Psychometric Properties of the German Narcissism Inventory 90 (NI-90) in a Clinical and Non-Clinical Sample of Adolescents: A Comparative Study

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Abstract

Background: The Narcissism Inventory (NI) is a frequently used German inventory for measuring narcissism in clinical settings; an additional short version (NI-90) also exists. Psychometric properties of the NI-90 scales were examined in clinical and non-clinical adolescent samples. ***Methods:*** Two adolescent samples were assessed with the NI-90: a non-clinical sample (n = 439, mean age ± SD = 15.05 ± 1.77 years) and a clinical sample (n = 235, 18.26 ± 0.77 years). Confirmatory factor analysis and principle component analysis were used to scrutinize the structure of the scales. Multiple regression analysis was used to predict the scores on two scales (helpless self; negative body self). ***Results:*** This study revealed heterogeneity in the NI-90 scales, which in turn explains the wide range seen in Cronbach's α (from 0.53 to 0.93). The postulated 4-factor structure could not be replicated in both samples. Multiple regression analysis revealed that personality disorder did not significantly predict negative body self or helpless self scores, whereas eating, mood, as well as somatoform and conversion disorders did. One NI-90 scale (greedy for praise and reassurance) showed sufficient psychometric quality for the measurement of narcissism in both samples. ***Conclusion:*** Based on the results, the authors recommend revising the NI-90. Items that may be useful for measuring aspects related to affective and body image complaints are presented. The greedy for praise and reassurance scale may be valuable for measuring features of 'overt' narcissism.

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Introduction

The Narcissism Inventory (NI) [1] is a frequently used German inventory for measuring narcissism in clinical settings. In addition, a short version (NI-90) also exists [2]. Narcissism – defined as a personality variable (trait) – has increasingly gained attention in studies with adolescents. Results of a meta-analysis, as well as longitudinal studies, reported a significant increase in narcissism from 1979 to 2007 among American students (d = 0.41) [3], more specifically a significant increase in narcissism from middle-to-late adolescence (d = 0.58) [4]. Moreover, narcissism in early adolescence has been associated with various behavioral, emotional, and social problems in late

adolescence. Early narcissism is related to later delinquency and aggression [5], conduct problems [6], peer-reported relational aggression [7], internalization problems [8], and even youth psychopathy [9]. However, there is still discussion about the core features of narcissism and how these can be measured properly [10]. Cain et al. [11] argue that two core themes of pathological narcissism can be distinguished: 'grandiose' and 'vulnerable' aspects of narcissism. In a similar way, Wink [12] proposed two distinct dimensions. The first factor, which relates to introversion, defensiveness, and anxiety, is labeled the 'vulnerability-sensitivity factor'; it is sometimes called 'covert narcissism'. The second factor, associated with extraversion and self-assurance, as well as aggression, is called the 'grandiosity-exhibitionism factor' or 'overt narcissism'. It is supposed that overt and covert narcissism differ with respect to two intertwined aspects: self-organization and self-regulation [for more detail, see 1, 13]. Covert narcissism implies feelings of insecurity resulting from a fragile self-esteem [14] or self-concept [15], whereas overt narcissism is rather associated with feelings of superiority and grandiosity [12]. Thus, arrogance or aggressiveness may be seen as regulatory mechanisms of overt narcissism. In contrast to that, depressive feelings may be conceived as a regulatory mechanism of covert narcissism [16].

Most empirical studies utilize the Narcissistic Personality Inventory [17, 18] to measure narcissism. This was designed according to the DSM-III descriptions of narcissistic personality disorder, and has been adapted to German-speaking adults [19]. A short self-report measure of childhood narcissism (Child Narcissism Scale) was recently developed [20], however, this has not yet been adapted to German-speaking adolescents. The NI [1] is a 163-item self-report measure of narcissistic self-regulatory mechanisms [for item examples, see 2]. The authors assume two main antagonistic motivational principles: 'the aspiration to effortless tranquility' and 'the aspiration to sensory-affective stimulation' [1]. It is expected that the self-system of narcissistic people is unbalanced with respect to these two self-regulatory dimensions; thus, they need particular self-regulatory mechanisms to adjust. These narcissistic self-regulatory mechanisms are assessed using 18 different scales, pertaining to 4 second-order dimensions. The dimensions are named 'threatened self', 'classic narcissistic self', 'idealistic self', and 'hypochondriacal self' [1]. The dimension 'threatened self' is comprised of different patterns of a fragile and instable self. The dimension 'classic narcissistic self' assesses overt aspects of narcissism (e.g. feelings of grandiosity, entitlement, narcissistic anger,

