibility
0.173	0.258	1.13	0.087	1.19	4.19	1.94	3.9	SD2: purposeful
0.741	0.001	4.87	0.992	1.21	2.01	1.47	3.03	SD3: resourcefulness
1.046	0.001	6.88	1	2.13	5.48	2.35	3.1	SD4: self-acceptance
0.136	0.373	0.89	0.047	2.15	6.52	2.35	6.83	SD5: enlightened second nature
3.013	0.001	19.81	1	4.00	22.53	4.66	35.86	COOPERATIVENESS (C)
1.809	0.001	11.89	1	0.79	4.38	1.41	6.55	C1: social acceptance
2.193	0.001	14.42	1	1.21	3.68	1.06	6.16	C2: empathy
1.056	0.001	6.94	1	1.41	5.01	1.51	6.57	C3: helpfulness
2.047	0.001	13.46	1	1.55	4.84	1.49	7.96	C4: compassion
0.555	0.001	3.65	0.915	1.13	4.67	2.01	5.62	C5: pure-hearted conscience
0.223	0.145	1.46	0.127	6.19	13.62	5.83	14.96	SEL-TRANSCENDENCE (ST)
0.008	0.956	0.06	0.010	2.55	5.04	2.24	5.06	ST1: self-forgetful
0.238	0.120	1.56	0.144	2.47	3.26	2.17	3.81	ST2: transpersonal identification
0.327	0.033	2.15	0.337	2.35	5.27	2.54	6.08	ST3: spiritual acceptance

**3.3. Comparison** of the results obtained on the temperament and character scales in the studied groups by gender. Mean scores stratified by gender were also calculated for the studied groups (Table 5).

**Table S5.** Comparison of the average results on temperament scales in studied groups broken down by gender.

d <sup>***</sup>	p <sup>**</sup>	t <sup>*</sup>	Power Test alfa = 0.01	SD	M AnxDisSexDys MEN N = 38	SD	M AnxDisSexDys WOMEN N = 65	Temperament Scales and Subscales
0.244	0.2311	1.20	0.137	6.03	13.89	7.01	12.25	NOVELTY SEEKING (NS)
0.299	0.142	1.48	0.206	4.19	26.68	4.78	28.06	HARM AVOIDANCE (HA)
0.761	0.000	3.77	0.904	2.59	18.34	2.42	20.25	REWARD DEPENDENCE (RD)
0.238	0.241	1.18	0.159	1.16	2.53	2.01	2.95	PERSISTENCE (P)
d <sup>***</sup>	p <sup>**</sup>	t <sup>*</sup>	Power Test alfa = 0.01	SD	M SexDys MEN N = 30	SD	M SexDys WOMEN N = 43	Temperament Scales and Subscales
0.156	0.509	0.66	0.047	4.89	19.73	5.19	20.53	NOVELTY SEEKING (NS)

0.030	0.899	0.13	0.014	4.75	16.47	6.22	16.30	HARM AVOIDANCE (HA)
0.555	0.020	2.37	0.491	2.99	11.53	2.92	13.19	REWARD DEPENDENCE (RD)
0.248	0.294	1.06	0.098	1.58	3.80	1.60	3.40	PERSISTENCE (P)
<b>d ***</b>	<b>p **</b>	<b>t *</b>	<b>Power Test alfa = 0.01</b>	<b>SD</b>	<b>M AnxDisSexDys MEN N = 38</b>	<b>SD</b>	<b>M AnxDisSexDys WOMEN N = 65</b>	<b>Character Scales and Subscales</b>
0.363	0.075	1.80	0.239	6.21	19.39	7.71	20.03	SELF-DIRECTEDNESS (SD)
0.421	0.040	2.08	0.265	5.04	31.63	4.30	33.58	COOPERATIVENESS (C)
0.391	0.056	1.93	0.19	7.11	13.53	4.79	15.8	SELF-TRANSCENDENCE (ST)
<b>d ***</b>	<b>p **</b>	<b>t *</b>	<b>Power Test alfa = 0.01</b>	<b>SD</b>	<b>M SexDys MEN N = 30</b>	<b>SD</b>	<b>M SexDys WOMEN N = 43</b>	<b>Character Scales and Subscales</b>
0.418	0.079	1.78	0.202	6.27	20.00	6.41	22.70	SELF-DIRECTEDNESS (SD)
0.175	0.457	0.75	0.032	4.19	21.53	3.75	22.23	COOPERATIVENESS (C)
0.093	0.692	0.40	0.015	6.92	13.27	5.7	13.86	SELF-TRANSCENDENCE (ST)

In the temperament domain, statistically significant gender differences were found in both groups only for reward dependence, with women scoring significantly higher than men. In the character domain, significant gender differences were observed only in the AnxDisSexDys group and only for cooperativeness, with women scoring higher than men.

