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Personality and Individual Differences 43 (2007) 1321–1332

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PERSONALITY AND  
INDIVIDUAL DIFFERENCES

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# Are there such things as “Narcissists” in social psychology? A taxometric analysis of the Narcissistic Personality Inventory

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Received 16 August 2006; received in revised form 23 March 2007; accepted 4 April 2007

Available online 18 May 2007

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## Abstract

Narcissism is typically viewed as a dimensional construct in social psychology. Direct evidence supporting this position is lacking, however, and recent research suggests that clinical measures of narcissism exhibit categorical properties. It is therefore unclear whether social psychological researchers should conceptualize narcissism as a category or continuum. To help remedy this, the latent structure of narcissism—measured by the Narcissistic Personality Inventory (NPI)—was examined using 3895 participants and three taxometric procedures. Results suggest that NPI scores are distributed dimensionally. There is no apparent shift from “normal” to “narcissist” observed across the NPI continuum. This is consistent with the prevailing view of narcissism in social psychology and suggests that narcissism is structured similar to other aspects of general personality. This also suggests a difference in how narcissism is structured in clinical versus social psychology (134 words).

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*Keywords:* Narcissism; Narcissistic Personality Inventory; Narcissistic Personality Disorder; Taxon; Categorical; Dimensional; Structure; Taxometrics; MAMBAC; MAXEIG; L-Mode

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## 0. Introduction

Narcissism has an extensive history as both a clinical and social psychological construct (see Campbell & Foster, 2007; Morf & Rhodewalt, 2001). As a clinical construct, narcissism grew to prominence with the writings of Freud (1914/1957). Kernberg (1974, 1975) and Kohut (1977) continued this clinical tradition, which ultimately led to the inclusion of narcissistic personality disorder (NPD) in the DSM-III (American Psychiatric Association, 1980).

Freud's (1931) essay on libidinal types and Murray's (1938) work on "narcism" or egophilia mark classic examples of narcissism conceptualized as a component of normal personality. A recent surge in narcissism research by social psychologists was prompted by the development of the Narcissistic Personality Inventory (NPI; Raskin & Hall, 1979). The development of the NPI was based on the clinical criteria for NPD, with the idea being that non-disordered persons often exhibit cognitive/behavioral patterns similar to those with NPD. The NPI has now been used in well over 100 investigations, has proven to be a reliable and valid assessment of narcissism as it occurs in the general population (del Rosario & White, 2005; Raskin & Terry, 1988), and is the primary measure of narcissism in the social psychological literature.

The clinical and social psychology concepts of narcissism share many similarities, but differ on one important aspect. In clinical psychology, narcissism is specified as a personality disorder. Based upon a set of diagnostic criteria individuals either have NPD or they do not. Put differently, the structure of clinical narcissism is *taxonic*. In contrast, social psychologists generally view narcissism as a *dimension*. According to this view, there is no categorical property to the structure of narcissism. There exists no point along the narcissism continuum where one shifts from "normal" to "narcissist."

The view that NPD, and personality disorders in general, have underlying taxa is controversial in the clinical domain. Many argue that personality disorders are extensions of normal personality continua and thus dimensional (e.g., Livesley, Schroeder, Jackson, & Jang, 1994; Markon, Krueger, & Watson, 2005; Widiger & Costa, 1994; Widiger, Simonson, Krueger, Livesley, & Verheul, 2005). The taxonic orientation remains prominent, however, and has received empirical support (e.g., Haslam, 2003). Indeed, with specific respect to NPD, the current evidence favors a taxonic view (Fossati et al., 2005). That is, NPD appears to be a qualitatively distinct personality syndrome.

In social psychology, there has been far less debate over the dimensional/taxonic structure of personality traits. The general assumption is that personality is dimensional and the research generally supports this position. There are examples of proposed taxonic personality traits (e.g., self-monitoring, Gangestad & Snyder, 1985; type-A personality, Strube, 1989), but more often than not, personality exhibits dimensional properties (e.g., five-factor model of personality, Arnau, Green, & Tubre, 1999; Green, Arnau, & Gleaves, 1999). Although the dimensional/taxonic properties of narcissism have not been investigated in the social psychology literature, the assumption seems to be that it too should be conceptualized as a dimension.