and furor). The dimension 'idealistic self' reflects regulation mechanisms that forestall potential ego threats (e.g. self-reliance, object devaluation). The dimension 'hypochondriac self' describes attention paid towards one's own state of health. Schoeneich et al. [2] reduced the number of items on each scale of the NI to 8 (in total 90 items) in order to attain a more concise version: the NI-90 [for the complete item list, see 2]. The empirically based item reduction was carried out based on two criteria: (1) reliability coefficients, and (2) sensitivity to therapeutic interventions over time.

The NI and NI-90 are considered to be reliable and valid instruments for clinical adults [1, 2, 21]. The reliability coefficients of the long version range from 0.74 to 0.94 (short version: 0.62–0.92) [1, 2]. However, Schoeneich et al. [2] reported some difficulties replicating the expected factor structure. In non-clinical adult and adolescent samples, the long version also revealed good psychometric properties [22]. The reliability coefficients ranged from 0.72 to 0.91. The NI seems to be favorable for the measure of self-regulatory mechanisms relating to overt (e.g. aggressiveness after ego-threat) and covert (e.g. anxiety, depressive feelings) aspects. However, the short version (NI-90) has not been tested in clinical adolescent samples. The present study fills this gap and examines the psychometric properties of the NI-90 in clinical and non-clinical adolescent samples.

Hypotheses

First, we expect reliability coefficients of the NI-90 to be acceptable or good in both adolescent samples, meaning that Cronbach's α coefficients should range between 0.70 and 0.90. This would be in line with the findings of Deneke and Hilgenstock [1] as well as Meder et al. [22]. Second, participants from the clinical sample should on average score higher than participants from the non-clinical sample. Third, it should be possible to replicate the postulated 4-factor structure in both samples.

Methods

Participants

The non-clinical sample (sample 1) included 439 German adolescents (201 male and 235 female high school students; 3 adolescents did not report their sex) with a mean age of 15.05 ± 1.77 years (range: 12–19 years) from urban areas of Berlin, Germany. The schools were randomly assigned to participate in this study. The sample comprised 58 general secondary school students, 165 intermediate secondary school students, and 214 grammar school students from grades 7 to 13 (2 participants did not report the type of school). The socioeconomic status of each school district was

Table 1. Diagnoses according to ICD-10 in the clinical sample (sample 2)

	ICD-10 codes	Frequency (%)
Mental and behavioral disorders due to use of hallucinogens	F16.7	1 (0.43)
Mental and behavioral disorders due to use of tobacco	F17.2	1 (0.43)
Pathological stealing (kleptomania)	F63.2	1 (0.43)
Factitious disorder	F68.1	1 (0.43)
Social phobias	F40.1	1 (0.43)
Obesity due to excess calories	E66.0	2 (0.85)
Recurrent depressive disorder	F33.x	4 (1.70)
Dissociative (conversion) disorders	F44.x	5 (2.13)
No data		7 (2.98)
Other anxiety disorders	F41.x	8 (3.40)
Specific personality disorders	F60.x	9 (3.83)
Dysthymia	F34.1	12 (5.11)
Depressive episode	F32.x	15 (6.38)
Reaction to severe stress and adjustment disorders	F43.x	22 (9.36)
Somatoform disorders	F45.x	22 (9.36)
Eating disorders	F50.x	124 (52.77)
Total		235 (100.0)

obtained from the *Sozialstrukturatlas Berlin 2003* [23], and held constant for districts with a medium socioeconomic status.