These results can be compared only within the studied groups. Further statistical analyses are not possible because the Polish TCI standardization study does not provide normative data stratified by gender.

#### 4. DISCUSSION

To the best of our knowledge, this is the first study to show that individuals with anxiety disorder(s) and comorbid sexual dysfunction(s) present significantly more maladaptive temperamental traits than individuals with sexual dysfunctions only and than members of the general population. This pattern may contribute to greater difficulties in the self-management of sexual problems and may also make treatment more challenging. For example, high harm avoidance may reduce acceptance of prolonged exposure techniques. Verification of this possibility requires further, more specific research.

The sexological questionnaire used in the study was designed according to ICD-10 diagnostic criteria [24]. Differences between these criteria and those of the most recent version of the American Psychiatric Association classification do not reduce the value of the present findings, because most dysfunctions included in ICD-10 [24] are also represented in DSM-5-TR [27]. In DSM-5-TR, some categories – for example, vaginismus and dyspareunia – were merged into Genito-Pelvic Pain/Penetration Disorder, and delayed ejaculation, which is among the least common sexual complaints, was added.

By contrast, the differences between ICD-10 [24] and ICD-11 [28] diagnostic criteria for sexual dysfunctions are more substantial. The traditional distinction between ‘organic’ and ‘non-organic’ sexual dysfunctions has been removed. In ICD-11, sexual dysfunctions are classified in the section on Conditions Related to Sexual Health, which is separate from the chapter on Mental, Behavioural or Neurodevelopmental Disorders.

The lack of marked differentiation on most character scales in patients with comorbid anxiety disorder(s) and sexual dysfunction(s) suggests that temperamental rather than characterological features may be more closely related to the mechanisms underlying these symptoms. Problems with cooperativeness in the group with sexual dysfunction(s) only suggest that this

attribute may be related to symptom formation in that group. For instance, low cooperativeness has been reported to be a negative predictor of sexual excitement.

The results obtained in the group with comorbid sexual dysfunction(s) and anxiety disorder(s) are consistent with previous studies using Cloninger's Temperament and Character Inventory [29-32]. In particular, participants with symptoms of anxiety disorders scored significantly higher on harm avoidance and its subscales than the general population. An interesting finding, not clearly confirmed in previous reports, was the very low score on novelty seeking. In Cloninger's earlier data [33], anxious patients tended to have elevated scores on this scale and were described as 'agitated, anxious to harmless stimuli, experiencing numerous somatic symptoms, and having high physical performance'. By contrast, the participants in the present study, who had lower mean novelty-seeking scores, could be described as more withdrawn, less interested in taking on challenges, more inclined to prefer the familiar, more tolerant of boredom, and more rigid and conventional. To some extent, this discrepancy may reflect the characteristics of the studied population – individuals with severe symptoms who decided to undergo treatment in a setting that required them to withdraw from professional activity for several weeks.

Similarly, the significantly higher results on reward dependence may reflect the specific nature of the studied population. Although some researchers have reported lower scores in people with anxiety disorders, attributing them mainly to withdrawal and emotional disconnection, the high intensity of anxiety symptoms in the present group may have contributed to elevated mean scores typical of people described as dependent, sensitive to criticism and rejection, and emotionally reactive. The lower scores on persistence in the studied group are consistent with previous reports [20].

The significant differences observed on the temperament scales between patients with sexual dysfunction only and those with sexual dysfunctions comorbid with anxiety disorders encourage a re-evaluation of views expressed in older diagnostic classifications (DSM-III [25] and ICD-9 [34]), in which sexual dysfunctions were

considered mainly non-specific symptoms of other mental disorders and only rarely as separate conditions.

