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BRIEF REPORT

Investigating the Structure of the Polish Five Factor Narcissism Inventory:
Support for the Three-Factor Model of Narcissism

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The 3-factor model of narcissism is generally agreed upon within the literature. However, only a limited number of studies have investigated its structure. We investigated the internal structure of the measure using exploratory factor analysis on the Polish adaptation of the Five Factor Narcissism Inventory (FFNI). This article reports results of 2 studies conducted in Poland, including a total of 793 adults. The results of both studies provided evidence for the 3-factor structure of narcissism. Nevertheless, there were also some deviations: Grandiose fantasies, thrill seeking and arrogance do not load appropriately on any factor, and manipulativeness and reactive anger were better indicators of agentic extraversion and narcissistic neuroticism than self-centered antagonism. The validity of the modification of the FFNI scoring was assessed in regard to the Big Five personality traits and other measures of narcissistic personality. Results provide evidence that the composite scores of the 3 factors are valid and that the modification of scoring improves the measurement precision of the FFNI.





Public Significance Statement

This study investigates the factorial structure of the Five Factor Narcissism Inventory. The three-factor model of narcissism has been supported; however, three scales do not load appropriately on any factor.

Keywords: narcissism, structure, FFNI

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For the past few decades, within the literature, there has been general agreement that there are two qualitatively distinct forms

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representing different facets of narcissistic pathology: grandiose and vulnerable narcissism (Miller, Lynam, Hyatt, & Campbell, 2017; Pincus et al., 2009). Grandiose narcissism represents exaggerated self-views and feelings of superiority, whereas vulnerable narcissism represents hypersensitivity and reactivity (Miller, Lynam, Hyatt, et al., 2017; Rogoza, Ciecuch, Strus, & Baran, 2019). Although these two forms of narcissism are frequently uncorrelated or have small positive correlations in empirical research (e.g., Hendin & Cheek, 1997), they share some common elements such as antagonism, entitlement, self-importance, and enmity toward others (Krizan & Herlache, 2018; Miller & Campbell, 2008). Correspondingly, the literature also provides evidence for distinguishing three facets of narcissistic personality: agentic extraversion (related to grandiosity), narcissistic neuroticism (related to vulnerability), and self-centered antagonism (related to both grandiosity and vulnerability; Ackerman, Donnellan, & Wright, 2019; Miller & Campbell, 2008; Wright & Edershile, 2018). The distinctiveness of an antagonistic facet of narcissism has been supported (e.g., Grapsas, Brummelman, Back, & Denis-

sen, 2020), and the Five Factor Narcissism Inventory (FFNI; Glover, Miller, Lynam, Crego, & Widiger, 2012) has played an important role in gathering all of these findings.

Measurement of Narcissistic Personality

There are many measures of narcissistic personality within the literature. Some of them are designed to assess one facet of narcissism (e.g., Hypersensitive Narcissism Scale [HSNS]; Hendin & Cheek, 1997), and some capture two facets (e.g., Pathological Narcissism Inventory [PNI]; Pincus et al., 2009), but there is only one measure that assesses all three narcissistic facets: the FFNI (Glover et al., 2012). The FFNI scales were developed on the basis of the opinion of experts (i.e., personality disorder researchers and clinicians), who ascribed which five-factor model (FFM) of personality facets (McCrae & Costa, 1997) are prototypical of narcissism and narcissistic personality disorder. Furthermore, in the development of the FFNI, Glover et al. (2012) also relied on empirical criteria, that is, a meta-analysis of different narcissism inventories to the FFM facets (Samuel & Widiger, 2008). By combining these two approaches, 15 scales were differentiated, measured by 148 items (full version) or 60 items (short form; Sherman et al., 2015). Although it was originally developed as a measure of grandiose and vulnerable narcissism (Glover et al., 2012), Miller et al. (2016) argued that a three-factorial model, corresponding to agentic extraversion, self-centered antagonism, and narcissistic neuroticism, best represented its structure. We provide a description of each FFNI scale in Supplementary Table 1.