The clinical sample (sample 2) included 235 inpatients from the Clinic for Internal Medicine and Psychosomatics, Charité – University Medical Center in Berlin (200 females and 35 males), from 1993 to 2001. The participants' ages ranged from 16 to 19 years, with a mean age of 18.26 ± 0.77 years. Table 1 displays a detailed description of psychiatric diagnoses in the clinical sample. The psychiatric disorders were diagnosed according to the ICD-10 by a professional (i.e. doctor or psychologist). The clinical data set incorporates only the main diagnoses.

Assessment

A paper and pencil version of the NI-90 was administered in class during school hours between January and May 2008 for the non-clinical sample. The clinical sample was collected using palmtops from 1993 to 2001. Approval for the study was obtained from the Institutional Review Board. Each item (both short and long versions) was rated on a 5-point scale ranging from 1 (does not apply at all) up to 5 (applies exactly).

The diagnostic interviews were half-standardized, including questions concerning: (1) affliction (i.e. quality, severity, progress, chronicity); (2) coexisting and further symptoms; (3) social background at the onset of the disorder; (4) risk and protective factors; (5) biographical anamnesis; (6) subjective representation of the disorder, and (7) motivation towards therapy. The interviews were conducted according to a clinical code of best practice.

Scales

The scales of the NI-90 are: helpless self (OHS); loss of control over affects and impulses (AIV); derealization/ depersonalization (DRP); basic potential of hope (recoded BAHr); worthless self (KLS); negative bodily self (NEK); social isolation (SOI); withdrawal into feelings of harmony (ARR); self-grandiosity (GRS);

longing for an idealized self-object (SIS); greedy for praise and reassurance (GLB); narcissistic furor (NAW); self-reliance ideal (AUI); object devaluation (OBA); idealizing values (WEI); symbiotic self-protection (SYS); hypochondriac expression of fear (HYA), and narcissistic gain from illness (NAK).

Statistical Analysis

Reliability in terms of Cronbach's alpha (α) was calculated in both samples. The scale structure of the NI-90 was analyzed respectively with confirmatory factor analysis (CFA) using maximum likelihood with robust standard errors estimator implemented in M*plus* [24] and principle component analysis (PCA) with varimax rotation. CFA models showing values <0.08 for the root mean square error of approximation (RMSEA [25]) and values >0.90 for the goodness of fit (CFI) [26] and Tucker Lewis Index (TLI) were considered to have an acceptable fit. Models showing values <0.06 for the RMSEA and values >0.95 for the CFI/TLI were judged as having a good model fit [27]. With respect to PCA, parallel analysis and a scree test were used to retain the appropriate number of latent factors. Factor congruence coefficients, according to Tucker [28], were calculated in order to study the factor similarity across samples. Two-factor loadings were considered to be fairly similar when the congruence coefficients c_{jk} ranged between 0.85 and 0.94, whereas values greater than 0.95 implied that the 2 factors were almost equal [29]. Multiple regression analysis was used to study the association between affect-coded psychiatric diagnoses and the scores of two scales (OHS, NEK)

Missing Data

Missing data only existed with respect to the non-clinical sample. The percentage of missing data was very low (max. 2.1%). In SPSS, multiple imputation was used to deal with missing data, and in M*plus* the full information maximum likelihood algorithm was used.

Table 2. Mean scores, SD, mean deviations and internal consistencies (α) of the NI–90