Recently described differences in TCI dimensions between men with and without premature ejaculation are broadly similar to the results presented here, although they vary substantially across the studied subtypes of premature ejaculation [5]. Women with vaginismus have also been shown to display higher depressive and anxious temperament traits than women without this dysfunction [35]. In those studies, however, the occurrence of anxiety disorders was not controlled. Nonetheless, findings concerning a specific sexual dysfunction support our results and highlight the importance of temperament and character in the diagnosis of sexual dysfunctions more broadly.

It is now well documented that the majority of sexual dysfunctions occur without comorbid mental disorders. Nevertheless, the possibility that symptoms of sexual dysfunction may sometimes constitute part of the psychopathology of other mental disorders may currently be underappreciated. It is noteworthy that the radical change in DSM-III diagnostic criteria was linked to strong criticism of the psychoanalytic concepts underlying earlier DSM versions. Today, related ideas are being reconsidered in different terms, for example in the concept of general neurotic syndrome [36-38]. Although this syndrome does not explicitly include sexual dysfunction, it illustrates a contemporary approach to complex constellations of psychopathological symptoms that coexist with anxiety, depression, and cluster C personality disorders. From this perspective, sexual dysfunction might in some cases be viewed as having a neurotic basis. This may indicate a direction for further research aimed at determining whether individuals with symptoms of sexual dysfunction(s) are experiencing two independent disease entities or whether sexual symptoms may fall within the broader scope of a broadly understood neurosis manifesting itself in various forms of impaired sexual functioning. Further studies on the typical distribution of temperament scores in groups of patients with different anxiety disorders and varying symptom severity could help differentiate individuals for whom a temperamental background is a com-

mon factor predisposing them to both anxiety disorders and sexual dysfunctions.

The findings obtained in the group with anxiety disorder(s) and comorbid sexual dysfunction(s) also indicate the need to include sexual issues in psychiatric evaluation. Available studies suggest that this aspect of functioning is often overlooked in the diagnostic process, owing both to patients' reluctance to report symptoms spontaneously and to clinicians' attitudes [6,39,40]. The recommendations issued by the Psychological and Interpersonal Committee for Sexual Function and Dysfunction for the International Consultation on Sexual Medicine in Paris [41] emphasized the important role of psychological and interpersonal factors in the development and persistence of symptoms of sexual dysfunction. These recommendations do not fully correspond to the guidelines of the European Association of Urology [42], which describe a strictly medical etiology of male sexual dysfunction and formulate predominantly medical treatment recommendations for erectile dysfunction and premature ejaculation. Those guidelines focus mainly on pharmacological and surgical interventions (phosphodiesterase type 5 inhibitors, selective serotonin reuptake inhibitors, vacuum therapy, and penile prostheses), assigning only a limited role to behavioral therapy and recommending it primarily in cases of comorbid dysfunctions and other psychiatric disorders.

An important limitation of the study is that it was conducted in a single center and involved a specific subgroup of patients with anxiety disorders requiring treatment in a day-ward setting. Many of these patients also had comorbid personality disorders, which were not controlled for because full anonymization of participants was necessary; including personality disorder diagnoses could have increased the risk of patient identification.

## 5. CONCLUSIONS

1. People with comorbid anxiety disorder(s) and sexual dysfunction(s) show statistically and clinically significant intensification of maladaptive temperamental traits (low novelty seeking, high harm avoidance, high

reward dependence, and low persistence) compared with both individuals with sexual dysfunction(s) without anxiety disorder(s) and the general population. This suggests a biological predisposition underlying these disorders.

2. The differences observed on the character scales in the group with sexual dysfunction(s) only may indicate the importance of low cooperativeness in the etiology of isolated sexual dysfunction. Lack of empathy, egocentrism, and a tendency toward criticism may play a significant role in the formation of erotic relationships.
3. The importance of biological determinants is further supported by the fact that, among people who began therapy because of anxiety disorder(s), all respondents reported symptoms of at least one sexual dysfunction. The findings may indicate a high probability of sexual dysfunction symptoms in people with anxiety disorders. They may also suggest that, in some cases, sexual dysfunction is one element of broader psychopathology rather than an isolated disorder.
4. In both studied groups, the scores obtained with Cloninger's Temperament and Character Inventory differed from those of the normalization sample. This confirms the usefulness of the instrument for describing specific clinical groups and for constructing personality profiles characteristic of these populations.

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**Institutional Review Board Statement:** The study was approved by the Bioethics Committee of the Medical University of Warsaw, Poland (approval number KB/70/2007).

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

**Conflicts of Interest:** The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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