In summary, the taxonic view of narcissism has received empirical support in the clinical literature (Fossati et al., 2005). Little is known, however, about the structure of narcissism as it pertains to social psychology. The assumption then perhaps should be that narcissism is categorical, which would fit with the clinical evidence. This assumption is at odds, however, with how narcis-

sism is viewed in social psychology. Indeed, to the extent that narcissism is categorical, changes to method, analysis, and theory may be necessitated. For example, some narcissism correlations may be driven by individuals with elevated NPI scores, but who are nevertheless members of a putative “non-narcissist” group. These findings may say very little about the functioning of “narcissists”. If the putative “narcissist” group is relatively small, it is even possible that some research on narcissism fails to capture any “narcissists” at all. This would be like studying gender differences in a female-only sample.

It is noteworthy that Fossati et al. (2005) investigated narcissism from a clinical perspective. They assessed narcissism using measures that capture NPD (e.g., Structured Clinical Interview for DSM; First, Spitzer, Gibbon, & Williams, 1995) administered to a clinical sample. It is unknown whether their results might generalize to narcissism as it is assessed by the NPI and in individuals selected from the general population, which is more representative of social psychological research. However, considering that (i) the content of the NPI was designed to reflect the diagnostic criteria for NPD (Raskin & Hall, 1979; Raskin & Terry, 1988) and (ii) scores on the NPI are strongly correlated with clinically valid measures of NPD that are administered to clinical samples (Prifitera & Ryan, 1984), there is reason to expect Fossati et al.’s (2005) results to generalize to the NPI. Consequently, there is a real need to formally test the structural properties of the NPI and specifically to determine whether social psychologists should conceptualize narcissism as a category or continuum.

## 1. Present study

The present study was conducted to remedy the lack of evidence concerning the taxonic/dimensional nature of narcissism as it is operationalized within the social psychology literature. To this end, the NPI was administered to 3895 participants. Responses were analyzed using three analytic procedures designed to distinguish taxa from dimensions—collectively referred to as *taxometrics* (Ruscio, Haslam, & Ruscio, 2006; Waller & Meehl, 1998).

## 2. Method

### 2.1. Participants and procedure

A total of 3895 participants (75% female; 81% Caucasian;  $M$  age = 25.0,  $SD$  = 8.9; range = 17–70) completed an online version of the NPI (see Foster, Campbell, & Twenge, 2003 for details). All participants reported being American and English speaking and were part of a larger international study on narcissism ( $n$  = 5965) that was conducted between the years 2001 and 2003. A portion of these data was reported in Foster et al. (2003). Although it is likely that some of these participants were receiving treatment for clinical disorders, this was not a clinical sample. Participants were drawn from the general population. Furthermore, although the sample demographics are similar to what one finds in college samples, this sample was not drawn exclusively from a college population. Indeed, all that was required to participate was a connection to the Internet.

### 2.1.1. General measure of narcissism

Raskin and Terry's (1988) 40-item forced-choice version of the NPI was used to assess narcissism. Participants were presented with 40 pairs of statements and asked to select the one that best described them. Within each pair was a statement that was more narcissistic in tone. For example, one of the pairs was "I am much like everybody else", and "I am an extraordinary person." One-point was given each time participants selected a narcissistic statement.

### 2.1.2. Selection of narcissism indicators

The taxometrics procedures used in this study require that a minimum of three indicators of narcissism be identified. The NPI can be dissected into seven subscales that reflect the diagnostic criteria for NPD (Raskin & Terry, 1988). They are *authority*, *self-sufficiency*, *superiority*, *exhibitionism*, *exploitativeness*, *vanity*, and *entitlement*. Scores on these subscales could be used as indicators of narcissism.

There were several indications that these indicators were good candidates for taxometric procedures. These are based upon guidelines detailed in Ruscio et al. (2006) and Waller and Meehl (1998). First, the indicators all correlated with total NPI score and with each other, but not to the point of redundancy (Table 1). Thus, each indicator appeared to reflect a significant yet unique component of narcissism. Second, all indicators exhibited levels of skew and kurtosis (Table 1) that were within the range that has been reported in the taxometrics literature (e.g., Beach & Amir, 2003). Third, nuisance correlation (Table 2), which is covariation among indicators that occurs within putative groups of "narcissists" and "non-narcissists," was within acceptable limits (i.e.,  $r < .30$ ; Meehl, 1995). Finally, indicator validities (Table 3) were all near or above the threshold that is considered acceptable (i.e.,  $d > 1.25$ ; Meehl, 1995). One potential issue was indicator reliability (Table 1), which varied across indicators. This mirrors estimates reported in the narcissism literature (e.g., Raskin & Terry, 1988), and in the present sample even the least reliable indicators still strongly predicted total NPI score ( $r_s > .46$ ). To test whether indicator reliability impacted results, two sets of parallel taxometric analyses were conducted that used either the five or three most reliable indicators (average  $\alpha_s = .64$  and  $.69$ , respectively). Removal of less reliable