Although the FFNI is a promising measure, research on it shows some limitations. As described above, the FFNI was not a factor-analytically derived measure. Miller et al. (2016) proposed the scoring and were interested in studying the structure of narcissistic personality and not the measurement model; thus, they analyzed scales rather than items. Currently, only two studies have examined some of the measurement models of the FFNI. First, in a Turkish sample, Eksi (2016) investigated a full measurement model using items from the full version of the FFNI as indicators. He found some support for a 15-correlated factor model, which fit the data better than did the two higher order factor models grandiose and vulnerable narcissism. Second, Prendergast et al. (2019) examined the measurement model of the narcissistic neuroticism scales in a Norwegian population. The four correlated-factors measurement model composed of items from the FFNI had a poor fit to the data. In fact, scales rather than items were most often used to investigate the structure of FFNI (Miller et al., 2016). Although there is a general agreement that there are three factors, less is known about their indicators. For example, an Italian study demonstrated that both manipulateness (.39 vs. .46) and thrill seeking (.31 vs. .31) load on agentic extraversion and antagonism, respectively, to a similar extent, whereas reactive anger (.48 vs. .32) loaded similarly on antagonism and narcissistic neuroticism, respectively (Fossati, Somma, Borroni, & Miller, 2018). Therefore, within the current study we aimed to assess the internal structure of the FFNI and to scrutinize its validity.

Current Study

The goal of the two current studies was to assess the structure of the FFNI and to evaluate its criterion validity. According to the literature (Krizan & Herlache, 2018; Miller & Campbell, 2008), we expected to retain the three-factorial solution. However, given the inconsistent results from the literature and uncertainty of what constitutes these factors (Eksi, 2016; Fossati et al., 2018), we expected difficulties in affirming this structure. Given the limitations of the confirmatory methods (e.g., Marsh et al., 2010), which have been highlighted in past research (Eksi, 2016; Prendergast et al., 2019) and the expectation that some of the scales (e.g., manipulateness) might be interstitial in nature, we used exploratory factor analysis (EFA). In order to establish the underlying number of factors, we employed parallel analysis and minimum average partial (Horn, 1965; Velicer, 1976). We report the results of EFAs using both items and scales as indicators. The analyses were carried out using principal axis factoring and oblimin rotation.

In regard to the criterion validity, we expected to replicate existing findings. Agentic extraversion should be positively related to extraversion, self-centered antagonism should be negatively related to agreeableness, and narcissistic neuroticism should be positively related to neuroticism and negatively related to extraversion. The FFNI factors were hypothesized to be related to other measures of narcissistic personality, reflecting their hypothesized content (Wright & Edershile, 2018). The data, statistical script used in the current article, and Polish translation of the FFNI are available at the Open Science Framework website (https://osf.io/fxnrx/?view_only=49a1d79d440e485794d05296f3ee6933).

Method

Participants and Procedure

In Study 1, $N = 328$ adults from Poland aged between 18 and 75 years ($M = 39.79$, $SD = 12.11$; 39% male) completed measures using the paper-and-pencil method. Study 2 was used for replication purposes and was completed online by $N = 465$ Polish adults aged between ages 18 and 70 years ($M = 32.08$, $SD = 10.65$; 28.6% male). The study was approved by the local institutional review board.

Measures

FFNI (Glover et al., 2012). In both studies we used the short form of the FFNI (Sherman et al., 2015), which comprises 60 items. Respondents answered the items using 5-point response scales ranging from 1 (*Disagree strongly*) to 5 (*Agree strongly*). The Polish translation was developed in collaboration with the authors of the original scale using the standard back-translation procedure, following the recommendations of the International Test Commission's (2017) guidelines. Specifically, all items were translated from English to Polish, the quality of translations were discussed in our research group, the selected translations were back-translated into English, and their quality was discussed with the authors of the original scale.

