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Structural Validity of the Communal Narcissism Inventory (CNI): The Bifactor Model

Abstract

The current report presents the factor structure analysis for the Communal Narcissism Inventory (CNI). The bi-factor model assuming one general factor and two residual factors (present-focused and future-focused communal narcissism) was examined across two student samples originating from Poland (N = 831) and the UK (N = 304) and compared to one-factor and two-factor solutions. Results supported the bifactor solution for the CNI, with one strong general factor and two weaker residual factors, as well as an indicated difference in the strength of correlations with external variables (self-esteem, agentic narcissism and psychological entitlement) for present and future communal narcissism. The obtained bifactor solution showed partial scalar invariance across two national samples, suggesting full replication of findings in two different cultural contexts. The implications of the bifactor model of communal narcissism for research practice is discussed in terms of both structural equation modelling and multiple regression analyses.

Keywords: communal narcissism; measurement, bifactor model

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

1. Introduction

Most studies on narcissism predominantly assume that narcissism is based on a grandiose self-view (Campbell & Foster, 2007; Emmons, 1984; Miller & Campbell, 2008; Morf, Horvath, & Torchetti, 2011; Raskin & Terry, 1988). The most popular tool to measure narcissism is the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988), which captures positive self-view, sense of entitlement, and desire for power and esteem. Numerous and replicable findings on narcissism support the agency model of narcissism, assuming that grandiose self-view is based on traits referring to agentic domain (Campbell, Brunell, & Finkel, 2006).

Recently, Gebauer, Sedikides, Verplanken and Maio (2012) proposed a communal model of narcissism, broadly defined as a grandiose self-view in the communal domain. They posit that communal narcissists have the same motives as agentic narcissists in terms of power, esteem, entitlement and grandiosity, but instead of promoting self-worth in agentic domains, communal narcissism reflects high self-perceived capacity in communal domains, such as morality, kindness, and emotional intimacy. Communal narcissism is distinct from other forms of narcissism (Gebauer et al., 2012), and genetically independent from them (Luo, Cai, Sedikides, & Song, 2014), but communal narcissism shows parallel relationships with self-esteem, entitlement, and satisfaction with life to agentic narcissism (Žemojtel-Piotrowska, Piotrowski, & Maltby, 2015). Correlations between agentic and communal narcissism are weak to moderate (Gebauer et al., 2012), but they both correlate with self-esteem, need of power, and psychological entitlement with similar strength (Gebauer et al., 2012). Their correlates with personality traits are similar, but differ with regard to Agreeableness, as agentic narcissism correlates negatively to it, while communal narcissism correlates positively (Gebauer et al., 2012).

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

Gebauer et al. (2012) assumed a unidimensional structure of communal narcissism. However, there are premises suggesting its multi-dimensionality. The first one is reflected in the content of the Communal Narcissism Inventory itself, as it is comprised of items referring to the current time (e.g., *I'm an amazing listener*), and items referring to the future (e.g., *I will bring freedom to the people*). Items referring to the present could be interpreted in terms of grandiosity, i.e., positive self-view in communal traits. Items referring to the future seem to represent a fantasy about positive influence on others, thus could be interpreted in terms of communal power or communal grandiose fantasy. We note that self-enhancement tendencies can find expression in the form of grandiose views on the present self as well as in overly optimistic unrealistic fantasies about the future (as manifested e.g., by comparative optimism, Shepperd, Carroll, Grace, & Terry, 2002). This might be particularly bold, as biased self-serving views regarding the future may undergo less scrutiny than views regarding the present. We speculate that in the communal domain such self-aggrandizing optimistic future views might be particularly difficult to scrutinize and revoke due to the fuzzy and subjective nature of accomplishments in this domain. Thus, claims regarding future accomplishments in the communal domain might become a convenient outlet for communal narcissism.

Furthermore, as there is currently consensus with regard to the multidimensionality of narcissism in both grandiose and vulnerable forms (see Miller et al., 2015 for review) and because communal narcissism is supposed to parallel agentic grandiose narcissism, we find it highly plausible that communal narcissism too is a multidimensional phenomenon.