Table 1

Mean, standard deviation, skew, kurtosis, reliability, and correlation matrix of total NPI score and indicator variables ( $n = 3895$ )

|                  | <i>M</i> | <i>SD</i> | Skew <sup>a</sup> | Kurt. <sup>b</sup> | Alpha | TOT | AUT | SEL | SUP | EXH | EXP | VAN |
|------------------|----------|-----------|-------------------|--------------------|-------|-----|-----|-----|-----|-----|-----|-----|
| Total NPI score  | 15.63    | 6.77      | .32               | −.21               | .83   |     |     |     |     |     |     |     |
| Authority        | 4.12     | 2.24      | .03               | −1.00              | .74   | .75 |     |     |     |     |     |     |
| Self-sufficiency | 1.95     | 1.25      | .26               | −.58               | .35   | .47 | .31 |     |     |     |     |     |
| Superiority      | 2.94     | 1.65      | −.02              | −.82               | .57   | .64 | .34 | .22 |     |     |     |     |
| Exhibitionism    | 1.93     | 1.81      | .76               | −.31               | .68   | .69 | .38 | .10 | .35 |     |     |     |
| Exploitativeness | 1.84     | 1.40      | .43               | −.66               | .55   | .59 | .35 | .22 | .21 | .35 |     |     |
| Vanity           | 1.07     | 1.09      | .54               | −1.06              | .66   | .49 | .17 | .10 | .39 | .37 | .16 |     |
| Entitlement      | 1.77     | 1.43      | .68               | −.09               | .48   | .59 | .38 | .19 | .20 | .32 | .29 | .15 |

Notes. All correlations are statistically significant (all  $p_s < .001$ ).

<sup>a</sup> Standard error = .04.

<sup>b</sup> Standard error = .08.

Table 2

Average correlation among indicator variables for total sample, participants in the top 20% of the sample in terms of total NPI score (i.e., putative “narcissist” taxon group), and participants in the bottom 50% of the sample (i.e., putative “non-narcissist” complement group) ( $n_s = 3895, 787, \text{ and } 1992$ , respectively)

|              | <i>M</i> | <i>SD</i> |
|--------------|----------|-----------|
| Total sample | .26      | .10       |
| Top 20%      | .08      | .07       |
| Bottom 50%   | .06      | .06       |

*Notes.* Absolute values of correlations were used to make calculations.

Table 3

Estimated validity for each of the seven narcissism indicators

|                  | Validity |
|------------------|----------|
| Authority        | 1.45     |
| Self-sufficiency | 1.02     |
| Superiority      | 1.26     |
| Exhibitionism    | 2.19     |
| Exploitativeness | 1.57     |
| Vanity           | 1.37     |
| Entitlement      | 1.61     |
| Average          | 1.50     |

*Notes.* Estimates are Cohen’s *D* values (see [Ruscio et al., 2006](#); formula 4.1 for specific calculation). The putative taxon group (i.e., “narcissists”) was defined as participants with total NPI scores in the upper 20% of the sample ( $n = 787$ ). The putative complement group (i.e., “non-narcissists”) was defined as participants with total NPI scores in the lower 50% of the sample ( $n = 1992$ ).

indicators did not appreciably change the results. Therefore, we present results stemming from analyses that used all seven indicators.

## 2.2. Plan of analysis

Three analytical procedures were used to assess the taxonicity/dimensionality of NPI scores (i.e., MAMBAC, MAXEIG, L-Mode). Each of the procedures is described at length elsewhere and interested readers are encouraged to consult the following books for more details ([Ruscio et al., 2006](#); [Waller & Meehl, 1998](#)). Below, we present aspects of these procedures relevant to the present study.