Criterion validity measures. To assess the basic personality traits of extraversion, neuroticism, openness to experience, agreeable-

ness, and conscientiousness, we used the 60-item Big Five Inventory-2 (Soto & John, 2017). Participants rated their agreement on a 5-point response scale ranging from 1 (*Disagree strongly*) to 5 (*Agree strongly*). We used the 13 item version of the Narcissistic Personality Inventory (Gentile et al., 2013), the 10-item HSNS (Hendin & Cheek, 1997), the 52-item PNI (Pincus et al., 2009; Wright, Lukowitsky, Pincus, & Conroy, 2010), the 18-item Narcissistic Admiration and Rivalry Questionnaire (NARQ; Back et al., 2013), the 13-item Narcissistic Grandiosity Scale (NGS; Rosenthal, Hooley, Montoya, van der Linden, & Steshenko, 2020), and the 13-item Narcissistic Vulnerability Scale (NVS; Crowe et al., 2018).

Results

Factor Structure

In Supplementary Table 2 we present the descriptive statistics and estimates of internal consistency for all measures administered in both studies. Results of the parallel analysis on items suggested retaining eight factors in the first study and nine factors in the second (see Supplementary Figures 1 and 2). However, the eigenvalues of the first three factors were much larger than were the remaining factors (i.e., the eigenvalue of the third factor was twice as large as the fourth one in both studies). Results of minimum average partial (MAP) test (see Supplementary Table 3) suggested retaining six and eight factors in both studies, respectively. Again, these results were ambiguous. The difference in statistics between the second and third factors (Study 1: MAP = .0043; Bayesian information criterion [BIC] = 628; root-mean-square error of approximation [RMSEA] = .011; Study 2: MAP = .0072; BIC = 1,567; RMSEA = .014) was much larger than between the third and fourth factors (Study 1: MAP = .0007; BIC = 79; RMSEA = .005; Study 2: MAP = .0002; BIC = 276; RMSEA = .004), suggesting that the introduction of the fourth factor does not seem to describe the underlying structure much better. Results using scales instead of items were more parsimonious; that is, all statistics suggested that the three-factorial solution represented the structure best. The parallel analysis (see Supplementary Figures 3 and 4) in Study 2 was an exception because its results suggested retaining four factors. However, the eigenvalue of the fourth factor was just above the simulation line, and moreover there was little change in how the subsequent eigenvalues changed, providing limited evidence for the four-factorial structure. Summarizing the findings, both the analyses on the item- and scale-levels suggested that the three-factorial model represents the underlying structure best, confirming our expectation. The factor loadings of items and scales on these factors are given in Table 1.

Results of the EFAs revealed that most of the scales loaded on the hypothesized factors. Nevertheless, we also observed some deviations. Grandiose fantasies loaded on all three facets of narcissism to a similar extent. Manipulativeness, and to a lesser extent thrill seeking, loaded more strongly on agentic extraversion instead of on self-centered antagonism as hypothesized. Arrogance had a similar pattern, albeit for only half of the items. Finally, reactive anger loaded on narcissistic neuroticism more strongly than on self-centered antagonism.¹

Criterion Validity

Given the identified problems, we report further results using both scoring keys proposed by Miller et al. (2016) as well as a modified

scoring. The modification of scoring regarded three aspects: (a) eliminating grandiose fantasies, thrill seeking, and arrogance because they appeared to be poorly differentiating the factors; (b) using manipulateness as an indicator of agentic extraversion; and (c) using reactive anger as an indicator of narcissistic neuroticism. The relations between facets of the FFNI, basic personality traits, and other measures of narcissistic personality are presented in Table 2.

Agentic extraversion was primarily and positively related to extraversion (but also to openness to experience) and slightly negatively related to agreeableness. Self-centered antagonism was primarily and negatively related to agreeableness (but also to conscientiousness). Narcissistic neuroticism was primarily and positively related to neuroticism and negatively to extraversion (and also to conscientiousness). Agentic extraversion and narcissistic neuroticism correlated most strongly with all other grandiose and vulnerable narcissism measures, respectively. Self-centered antagonism correlated positively with both the grandiose and vulnerable narcissism scales. Thus, the pattern of relations between the Polish FFNI factors corresponds to the findings from the literature, confirming its criterion validity.