	Non-clinical sample (n = 439)				Clinical sample (n = 235)				Mean deviation	t	d
	score (mean ± SD)	z-score for skewness	z-score for kurtosis	α	score (mean ± SD)	z-score for skewness	z-score for kurtosis	α			
OHS	1.94 ± 0.82	8.83***	3.52***	0.78	3.09 ± 1.17	–1.06	–3.16**	0.90	–1.15	–13.40***	1.20
AIV	2.83 ± 0.86	1.50	–2.96**	0.67	3.02 ± 0.92	0.31	–2.00*	0.75	–0.19	–2.70**	0.22
DRP	2.07 ± 0.78	6.58***	0.61	0.73	2.88 ± 1.14	0.38	–2.72**	0.89	–0.81	–9.69***	0.88
BAHr	2.79 ± 0.75	1.33	–1.26	0.59	3.23 ± 0.97	0.13	–2.31*	0.83	–0.46	–6.02***	0.53
KLS	2.49 ± 0.79	2.92**	–2.65**	0.66	3.06 ± 1.05	0.44	–2.88**	0.83	–0.57	–7.30***	0.64
NEK	1.75 ± 0.94	11.83***	5.83***	0.90	3.02 ± 1.33	–0.19	–3.94***	0.94	–1.27	–12.91***	1.16
SOI	1.89 ± 0.73	9.83***	6.65***	0.70	2.53 ± 0.92	2.94**	–1.19	0.76	–0.64	–9.23***	0.79
ARR	2.73 ± 0.81	2.42*	1.22	0.63	3.05 ± 0.93	0.50	–1.56	0.72	–0.32	–4.54***	0.38
GRS	2.81 ± 0.74	0.75	–2.30*	0.54	2.30 ± 0.77	1.94	–1.31	0.67	0.51	8.48***	–0.68
SIS	3.10 ± 0.74	–0.83	–1.61	0.54	2.90 ± 0.79	1.63	–1.44	0.65	0.20	3.15**	–0.26
GLB	3.02 ± 0.84	0.50	–2.22*	0.71	3.01 ± 1.01	–1.13	–2.31*	0.82	0.01	0.09	–0.01
NAW	3.46 ± 0.87	–1.75	–1.91	0.71	3.13 ± 0.97	–0.81	–2.28*	0.81	0.33	4.40***	–0.36
AUI	3.44 ± 0.77	–2.25*	–1.39	0.67	3.07 ± 0.80	–0.88	–0.84	0.67	0.37	5.87***	–0.47
OBA	3.08 ± 0.80	–0.50	–1.65	0.66	3.04 ± 0.80	0.13	–1.25	0.70	0.04	0.83	–0.06
WEI	3.23 ± 0.72	–0.83	–0.30	0.62	3.12 ± 0.70	–0.75	–0.47	0.56	0.11	1.95	–0.16
SYS	3.80 ± 0.70	–4.08***	0.13	0.56	3.66 ± 0.69	–1.31	–1.41	0.53	0.14	2.43*	–0.20
HYA	2.28 ± 0.73	4.17***	–0.09	0.61	2.68 ± 0.90	2.88**	–0.47	0.76	–0.40	–5.87***	0.50
NAK	2.04 ± 0.78	6.25***	1.74	0.63	2.70 ± 1.00	1.88	–1.66	0.78	–0.66	–8.87***	0.77

** p < 0.05; ** p < 0.01; *** p < 0.001.

Results

Means, standard deviations, significant skewness and kurtosis, as well as significant mean deviations between clinical and non-clinical participants with regard to the 18 NI-90 scales are shown in table 2.

The results indicate that, on average, participants from the clinical sample scored higher on scales pertaining to the first dimension 'threatened self' (OHS, AIV, DRP, BAHr, KLS, NEK, SOI, ARR) than participants of the non-clinical sample. Furthermore, participants belonging to the clinical sample scored higher on scales pertaining to the fourth dimension 'hypochondriac self' (i.e. HYA, NAK) than their non-clinical counterparts. However, participants in the non-clinical sample scored higher on scales pertaining to the dimensions 'classic narcissistic self' (GRS, SIS, NAW, AUI) as well as 'idealistic self' (AUI, SYS) than participants in the clinical sample. Nonsignificant mean differences between both samples were observed for the following scales: GLB, WEI, and OBA. Distributional characteristics of the scale were evaluated with respect to significant skewness and kurtosis values. In particular, NEK showed significant skewness and kurtosis values in both samples. The scales NEK, OHS and DRP were right-skewed in the non-clinical sample and bimodally distributed in the clinical sample.