### 2.2.1. MAMBAC

Participants were sorted based on their summed scores on six of the narcissism indicators (e.g., authority). This sum is referred to as the *input indicator*. Cuts were then made to the sample at 50 regularly spaced intervals along the input indicator. The first and fiftieth cuts were positioned at least 25 cases from each extreme of the input indicator. Each cut divided participants with input indicator scores above the cut from those with input indicator scores below the cut. Mean scores on the seventh narcissism indicator—called the *output indicator*—were then computed for

participants who fell above or below the cuts. Differences between above/below cut means were computed and plotted so that the *y*-axis reflected difference magnitude and the *x*-axis reflected participant number at which cuts were made (recall that participants were first sorted based on input indicator scores). Taxonicity is indicated by an inverted u-shape to MAMBAC plots (Meehl & Yonce, 1994; Waller & Meehl, 1998); a u-shape indicates dimensionality. Seven plots were created (i.e., one for each output indicator) and each provided a single piece of evidence supporting the taxonic or dimensional conjecture. Additional evidence came from examining putative taxon base rates estimated by peak positions of the MAMBAC plots. Peaks that are right-of-center indicate base rates lower than 50%. More extreme right-shifts indicate progressively smaller base rates. Taxonicity is indicated when MAMBAC plots produce similar base rate estimates (Meehl & Yonce, 1994; Waller & Meehl, 1998); dimensionality is indicated by variability in estimates.

### 2.2.2. MAXEIG

Participants were divided into 50 samples—referred to as *windows*—based upon scores on a single narcissism indicator, referred to as *input indicators*. Windows overlapped by 90%, meaning that neighboring windows shared 90% of their participants. Eigenvalues, indicating level of general covariation, were then computed for the remaining six narcissism indicators and plotted so that the *y*-axis reflected eigenvalue magnitude and the *x*-axis reflected window number (seven plots were created; one for each input indicator). Taxonicity is indicated by a peaked graph and dimensionality by a flat graph (Waller & Meehl, 1998). Like MAMBAC, peak position provides an estimate of putative taxon base rate. Taxonicity is again indicated by consistent estimates across plots; dimensionality by inconsistency (Waller & Meehl, 1998).

### 2.2.3. L-Mode

Narcissism indicators were factor analyzed and a factor-score density plot was constructed using the first principal factor. Taxonicity is indicated by bimodal appearance to this plot; dimensionality by unimodal appearance (Waller & Meehl, 1998). Putative taxon base rate can also be estimated, this time based upon positions of upper and lower modes. Base rates can be estimated by the position of the lower-mode, the upper-mode, or their average. Waller and Meehl (1998) advise using the upper-mode when putative base rate is less than 50%. This seemed certain, so we used the upper-mode to estimate putative base rate. Because only one L-Mode plot is created, internal comparison cannot be made. Instead, the base rate estimate by L-Mode can be compared with estimates by MAMBAC and MAXEIG. Taxonicity is indicated by consistency amongst these estimates; dimensionality by inconsistency (Waller & Meehl, 1998).

### 2.2.4. Statistical simulations

Each of the above procedures produces compelling visual/quantitative evidence of taxonicity/dimensionality. It is generally considered prudent, however, to run concurrent procedures using simulated data sets that possess statistical properties similar to the research data, but designed to be taxonic or dimensional. In the present study, we used simulation programs created by John Ruscio (Ruscio, Ruscio, & Meron, *in press*) to produce 10 sets of taxonic data and 10 sets of dimensional data. The confidence in our conclusions would be increased to the extent that individual procedures all supported one conclusion (i.e., that narcissism is taxonic or dimensional) *and* matched results attained from simulated data of the same type.

### 3. Results

We present the results of the taxometric procedures in three sections: evidence stemming from (i) visual inspection of plots, (ii) comparisons between research and simulated data, and (iii) consistency of putative taxon base rate estimates.<sup>1</sup> Again, taxonicity is evidenced by (i) plots that visually reflect taxonic distributions (e.g., MAMBAC and MAXEIG plots that are peaked; L-Mode plots that are bimodal), (ii) plots of research data that correlate with plots of simulated taxonic data, and (iii) base rate estimates that are consistent within and across taxometric procedures. Dimensionality is evidenced by (i) plots that visually reflect dimensional distributions (e.g., MAMBAC plots that are u-shaped, MAXEIG plots that are flat, L-Mode plots that are unimodal), (ii) plots of research data that correlate with plots of simulated dimensional data, and (iii) base rate estimates that vary across and within taxometric procedures.