All modified scales correlated with the original version at $r \geq .91$ ($ps < .001$). Modified agentic extraversion correlated more strongly to extraversion, conscientiousness, and (negatively) to neuroticism. Self-centered antagonism correlated more strongly (negatively) to agreeableness, and its direction of relation to extraversion changed from positive to negative (still, it remained nonsignificant). Modified narcissistic neuroticism correlated more strongly (negatively) to conscientiousness and agreeableness. The application of the modified scoring resulted in narcissistic neuroticism's being correlated to agreeableness to the same extent as agentic extraversion ($z = 0.13$; $p = .900$). Modified agentic extraversion correlated more strongly to the NPI and (negatively) to the NVS and less strongly to the PNI—Grandiosity (PNI-G). The changes for self-centered antagonism and narcissistic neuroticism were more evident. Although there was no change in how the modified self-centered antagonism correlated to rivalry (which is also a measure of antagonism), it correlated less strongly to all grandiose narcissism measures and more strongly to vulnerable narcissism measures (except for the PNI-G). The changes in the modified narcissistic neuroticism were all positive and all significant.

The scale intercorrelations of the original and modified versions are given in Supplementary Table 5. Among the differences between the versions, there were no changes in how agentic extraversion correlated to narcissistic neuroticism. Self-centered antagonism, however, correlated less strongly to agentic extraversion (Study 1: .37 vs. .58; Study 2: .36 vs. .55) and more strongly to narcissistic neuroticism (Study 1: .22 vs. .05; Study 2: .12 vs. -.07). Thus, the modified version exhibited a theoretically more plausible correlation profile in regard to both personality traits and other narcissism measures.

Discussion

The internal structure of the FFNI has seldom been investigated, and when it was, scales were often used as indicators in the analysis

¹ We also assessed a model with a forced two-factorial structure (see Supplementary Table 4). Grandiose fantasies, arrogance, manipulateness, and thrill seeking all appeared as indicators of the grandiose narcissism factor. Reactive anger loaded on grandiose and vulnerable narcissism to the same extent.

Table 1
Standardized Factor Loadings of the FFNI Items and Scales
Based on Study 1 ($N = 328$) and Study 2 ($N = 465$)