According to a minimum standard for reliability of 0.70 [30], the internal consistencies within the non-clinical sample were quite low, ranging between 0.54 (for SIS and GRS) and 0.78 (OHS), with one exception of 0.90 (NEK). Only 6 out of 18 scales reached at least satisfying internal consistencies $\geq$0.70 (OHS, DRP, NEK, SOI, GLB, NAW). These values are higher in the clinical sample. Nevertheless, the internal consistencies covered a wide range of values from 0.53 up to 0.94. In particular, the scales SYS and WEI showed low internal consistencies (0.53 and 0.56), and 3 other scales did not reach scores $\geq$0.70 (GRS, SIS, AUI). The average item-total correlation values range between $r_{it} = 0.31$ (GRS, SIS) and $r_{it} = 0.76$ (NEK) in the non-clinical sample. Scales that show the highest skewness values (e.g. OHS, DRP, NEK) also revealed the highest average item-total correlation values in the non-clinical sample. In the clinical sample, the average item-total correlation values ranged between $r_{it} = 0.30$ (SYS) and $r_{it} = 0.84$ (NEK). Significant inter-correlations of the NI-90 subscales ranged between $r_{BAHr-AUI} = -0.44$ (p < 0.01) and $r_{DRP-OHS} = 0.71$ (p < 0.01) (median: $r_{GRS-AIV} = 0.20$, p < 0.01) in the non-clinical sample, whereas in the clinical sample the inter-correlations ranged between $r_{BAHr-AUI} = -0.47$ (p < 0.01) and $r_{DRP-OHS} = 0.78$ (p < 0.01) (median: $r_{OBA-NEK} = 0.29$, p < 0.01).

Table 3. Rotated factor loading matrix of the 11 homogenous NI-90 items in both samples

	Non-clinical sample (n = 439)		Clinical sample (n = 235)	
	factor 1	factor 2	factor 1	factor 2
I just can't seem to like my body (NI12, NEK).	0.79[1]	0.00	0.82[1]	0.07
I often feel like a house of cards that could collapse at any moment (NI17, OHS).	–0.01	0.74[1]	–0.03	0.84[1]
I often experience feelings of inner emptiness which are hard to describe (NI24, OHS).	0.15	0.56[1]	0.11	0.76[1]
I avoid parties because I know that I would just feel like an outsider or a stranger (NI28, SOI).	0.07	0.48[1]	0.09	0.47[1]
Sometimes I feel that I am useless and that I do not matter (NI39, NEK).	0.16	0.56[1]	0.32	0.57[1]
Sometimes I think my body is so unattractive that I'd rather hide it from other people (NI40, NEK).	0.81[1]	0.03	0.89[1]	0.00
Sometimes I am struck by feelings of anxiety and agitation, and I do not know what to do (NI48, OHS).	–0.05	0.66[1]	0.00	0.75
I really don't like my body (NI54, NEK).	0.95[1]	–0.11	0.97	–0.14
Essentially, I detest myself because of all the physical defects that I have discovered (NI64, NEK).	0.75[1]	0.05	0.81[1]	0.06
I am the kind of person who still has principles and knows how to live by them (NI68, WEI).	–0.16	0.04	0.08	–0.15
Sometime my body feels strange to me, as if it did not belong to me (NI70, DRP).	0.43[1]	0.36	0.53[1]	0.30

Exploratory factor analysis was performed in *Mplus* with MLR estimator. The 2-factor model fitted the data in the non-clinical sample (χ^2 = 38.301, d.f. = 34, n = 439, p = 0.281; CFI = 1.00, TLI = 1.00, RMSEA = 0.02) and clinical sample (χ^2 = 42,064, d.f. = 34, n = 235, p = 0.161; CFI = 0.99, TLI = 0.99, RMSEA = 0.03). Items were translated by the authors.
[1] Met criteria for salience of Fürntratt [32].