#### 3.1. Visual inspection of plots

Fig. 1 shows plots produced by the three procedures. Visual inspection reveals unambiguous support for the dimensionality of narcissism. MAMBAC plots displayed a u-shape, MAXEIG plots were largely flat, and the L-Mode plot appeared unimodal. All these patterns are characteristic of dimensional constructs. Based upon a visual plot inspection, there appears to be little evidence that a qualitative shift occurs anywhere along the NPI continuum.

#### 3.2. Comparisons between research and simulated data

Fig. 2 shows plots produced by each procedure using the research data contrasted with plots attained from 10 simulated sets of taxonic data and 10 simulated sets of dimensional data. Again, support for the dimensionality of narcissism was unambiguous. Plots attained from research data more closely matched simulated dimensional than simulated taxonic plots. MAMBAC and MAXEIG also produced comparison curve fit-indices (CCFI; [Ruscio et al., 2006](#)), which mathematically compares the research data to the simulated dimensional and taxonic data. CCFI values closer to 1.00 indicate support for taxonicity; values closer to 0.00 indicate support for dimensionality. We attained CCFI values of .22 and .19 for MAMBAC and MAXEIG, respectively. Both of these values indicate that the research data more closely fit the simulated dimensional data. To summarize, not only do the research data plots look dimensional, they also look like plots of simulated dimensional data.

#### 3.3. Consistency of base rate estimates

Base rate estimates indicate the estimated proportion of putative taxon members (i.e., “narcissists”) in the sample. Accurate base rate estimates are only possible if discrete groups of taxon members exist. If such a group does exist, then taxometrics procedures that produce multiple

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<sup>1</sup> Procedures were conducted using taxometric programs written by John Ruscio (e.g., [Ruscio et al., 2006](#)).

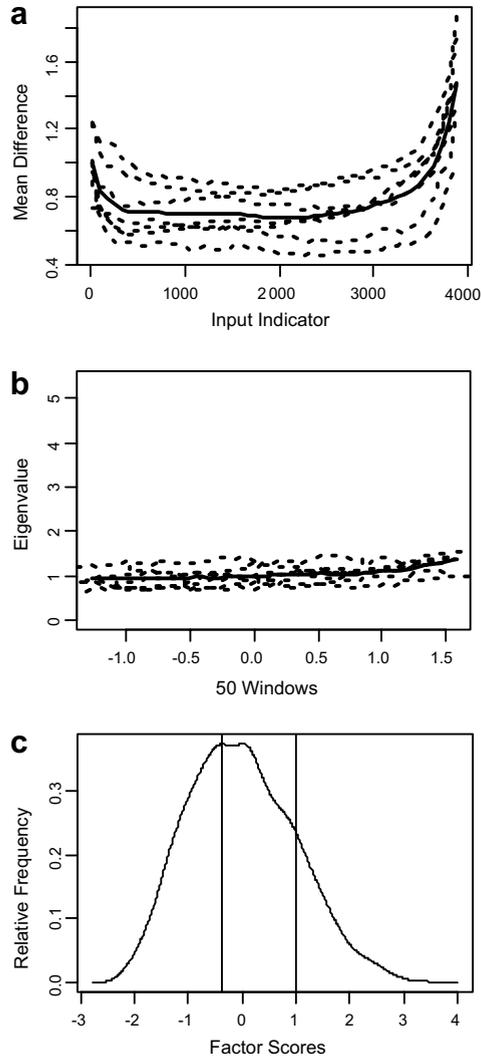


Fig. 1. Individual and average (a) MAMBAC, (b) MAXEIG, and (c) L-Mode plots. Solid line represents average plot. Dashed lines represent individual plots for each indicator. Note that only a single plot is produced by L-Mode.

baserate estimates (e.g., MAMBAC and MAXEIG) should produce consistent estimates (i.e., high within-procedure consistency). Furthermore, mean base rate estimates produced by different procedures should also be consistent (i.e., high across-procedure consistency).