Introducing the distinction between the present and the future grandiose self-views might advance understanding of some of the underlying psychological processes associated with communal narcissism. For example, the distinction between present behavior and future intentions might be important in terms of understanding conscious aspects of communal narcissism, particularly in terms of psychological volition (e.g., Frith, 2013). This possible

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

distinction could be considered via two techniques: bifactor model analysis (Gibbons & Hedeker, 1992) and discriminant validity (Campbell & Fiske, 1953).

First, bifactor models encompass the idea of a single common construct (e.g., general communal narcissism), while also recognizing the multidimensionality of the concepts (e.g., present and future communal narcissism). Analysis of the bifactor model also allows for identification of a general factor and residualized primary factors and for comparison of their relative strengths in overall variance, which is impossible in classical hierarchical models (Chen, Hayes, Carver, Laurenceau, & Zhang, 2012; Reise, Scheines, Widaman, & Haviland, 2013).

Second, we consider the discriminatory validity of the obtained factor solution, which examines whether the distinct concepts in the proposed measurement are indeed distinct with regard to correlates (Campbell & Fiske, 1959). Present-focused communal self-thoughts seem to be related more to very high self-esteem and general beliefs about own moral superiority in comparison to social surroundings (such as being the best friend or an amazing listener). Future-focused communal self-thoughts are related more to grandiose fantasies about extraordinary large-scale world-changing accomplishments (such as bringing peace, freedom, and justice to humankind). Most future self-thoughts are related to one's unusual future status in the world and beliefs in one's capacity to influence others, and they seem to be related to desire for fame and worldwide recognition. Present-focused self-thoughts express self-righteousness and complacency, beliefs in own fundamental exceptionality, and general moral superiority. Both of these kinds of thoughts, though distinct, seem to stem from a common root represented by the general factor of communal narcissism (see Gebauer et al., 2012).

Therefore, consideration of the proposed bifactor solution will help clarify and provide a context to a debate about how to conceptualize communal narcissism. The objective of the current study is to extend previous research by examining the structural validity of CNI

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

through comparison of several statistical models and their replicability across two different linguistic versions (i.e., English and Polish). After examining the possibility of identifying two residual factors among CNI, we also investigate whether present or future communal grandiose self-thoughts correlate differently to self-esteem, psychological entitlement, and agentic narcissism. We posit that both present-focused and future-focused communal narcissism should be positively related to higher self-esteem, but future narcissism will be related more strongly to agentic narcissism than its present counterpart as it manifests grandiose fantasy about exceptional influence on others rather than overestimation of own current communal traits.

2. Methods

2.1. Samples and procedure

Two samples were used in the current study. Sample 1 consisted of 304 undergraduate students (73.7% female, mean age = 19.98 years, $SD = 3.34$, range 17–46 years) from England. Sample 2 consisted of 501 undergraduate students and 330 adolescents and young adults from Poland recruited online (57% female, mean age = 21.43 years, $SD = 2.72$, range 16–47 years).

Participation in the study was anonymous and voluntary. Students from England and some of the participants from Poland were recruited to the study online. The rest participated offline. Scales were administered in small groups (15–20 peoples) during their classes. The students recruited offline were rewarded for participation with credit points.

2.2. Instruments

The Communal Narcissism Inventory (CNI; Gebauer et al., 2012). This scale serves as a measure of communal narcissism, defined as grandiose self-thoughts in the communal domain (e.g., *I'm an amazing listener; I will bring freedom to the people*). The scale consists

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

of 16 items: eight are related to the present, seven refer to the future and one is conditional, referring to the present or the future. The response scale ranges from 1–*strongly disagree* to 7–*strongly agree*. The scale has adequate reliability (Cronbach's alphas ranged from .86 to .94, Gebauer et al., 2012) and some preliminary validity (Gebauer et al., 2012). Polish versions of the scale were obtained through the process of translation and independent back translation conducted by bilingual psychologists and native speakers.

Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988, Polish adaptation, Bazinska & Drat-Ruszczak, 2000). The Narcissistic Personality Inventory is the best-recognized scale measuring the agentic form of narcissism. The scale consists of 40 items (34 in the validated Polish version), referring to grandiose self-thoughts, need for power, and sense of entitlement (e.g., *I'm a born leader; I like to show off my body*). In the UK, participants chose between pairs of statements, one of which was an indicator of narcissism. In Poland, participants responded to each item using scales that ranged from 1 = *it's not me* to 5 = *it's me* (Bazinska & Drat-Ruszczak, 2000). Cronbach's alphas of the NPI was .94 in the Polish sample and .84 in the British.

Psychological Entitlement Scale (PES; Campbell et al., 2004, Polish adaptation Żemojtel-Piotrowska, Piotrowski, & Baran, 2015). The PES serves as a measure of psychological entitlement, defined as a pervasive sense that an individual deserves more than others and is entitled to more than them. The scale consists of 9 statements (e.g., *I deserve the best*), one of which is reverse-scored. Answers categories ranged from 1 -*strongly disagree* to 7 -*strongly agree*. Cronbach's alphas coefficients in the current study were .87 in the Polish samples and .86 in the British.

Self-esteem Scale (Rosenberg, 1965, Polish adaptation Laguna, Lachowicz-Tabaczek, & Dzwonkowska, 2010). The scale serves as a measure of general positive self-evaluation. Five items are positively scored and five reverse-scored. Rating scores ranged from 1 -

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

strongly disagree to *5-strongly agree*. Cronbach's alphas were .91 in the Polish samples and in the British.

2.3. Statistical analyses

All confirmatory factor analyses (CFAs) were conducted using AMOS 22 software¹. As we intended to compare the goodness-of-fit indices for different solutions in different samples, we needed to make two sorts of comparisons. The first was the between-model comparisons. We compared the goodness-of-fit indices for

(1a) the one-factor solution, assuming that all CNI items measured one global factor without correlating errors for observed variables

(1b) the one-factor solution, identical to the one that the authors of the CNI described in their analyses, i.e., allowing the error variances of communal grandiose self-thoughts, as well as the eight future-focused communal grandiose self-thoughts, to correlate with each other (Gebauer et al., 2012, p. 861)

(2) the two-factor solution (assuming that present and future narcissism form two separate factors)

(3) the bifactor solution (see Figure 1), assuming that the particular items loaded simultaneously on the general factor and corresponding lower-level factor (i.e., the present narcissism or future narcissism respectively).

¹Prior to conducting the CFA, the authors performed exploratory factor analysis with an oblique two-factor solution that showed items clustered according to assumptions, with the exception of item 8, which loaded equally to both factors in both samples (results of the analysis available on request from the first author). Item 5 loaded more strongly on the present-related factor.

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

The second comparisons were done between-samples. After identifying the best fit model in each group, we conducted these comparisons using multi-group confirmatory factor analysis (MGCFA) to examine whether the structure of the CNI within British and Polish samples were comparable. MGCFA allows examination of three basic levels of the scale's equivalence:

- (1) configural, based on the assumption that the same factor is measured by the same items across samples
- (2) metric, assuming that the meaning of the construct is the same across samples, i.e., the factor loadings of particular items equally load on latent a factor, and
- (3) scalar, assuming that the scale is used in the same mode across samples (Cieciuch & Davidov, 2015).

We used several goodness-of-fit indices: the root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR), both smaller than .06 for excellent fit, with values between .08 to .10 for moderate fit. The comparative fit index (CFI) should be larger than .95 for good fit and .90 for moderate fit (Hu & Bentler, 1999; Kline, 2005). Chi-squared should be insignificant; however, in the large samples (i.e., larger than 200) this criterion is difficult to meet. For good fit, a χ^2/df should be less than three and for moderate fit, less than five (Kline, 2005). The fit of competing models was compared by ΔCFI criterion, which should be lower than .01 to indicate that there are no significant differences between models (Chen, 2007).

Further, we examined McDonald's omega coefficients using R software (Ihaka & Gentleman, 1995) and explained common variance (ECV). These two statistics serve as the indicators of strength of the general factor in relation to residual factors. Bifactor analysis itself is not sufficient to assess whether the scale is unidimensional or multidimensional and whether residual factors are useful for statistical analyses. The scale could be regarded as

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

multidimensional if the general factor explains less than 70% of the common variance (O'Connor Quinn, 2014). McDonald's omega is an indicator of the general factor saturation of a test (Zinbarg, Revelle, Yovel, & Li, 2005).