Scale and item	Agentic extraversion	Self-centered antagonism	Narcissistic neuroticism
Acclaim seeking	.77/.69	-.04/.04	-.01/-.02
FFNI1	.45/.57	-.11/.00	.04/.03
FFNI16	.68/.58	-.03/-.01	-.08/-.07
FFNI31	.56/.69	.18/.12	.20/.13
FFNI46	.68/.62	-.10/.01	-.07/-.07
Authoritativeness	.80/.82	-.06/-.09	-.18/-.17
FFNI3	.69/.74	-.07/-.10	-.14/-.16
FFNI18	.72/.72	-.11/-.10	-.12/-.13
FFNI33	.62/.64	.06/.11	-.09/-.09
FFNI48	.60/.68	-.03/-.04	-.05/-.13
Grandiose fantasies	.38/.48	.22/.19	.27/.21
FFNI8	.30/.43	.28/.18	.32/.25
FFNI23	.29/.38	.26/.29	.29/.30
FFNI38 (rev)	-.14/-.32	-.08/-.07	-.19/-.19
FFNI53	.37/.55	.32/.16	.13/.08
Exhibitionism	.65/.68	-.08/-.11	.16/.09
FFNI6	.48/.45	-.14/-.17	.08/.01
FFNI21	.47/.56	-.08/.01	.32/.21
FFNI36	.49/.50	.19/.15	.21/.18
FFNI51	.55/.55	-.08/-.20	.07/-.05
Manipulativeness	.60/.54	.31/.31	.01/-.05
FFNI11	.37/.29	.30/.43	.14/.04
FFNI26	.35/.29	.40/.48	.10/.04
FFNI41	.52/.59	.09/-.02	-.13/-.16
FFNI56	.48/.46	.22/.24	-.01/-.07
Thrill seeking	.45/.39	.34/.30	.00/-.06
FFNI15	.33/.39	.37/.31	.07/-.01
FFNI30	.45/.45	.21/.20	-.09/-.10
FFNI45	.28/.19	.40/.38	-.01/-.04
FFNI60	.36/.37	.32/.30	.03/-.09
Exploitativeness	.09/.17	.75/.76	-.03/-.02
FFNI7	-.01/.16	.60/.71	-.05/-.02
FFNI22	.02/.09	.58/.74	-.07/-.01
FFNI37	.14/.08	.63/.72	.01/.00
FFNI52	.07/.11	.67/.73	-.08/-.05
Lack of empathy	-.21/-.18	.79/.80	-.04/-.12
FFNI10	-.21/-.14	.56/.70	-.01/-.13
FFNI25	-.16/-.19	.64/.62	-.14/-.06
FFNI40	-.16/-.18	.61/.70	-.01/-.11
FFNI55	-.14/-.19	.70/.72	-.11/-.17
Entitlement	.17/.28	.57/.52	.16/.16
FFNI5	.15/.28	.40/.39	.22/.13
FFNI20	.07/.11	.42/.41	.00/.07
FFNI35	.11/.23	.52/.50	.15/.22
FFNI50	.16/.20	.60/.52	.13/.15
Arrogance	.35/.42	.54/.39	.02/.02
FFNI2	.25/.36	.29/.32	-.06/.02
FFNI17	.08/.10	.39/.36	.08/.08
FFNI32	.03/.10	.58/.43	.06/.07
FFNI47	.53/.55	.22/.12	.01/-.06
Distrust	.07/-.06	.38/.55	.22/.23
FFNI4	.06/-.03	.28/.49	.15/.11
FFNI19 (rev)	.04/.08	-.30/-.38	.02/-.07
FFNI34	-.01/-.18	.32/.42	.14/.21
FFNI49	.14/.02	.23/.33	.27/.24
Reactive anger	.24/.28	.36/.22	.49/.52
FFNI13	-.04/.06	.32/.24	.53/.47
FFNI28	.22/.21	.19/.16	.31/.32
FFNI43	-.19/.18	-.01/.31	.64/.42
FFNI58	.27/.25	.28/.11	.37/.42

Scale and item	Agentic extraversion	Self-centered antagonism	Narcissistic neuroticism
Shame	.01/-.04	-.01/.02	.74/.81
FFNI14	.01/-.03	.05/-.01	.50/.61
FFNI29	.03/-.02	.02/.12	.59/.70
FFNI44	-.19/-.19	-.01/.01	.64/.67
FFNI59	-.03/-.06	.02/.04	.64/.76
Indifference (rev)	.00/-.01	.37/.22	-.56/-.73
FFNI9 (rev)	.12/.03	.25/.12	-.48/-.65
FFNI24 (rev)	.03/-.01	.38/.28	-.38/-.64
FFNI39 (rev)	.04/-.01	.26/.13	-.63/-.73
FFNI54 (rev)	.01/.02	.28/.22	-.57/-.68
Need of admiration	-.12/-.09	.02/.03	.83/.86
FFNI12	.05/.10	.02/.05	.64/.65
FFNI27 (rev)	.38/.24	-.01/-.06	-.44/-.55
FFNI42	-.22/-.26	.20/.13	.49/.53
FFNI57	-.04/-.05	.00/-.06	.62/.72

Note. Results for Study 2 are presented after the diagonal. FFNI = Five Factor Narcissism Inventory; rev = reverse-coded.