MAMBAC base rate estimates ranged from .35 to .54 ( $M = .42$ ,  $SD = .08$ ). MAXEIG base rate estimates ranged .23 to .32 ( $M = .26$ ,  $SD = .04$ ). L-Mode estimated the putative taxon base rate to be .49. A few points are worth noting about these estimates. First, L-Mode produced an estimate close to .50, which is typical when constructs are dimensional (Ruscio, Ruscio, & Keane, 2002). Essentially, L-Mode is making an uninformed guess that is not better than chance. Second, MAMBAC estimates in particular showed considerable within-procedure variability, also consis-

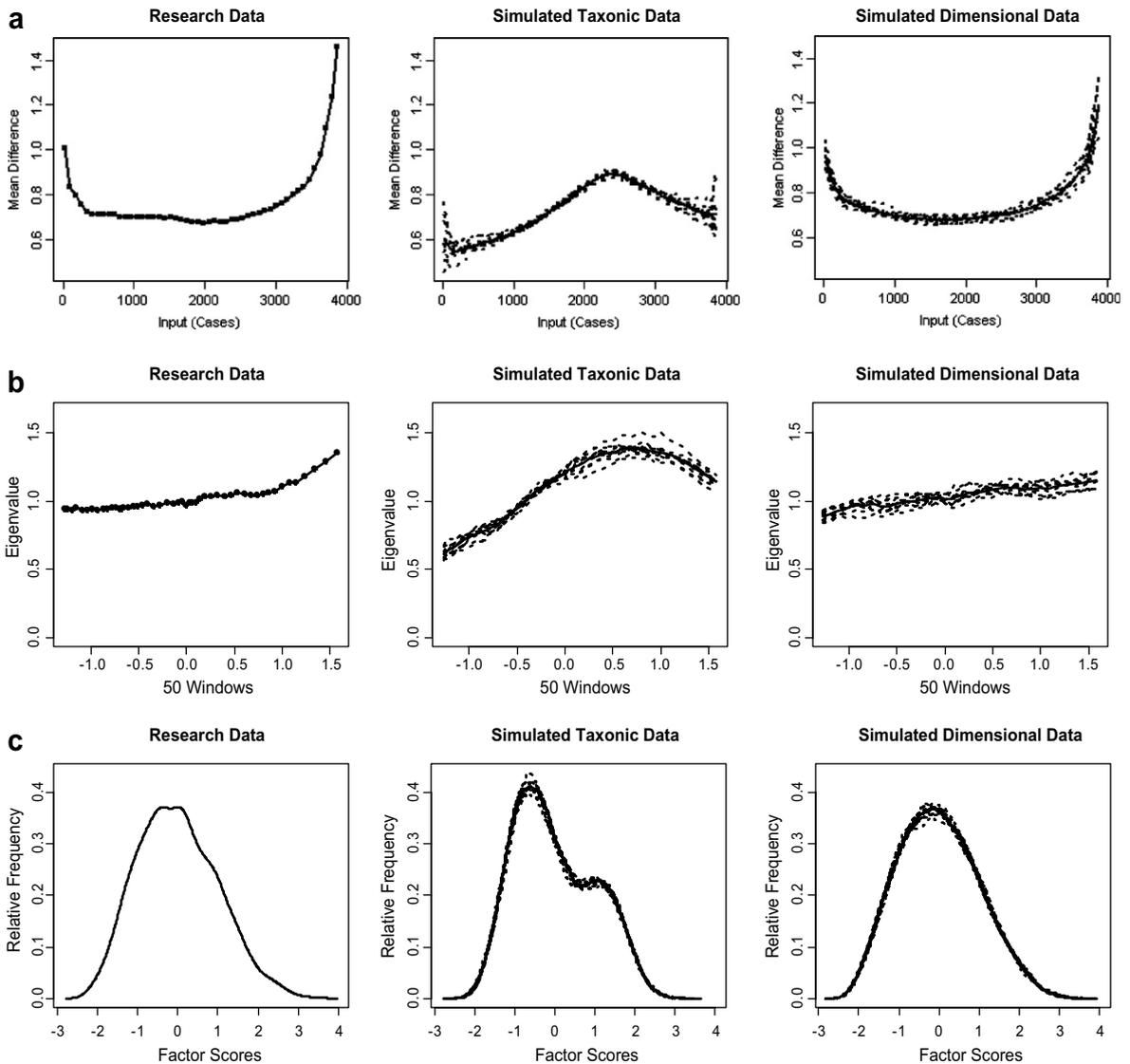


Fig. 2. Average (a) MAMBAC, (b) MAXEIG, and (c) L-Mode plots attained from the research data compared to 10 plots attained from simulated taxonomic data and 10 plots attained from simulated dimensional data.