3. Results

3.1. The Structural Validity of the CNI

Table 1 reports goodness-of-fit statistics and results of comparisons of competing models across two samples. All goodness-of-fit indices for the bifactor model met the criteria for goodness-of-fit. The bifactor model indicated a significantly better fit than the one-factor and two-factor models (ΔCFI larger than .01). Our results were very similar to the goodness-of-fit for the one-factor model reported by Gebauer et al. (2012), i.e., $\chi^2/\text{df} = 3.21$, $\text{CFI} = .96$ and $\text{RMSEA} = .08$. Despite the fact that the one-factor model with Gebauer et al.'s (2012) amendment indicated a better fit than the bifactor solution, this latter is statistically more justified than a model allowing for correlations between all errors as it recognizes the complex structure of a scale (Reise et al., 2013).

As analysis indicated that the bifactor model is significantly better than the one-factor solution, the next step of the analysis was to examine whether the bifactor model is comparable across two national versions. Table 2 reports results for the MGCFA. The analyses indicated full metric invariance and partial scalar invariance both for one-factor and bifactor models (ΔCFI between the unconstrained model and the model assuming equal regression weights lower than .01). Thus, there were no differences in the regression weights between the original and Polish versions, supporting generalizability of findings across different cultural contexts.

Having examined the cross-cultural comparability of the bifactor model across two linguistic versions, we investigated whether identifying general and two group factors is justified. Table 3 presents factor loadings produced by Model 1 and Model 3.

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

As MGCFA indicated lack of differences in factor loadings across two groups, the estimations were based on collapsed samples. All but national two factor loadings for the general factor were high. Two were lower than .40 (items 11 and 16). Factor loadings for present-focused communal self-thoughts were generally low, and in two cases, their values were negative, whereas factor loadings for future-related self-thoughts were visibly higher: five of eight exceeded value .40. Item five seems not to be a part of the future-focused self-thoughts factor, similar to items eight and 12, which had negative factor loadings. Explained Common Variance (ECV) for the general factor was significantly higher than residual factors, and it was equal to .64 for the general factor. There are no formally established cut-off values for ECV; however, the common rule-of-thumb for the general factor is .70, and higher values suggest unidimensionality of the data, whereas lower values suggest multidimensionality instead (O'Connor Quinn, 2014). McDonald's ω -hierarchical reliability coefficient for the general factor was .90 in both samples, and for specific factors, there were .85 and .83 for present-related grandiose communal self-views in the UK and Polish samples, respectively, and .89 in both samples for future-related grandiose communal self-views. All these indicators were high.

As the data analyses suggested that identification of lower-level factors is possible, we compared the strength of correlations for both specific communal narcissism factors with external variables, i.e., agentic narcissism, self-esteem, and psychological entitlement. Table 4 presents comparisons in the strength of correlations for present-related and future-related communal grandiose self-thought with the measures of agentic narcissism, self-esteem, and psychological entitlement. Z-tests indicated significant differences in the strength of correlations for both facets with agentic narcissism, psychological entitlement (in both samples), and self-esteem (in the Polish sample). The strength of correlations was higher for future-related communal grandiose self-thoughts, except for the correlations between self-

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

esteem and present-related communal grandiose self-thoughts. In the case of future narcissism, the correlations with grandiose agentic narcissism and entitlement were strong, but in the case of present communal narcissism, they were moderate. Thus, this pattern of correlations supports the assumption that grandiose communal fantasies reflect willingness to influence others accompanied by a greater sense of entitlement.

4. Discussion

Despite the originally assumed unifactorial structure of the Communal Narcissism Inventory, the current study provided evidence supporting the implementation of a bifactor solution to describe the internal structure of the CNI. In our series of analyses, the bifactor model appeared to be well fitted to the data. McDonald's omega coefficients were high both for general and residual factors. The general factor accounted for 70% of total test variance and explained 63% of the common variance. Explained common variance (ECV) suggested multidimensionality of the CNI, as the general factor was lower than 70%, and residual factors explained a significant proportion of the total variance of the scale. However, as ECV suggested, both residual factors were rather weak. The bifactor structure of the CNI was cross-culturally replicable – we established partial scalar invariance for Polish-British linguistic versions. The current study contributes new knowledge about the structural validity of the CNI and provides important recommendations for further statistical analyses utilizing this scale. The bifactor model is useful in structural equation modelling as it justifies the use of residual factors as indicators of a latent variable denoting a general factor. It is also possible to use lower-level scores in examining two facets of communal narcissism.