CFA revealed that the expected 4-factor model neither fits the data in the clinical sample (χ^2 = 665.829, d.f. = 129, n = 235, p < 0.001; CFI = 0.71, TLI = 0.66, RMSEA = 0.13) nor in the non-clinical sample (χ^2 = 804.098, d.f. = 129, n = 439, p < 0.001; CFI = 0.71, TLI = 0.66, RMSEA = 0.11). Additionally, PCA with varimax rotation was performed in both samples. Although PCA is not considered to be a true method of factor analysis [31], we decided to use PCA simply to be in line with the methods and procedures of the study by Schoeneich et al. [2]. Parallel analysis was also used to determine the number of factors to retain. For the non-clinical sample, the random eigenvalue generated for the first 3 factors is smaller than their empirical counterparts (1.45 vs. 4.94, 1.34 vs. 2.80, and 1.28 vs. 1.34). The random eigenvalues corresponding to the fourth factor (1.22) are larger than the eigenvalue obtained by the real data (1.06). Hence, parallel analysis suggests the retention of 3 factors. For the clinical sample, the random eigenvalues of the first 2 factors (1.59 vs. 5.92, 1.48 vs. 3.29) are smaller than the eigenvalues of the actual data set. The random eigenvalue of the third factor 1.38 is marginally larger than its counterpart (1.37). According to these marginal differences and results of the scree test, we decided to retain 3 factors. Tucker's congruence coefficient (C_{jk}) was used in order to evaluate factor

similarity [29]. After rotating the factor matrix, the C_{jk} could be interpreted as indices for maximal factor similarity. The C_{jk} of factor matrices between the two samples were 0.90 (factor 1), 0.81 (factor 2), and 0.40 (factor 3). Thus, only the first factor can be considered as fairly similar across both samples. These results indicate that the 4-factor structure is not tenable and differs across both samples.

Next, the NI-90 factor structure was scrutinized at the item level. Homogeneous items were identified according to the criteria by Fürntratt [32]. In the present study, only items with factor loadings >0.60 and communality values >0.40 were selected. According to these criteria, 11 homogenous items were retained. The majority of the selected items belonged to the scales OHS and NEK, except for 3 items that belonged to the scales SOI, WEI, and DRP. Subsequently, exploratory factor analysis was computed using *Mplus* with geomin rotation and the maximum likelihood with robust standard errors. Fit indices suggested the retention of 2 factors in both samples. Table 3 presents the factor loadings of the exploratory factor analysis for both samples.

According to congruence coefficient of Tucker [29], the factor structure can be considered as almost identical across both samples C_{jk} = 0.93 (factor 1) and C_{jk} = 0.95

Table 4. Six major ICD-10 diagnoses were built and their effects coded

Eating disorder	F50.0, F50.1, F50.2, F50.3, F50.5, F50.8, F50.9
Mood disorder	F32.1, F32.2, F32.8, F32.9, F33.1, F33.2, F34.1
Somatoform and conversion disorders	F44, F44.4, F44.6, F45.0, F45.1, F45.3, F45.31, F45.32, F45.33, F45.4, F45.8
Stress-related disorder	F43, F43.0, F43.1, F43.2
Personality disorders	F60.3, F60.30, F60.8, F60.9
Anxiety disorder	F40.1, F41.0, F41.1, F41.2

ICD-10 diagnoses such as E66.0, F16.7, F17.2, F63.2, and F68.1 were excluded from this analysis.

(factor 2). Factor 1 can be interpreted as 'negative body self' and may be useful for the measurement of negative self-evaluation towards one's own body image (see NI12, NI40, NI54, NI64, NI70 in table 3). With regard to the item content, these items seem to measure aspects relating to the symptoms of eating disorders rather than narcissism. The second factor can be interpreted as 'helpless self' (see NI17, NI24, NI28, NI39, NI48 in table 3). These items seem to measure aspects related to mood disorders. Item NI68 shows low factor loading, and thus should be eliminated.

Finally, results of the multiple regression analysis indicate that eating disorders ($\beta = 0.31$, $t_{216} = 4.82$, $p < 0.001$) as well as mood disorders ($\beta = 0.18$, $t_{216} = 2.66$, $p < 0.01$) were positively related to NEK scores, whereas somatoform and conversion disorders were significantly negative associated with NEK scores ($\beta = -0.29$, $t_{216} = -4.34$, $p < 0.001$). However, personality disorders were not significantly related to NEK ($\beta = 0.11$, $t_{216} = 1.49$, n.s.). The entire model including major diagnoses (table 4) explained a significant proportion of the variance in NEK scores ($R^2 = 0.20$, $F_{5, 216} = 10.96$, $p < 0.001$). With respect to OHS scores, only mood ($\beta = 0.16$, $t_{216} = 2.29$, $p = 0.02$) and somatoform/conversion disorders ($\beta = -0.19$, $t_{216} = -2.65$, $p < 0.01$) seem to be significantly predictive. The entire model explains a significant amount of variance in OHS scores ($R^2 = 0.05$, $F_{5, 216} = 2.35$, $p = 0.04$).