(Fossati et al., 2018; Miller et al., 2016). Our study supplements these studies by investigating the FFNI structure using items as indicators. Although the FFNI was developed as a measure of grandiose and vulnerable narcissism (Glover et al., 2012), we provided evidence that the three-factor model represents the data best, corroborating the three-factor model of narcissism (Crowe, Lynam, Campbell, & Miller, 2019; Krizan & Herlache, 2018; Miller & Campbell, 2008).

Across both studies, we identified some deviations in terms of the hypothesized indicators as proposed by Miller et al. (2016). Contrary to expectation, manipulativeness captured agentic extraversion to more of an extent than it did self-centered antagonism. This could be because FFNI manipulativeness may capture grandiose beliefs of one's eloquence skills (e.g., "I can talk my way into and out of anything" or "It is easy to get people to do what I want"), which are more typical for extraversion (i.e., high FFM assertiveness) than for agreeableness (i.e., low FFM straightforwardness). Reactive anger, instead of self-centered antagonism, loaded strongly on the narcissistic neuroticism factor. Also noteworthy was that two reactive anger items also loaded on agentic extraversion (e.g., "I have at times gone into a rage when not treated rightly"). Although there is some evidence that reactivity in grandiose narcissism occurs in response to unmet expectations (Pincus et al., 2009), existing research has suggested that it better represents a vulnerability to negative affect (Wright et al., 2010); thus, its location is not surprising.

Grandiose fantasies were unable to differentiate between the facets of narcissism. Its factor loadings across both studies were similar in strength on all factors. This might be because grandiose fantasies are present not only in grandiose narcissism but also in vulnerable narcissism. For example, vulnerable narcissists tend to deal with dysregulation by engaging in grandiose fantasies of prevailing over others and winning admiration (Kealy & Rasmussen, 2012). The item "I often fantasize about having lots of success and power" fits within this argumentation. Thrill seeking appeared to capture agentic extraversion and self-centered antagonism to a similar extent. Thrill seeking is not included in any other measure of narcissism, nor is it part of the diagnostic criteria for the disorder. It was developed because narcissism correlated to the FFM extraversion facet of excitement seeking (Glover et al., 2012). However, subsequent studies revealed it captures the self-centered antagonism factor (Miller et al., 2016), which in fact is unrelated to extraversion (Back et al., 2013).

Table 2
Intercorrelations of the FFNI Factors and Correlations Between FFNI Factors and Other Study Variables

Study, factor, or variable	Agentic extraversion		Self-centered antagonism		Narcissistic neuroticism	
	Scoring	z	Scoring	z	Scoring	z
Study 1 ($N = 328$)						
Extraversion	.55**/.62**	4.68*	.09/-.08	7.88*	-.31**/-.27**	2.41
Neuroticism	-.06/-.11	2.64*	.15/.15	0.00	.61**/.64**	2.23
Openness to experience	.32**/.36**	2.23	.02/-.12	6.31*	-.02/-.02	0.00
Agreeableness	-.17**/-.18**	0.53	-.53**/-.56**	1.54	-.05/-.19**	8.98*
Conscientiousness	-.03/.03	3.17*	-.26**/-.26**	0.00	-.21**/-.26**	2.97*
Study 2 ($N = 465$)						
NPI	.62***/.66***	3.06*	.59***/.45***	9.74*	-.04/.07	9.07*
HSNS	.10/.06	2.32	.38***/.43***	2.98*	.57***/.63***	5.95*
PNI-G	.64***/.60***	2.99*	.47***/.34***	8.21*	.22***/.30***	6.59*
PNI-V	.21***/.17***	2.36	.42***/.46***	2.42	.61***/.69***	8.69*
ADM	.70***/.71***	0.82	.40***/.21***	12.40*	-.23***/-.15***	6.47*
RIV	.31***/.33***	1.22	.63***/.65***	1.42	.28***/.37***	7.69*
NGS	.63***/.66***	2.30	.55***/.40***	10.20*	-.16***/-.08	6.39*
NVS	-.06/-.11	2.91*	.22***/.30***	4.56*	.63***/.67***	4.10*

Note. Bonferroni correction for multiple testing was applied. Miller et al. (2016) scoring appears before the diagonals, and the modified scoring appears after. z values represent test of difference in correlation strength between the original and modified scoring. FFNI = Five Factor Narcissism Inventory; NPI = Narcissistic Personality Inventory; HSNS = Hypersensitive Narcissism Scale; PNI-G = Pathological Narcissism Inventory—Grandiosity; PNI-V = Pathological Narcissism Inventory—Vulnerability; ADM = admiration; RIV = rivalry; NGS = Narcissistic Grandiosity Scale; NVS = Narcissistic Vulnerability Scale.