The psychological meanings of future-related self-thoughts and present-related self-thoughts are likely to be distinct, as indicated in the strength of correlations with basic psychological variables traditionally linked with narcissism, i.e., psychological entitlement and self-esteem. Also, the correlations with agentic narcissism suggest that future-related self-

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

thoughts associated with extraordinary ground-breaking accomplishments express the core of grandiose narcissism more strongly than present-related self-thoughts regarding a general opinion of own moral superiority. In addition, the lower correlation of future-related self-thoughts with self-esteem might suggest lower adaptiveness of this facet of communal narcissism (perhaps similarly to unrealistic optimism regarding own life satisfaction, Busseri, Choma, & Sadava, 2009). However, this remains a speculation. Further differences between these two types of narcissistic thoughts related to the two time perspectives are yet to be investigated and established by future research. Moreover, there are possible cross-cultural differences in the relationship between two facets of communal narcissism, self-esteem and psychological entitlement. In the Polish sample, both aspects of communal narcissism are similarly associated to entitlement, suggesting that a positive self-view in the communal domain itself (without any imaginary actions) is accompanied also by expecting more from others. In the UK sample, grandiose fantasy about the future is associated more strongly with entitlement than current positive self-view. It is possible that in more collectivistic countries manifesting positive communal traits is sufficient for formulating expectations toward others, while in individualistic countries it is not. Moreover, in the collectivistic countries general self-esteem could be more infused by communal traits than in the individualistic.

Finally, our analyses suggest that the subscale measuring present-related self-thoughts is psychometrically weaker than the subscale measuring future-related self-thoughts; however, it is still useful for scientific analyses. Especially, factor loadings suggest that item five should be excluded from future-related grandiose communal self-thoughts, and similarly, items eight and 12 from present-related self-thoughts, at least when testing students samples. It is plausible that attitudes towards parenthood vary greatly among contemporary young people in developed countries, with some expressing no desire to become a parent at all, thus lowering the validity of the Communal Narcissism Inventory and distorting the pattern of

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

results. Therefore, in further analyses, including or excluding these three items in the Communal Narcissism Inventory should be carefully considered. Although they load highly on the general factor, they do not fit the assumed distinction between communal self-thoughts about the present and the future. It is possible that they form separate factors, despite the fact that in our EFA analyses, the two-factor solution was supported by the data. This could be examined in further research.

The current study has several limitations. Although we examined the bifactor model in a new linguistic context (i.e., Polish), Poland is still a European country and shares quite a similar cultural background with the UK. For this reason, the bifactor model of the CNI should be further investigated within a non-European context. Moreover, in the UK sample, communal narcissism did not correlate with self-esteem despite the positive relationship between communal narcissism and self-esteem detected in former studies (Gebauer et al., 2012). Earlier research on agentic narcissism showed that the variability in associations between agentic narcissism and different measures of self-esteem may be accounted for in part by the degree to which a given self-esteem measure captures dominance (Brown & Zeigler-Hill, 2004). By analogy, the correlation of communal narcissism with self-esteem should be moderated by the extent to which a particular self-esteem measure is saturated with communion.

Notwithstanding the abovementioned limitations, our analyses support the usefulness of indicating two lower-order factors, which could be explored in further research, in addition to the one general level of communal narcissism. The bifactor model allows also for resolution of the problem with the complex structure of the CNI. Our analyses show adequate model fit in two different national samples. Different correlates of present and future communal narcissism support the empirical usefulness of these both factors in explaining the functioning of communal narcissists. Thus, the current study suggests, by indicating the more

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

complex nature of communal narcissism, that other facets of communal narcissism, not captured by the Communal Narcissism Inventory, are also conceivable. For instance, it is possible that communal narcissism is as complex as agentic narcissism, with a communal form of entitlement or exhibitionism, in addition to the communal grandiosity and communal power reflected in the content of the CNI.