Discussion

Narcissism is defined as a multidimensional construct, including aspects of grandiosity and vulnerability [11, 12]. Particularly for the direct measurement of narcissistic regulatory mechanisms, the NI-90 seemed to be promising at first sight. This study examined the psychometric properties of the NI-90 in a clinical as well as in a non-clinical adolescent sample. The results of the study revealed heterogeneity of most of the NI-90 scales. Five NI-90 scales (GRS, SIS, AUI, WEI, and SYS) showed low internal consistency values across both samples. These scales should not be used in practical applications with adolescents. Items belonging to more reliable scales (such as OHS, NEK, and DRP) discriminated between participants, which is supported by the high average item-total correlation values of these scales. However, these scales (OHS, NEK, and DRP) are highly right-skewed within the non-clinical sample and bimodally distributed within the clinical sample. The internal consistencies of the scales might have been inflated due to high skewness values. The highly right-skewed distributions (i.e. floor effects) in the non-clinical sample confirmed that participants negated these items, whereas participants of the clinical sample either negated or affirmed these items. Moreover, significant mean differences confirmed that non-clinical participants scored higher on average than their clinical counterparts with respect to scales measuring overt features of narcissism (GRS, SIS, NAW, AUI), which contradicts our hypothesis. The bimodal distributions of the scales OHS, NEK, and DRP indicate that the clinical sample consists of two different subgroups. With respect to the item content of the scales (OHS, DRP, and NEK), it becomes questionable whether these items really measure aspects of narcissism. It is important to note that we do not doubt that narcissistic adolescents feel miserable or depressed sometimes, nor do we question the aspect of vulnerability of narcissism. Some researchers even claim that 'narcissistic depression' was predominant in adolescents [33]. However, we distrust the assertion that high scores on those 3 scales indicate a severe narcissistic self-regulatory mechanism. The results of multiple regression analysis confirmed that high values on NEK and OHS are associated with eating and mood disorders instead of personality disorders. The results of CFA as well as PCA revealed that within both samples the postulated 4-factor structure does not fit the data. According

to Tucker's congruence coefficients, only the first factor can be considered to be stable across both samples. The poor model fit within both samples can be partially explained by the heterogeneity of the scales. The EFA results of 11 homogenous items suggest retaining two factors. The first factor relating to dislike of one's own body may be called 'negative body self'. The second factor may be linked to a depressive mood, and therefore, may be called 'helpless self'. With respect to the item content, it can be claimed that these items measure features of mood, eating, and somatoform disorders rather than narcissistic self-regulatory mechanisms. However, there is 1 scale (GLB) which may be valuable for the measurement of overt features of narcissism. According to the item content, these items seem to assess feeling of grandiosity, need for gratification, and entitlement. These items seem theoretically reasonable and show acceptable psychometric properties.

Limitations and Future Research

The results of this study are limited due to the specific samples used. Many researchers are convinced that narcissism is instead stable over time and can be assessed from early-to-late adolescence [10]. However, self-representation of adolescents may change over time and some narcissistic self-regulatory mechanisms may be more present at time of adulthood. In addition, the clinical sample contains only a few members diagnosed with specific personality disorders (n = 9), whereas a relative high number of participants displayed an eating disorder. Nevertheless, the clinical sample is comparable to the sample that was administered for designing the NI-90. In addition, the prevalence rate of personality disorders among adolescents is quite low compared to the prevalence rate of eating disorders [34]. Another limitation of this study is that it was not possible to include psychiatric comorbidities in the evaluation. Due to these sample characteristics, the generalizability of the findings is limited. Future studies should focus on the investigation of discriminant and predictive validity of narcissism measures. In particular, features of covert narcissism including aspects of vulnerability seem to be difficult to measure. Finally, it is essential to differentiate between features of covert narcissism and other psychiatric disorders (such as mood or eating disorders).

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