* $p < .01$. ** $p < .006$. *** $p < .005$.

Arrogance loaded on the same factors in a similar fashion, but some items appeared to load exclusively on agentic extraversion. The content of these problematic items (e.g., “I am a superior person”) seems to reflect an exaggerated self-esteem typical for grandiosity rather than the antagonistic lifestyle orientation (Ackerman et al., 2019; Back et al., 2013; Wright & Edershile, 2018). Given the interstitial character of these three scales, their utility as indicators of a specific facet of narcissism seems to be limited.

These results are not exclusive to the current study. Previous research on the FFNI also identified some consistent cross-loadings of manipulateness and reactive anger, although weaker than those reported in the current study. For example, manipulateness loaded on self-centered antagonism at .54 versus .37 on agentic extraversion (Sherman et al., 2015). Arrogance cross-loaded from self-centered antagonism (.61) on agentic extraversion (.27; Fossati et al., 2018), and grandiose fantasies cross-loaded on self-centered antagonism (.34) to a similar extent as on agentic extraversion (.43; Sherman et al., 2015). Thrill seeking, consequently, had the weakest loadings on the self-centered antagonism factor (i.e., .31 in the short and .40 in the long versions; Miller et al., 2016; Sherman et al., 2015). Moreover, we have to note that the lack of differentiation of grandiose fantasies, arrogance, manipulateness, and thrill seeking appeared in the three-factor solution, but they still differentiated grandiose from vulnerable narcissism in a forced two-factorial solution (see Supplementary Table 4). To assess whether the modification of the scoring for the three FFNI facets improved measurement precision, we evaluated criterion validity using both scoring options.

Is New Scoring Valid?

Results revealed that the modification of the scoring slightly influenced the expected relations to basic personality traits. The most visible change was that narcissistic neuroticism was positively correlated with low agreeableness. Furthermore, self-centered antagonism correlated positively to narcissistic neuroticism, as theoretically expected (Krizan & Herlache,

2018; Wright & Edershile, 2018), whereas this relation was nonsignificant using original scoring. In regard to other measures of narcissism, the largest changes were seen for self-centered antagonism. The correlations with grandiose narcissism scales became weaker, and those with vulnerable narcissism were stronger. As a result, the modified self-centered antagonism correlated to a similar extent to both grandiose and vulnerable narcissism measures. This finding is an indication of the validity of the modified scoring, given the fact that antagonism plays a central role in narcissistic personality (Crowe et al., 2019; Krizan & Herlache, 2018; Miller & Campbell, 2008; Rogoza et al., 2019), and as result, it should be equally present in both grandiose and vulnerable narcissism. Therefore, our modified scoring seems to be more valid than that proposed by Miller et al. (2016), and our work contributes to the literature by fine-tuning the measurement of the FFNI.

Limitations

The goal of the present research was to assess the internal structure of the FFNI. For this purpose, we conducted two studies to examine the FFNI's content and criterion validity, finding support for the three-factor model but also highlighting the limitations of the FFNI itself. Future research might assess whether our findings also hold using different methodologies such as other-informant reports (Oltmanns, Crego, & Widiger, 2018). Moreover, our participants originate from Poland. Although there is evidence that our results are consistent with other European populations (i.e., Italian; Fossati et al., 2018), there is less congruence to the American population (Miller et al., 2016). Therefore, our suggested changes should be treated with a dose of caution.

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