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BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

Table 1. *Confirmatory factor analyses fit indices for competing models of the CNI across two samples*

	χ^2	df	χ^2/df	CFI	RMSEA	SRMR
Sample 1: UK						
Model 1: one-factor	649.47	104	6.25	.747	.132 (.122 .141)	.105
One-factor corrected	93.71	49	1.91	.979	.055 (.038 .072)	.037
Model 2: two-factor	379.98	103	3.69	.872	.094 (.084 .104)	.082
Model 3: bifactor	233.36	88	2.65	.933	.074 (.062 .085)	.049
Sample 2: Poland						
Model 1: one-factor	1868.94	104	17.97	.748	.138 (.132 .143)	.096
One-factor corrected	255.22	49	5.21	.971	.068 (.060 .077)	.035
Model 2: two-factor	1127.13	103	10.94	.854	.105 (.100 .111)	.081
Model 3: bifactor	579.68	88	6.59	.930	.079 (.073 .085)	.050

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

Table 2. *Results for Multi-group CFA for the bifactor model for British and Polish versions*

	χ^2	df	CFI	RMSEA	SRMR
Configural	813.10	176	.931	.055 (.051 .059)	.049
Metric	878.15	205	.927	.052 (.049 .056)	.064
Scalar	1132.43	221	.901	.059 (.055 .062)	.064
Partial scalar ¹	970.10	216	.918	.059 (.051 .057)	.064

Note. ¹Intercept constraints released for items 7,10,11,13 and 14.

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

Table 3. *Standardized regression weights for the one-factor and bifactor models in two samples (model assuming equal regression weights), reliabilities (McDonald Omegas), and explained common variance (ECV) for general and residual group factors*

	One-factor	Bifactor model		
		General	Present	Future
1. I am the most helpful person I know.	.46	.55	.47	
2. I am going to bring peace and justice to the world.	.72	.59		.39
3. I am the best friend someone can have.	.52	.67	.19	
4. I will be well known for the good deeds I will have done.	.76	.59		.37
5. I am (going to be) the best parent on this planet.	.53	.46		-.01
6. I am the most caring person in my social surroundings.	.53	.62	.39	
7. In the future, I will be well known for solving the world's problems.	.67	.52		.64
8. I greatly enrich others' lives.	.62	.69	-.22	
9. I will bring freedom to the people.	.74	.55		.60
10. I am an amazing listener.	.34	.50	.07	
11. I will be able to solve world poverty.	.58	.38		.70
12. I have a very positive influence on others.	.54	.67	-.17	
13. I am generally the most understanding person.	.55	.62	.21	
14. I'll make the world a much more beautiful place.	.77	.54		.51
15. I am extraordinarily trustworthy.	.36	.48	.15	
16. I will be famous for increasing people's well-being.	.54	.35		.67
SS loadings	5.59	4.97	0.56	2.26
ω hierarchical POL		.90		
ω hierarchical UK		.90		
ω specific POL			.85	.89
ω specific UK			.83	.89
Proportion of explained common variance (ECV)		.64	.07	.29
Cronbach's alphas POL		.91	.82	.86
Cronbach's alphas UK		.90	.83	.87

Note. Item five was assumed by Gebauer et al. (2012) to be part of the future-related factor. However, an alternative model excluding this item was significantly more weakly fitted to the data ($\Delta\text{CFI} > .01$).

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

Table 4. *Correlation of present-related and future-related grandiose self-views with external variables*

	CNI-present	CNI-future	CNI global	Z
Sample1 (UK)				
NPI	.25**	.48***	.42***	-1.97*
SES	.07	.04	.06	0.37
PES	.29***	.48***	.44***	-2.75**
Sample 2 (Poland)				
NPI	.35***	.50***	.50***	-1.88*
SES	.25***	.14***	.21***	2.3**
PES	.41***	.45***	.48***	-0.99

Note. NPI = Narcissistic Personality Inventory; SES = Self-esteem Scale; PES =

Psychological Entitlement Scale.

* $p < .05$; ** $p < .01$; *** $p < .001$.

BIFACTOR MODEL OF THE COMMUNAL NARCISSISM INVENTORY

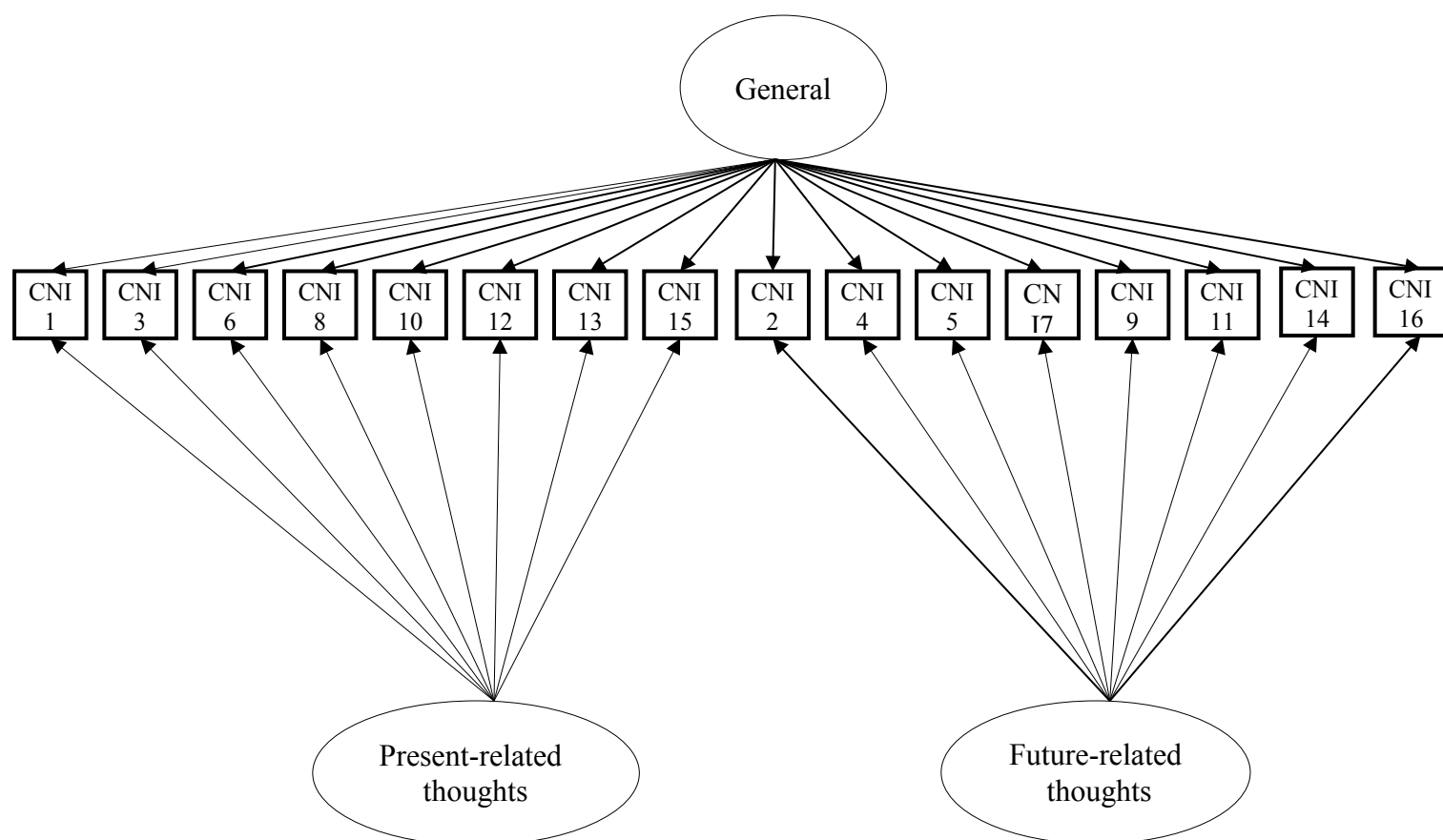


Figure 1. Bifactor model of the CNI.