tent with dimensionality. Third, mean base rate estimates varied substantially across procedures (MAMBAC = .42, MAXEIG = .26, L-Mode = .49), further suggestive of dimensionality. For comparison purposes, Fossati et al.’s (2005) study of NPD, which found evidence of taxonicity, reported more consistent estimates (i.e., ranged from .17 to .21).

Finally, all base rate estimates were higher—in some cases substantially higher—than what would presumably be expected. There is admittedly little to guide estimates of narcissism base rates. Fossati et al. (2005) assessed narcissism in a clinical population. They acknowledged that

their “data do not give any indication of the base rate in the general population” (p. 367). If guided by the 1% estimate of NPD prevalence (American Psychiatric Association, 1987), then even the lowest attained estimates seem unrealistic. Even presuming that the actual occurrence of “narcissism” is 10-times this rate—which may be more realistic (cf. Campbell & Foster, 2007)—the attained estimates are still approximately 2.5 to five times this value. In short, base rate estimates attained from the present set of taxometric analyses were largely inconsistent and unrealistic, suggesting that the NPI is not capturing a categorical trait.

#### 4. Discussion

Evidence from three independent taxometric procedures strongly supported the dimensional perspective of narcissism. Graphically, the shapes of the plots produced by the procedures were indicative of dimensionality. Comparing the research data to multiple sets of simulated taxonic and dimensional data showed that the research data more closely matched the simulated dimensional data. Finally, base rate estimates varied within and among the procedures and were unrealistic. Based upon these findings, the take-home message is that narcissism, as it is most frequently measured by social psychologists, should be thought of as a dimension.

As discussed earlier, there is considerable debate in the clinical literature whether personality disorders should be viewed as categorical or continuous phenomena (Haslam, 2003; Livesley et al., 1994; Widiger & Costa, 1994; Widiger et al., 2005). This debate is largely non-existent in the social psychology literature because personality is generally assumed to be continuously distributed. This view has been supported empirically (e.g., Arnau et al., 1999; Green et al., 1999), but evidence of proposed personality taxa has also been reported (e.g., Gangestad & Snyder, 1985; Strube, 1989).

As this issue pertains to narcissism, the existing prior evidence supported a categorical view of narcissism (Fossati et al., 2005). It was questionable, however, whether this evidence was informative of the structure of narcissism as it is measured in social psychological research. Fossati et al. (2005) assessed narcissism using a measure of NPD administered to a clinical sample. Although the NPI is based on DSM criteria for NPD (Raskin & Hall, 1979; Raskin & Terry, 1988) and has been validated on clinical samples (Prifitera & Ryan, 1984) it was necessary to test its structure using a sample drawn from the general population. The results of the present study strongly support the view that narcissism—as it occurs in the general population and assessed by the NPI—is continuously rather than categorically distributed. Thus, a key distinction between narcissism in the clinical and social psychology domains may be its underlying structure. The evidence suggests that clinical narcissism may be a categorical phenomenon, whereas sub-clinical, or “normal” narcissism, as it is studied in social psychology, is a dimensional trait.

The results of the present study should be comforting to narcissism researchers in social psychology. They suggest that one of the fundamental assumptions about narcissism is more than likely correct. Recent research by Fossati et al. (2005) called this assumption into question. The results of the present study, however, suggest that confidence can be placed in how prior studies of narcissism were interpreted. As discussed earlier, a finding that the NPI was distributed categorically may have necessitated a major overhaul in terms of the theoretical and empirical approaches to studying narcissism. This had the potential to call into question years of research

on narcissism conducted by social psychologists. The present study's results suggest that this is probably not a serious concern.

In closing, the present study has effectively doubled the published evidence concerning narcissism taxonicity/dimensionality. While this is a step forward, it also illustrates how little we know about this issue. Future studies should examine this issue further by testing the taxonicity/dimensionality of (i) other popular measures of narcissism (e.g., Hypersensitivity Narcissism Scale; [Hendin & Cheek, 1997](#)), (ii) other versions and formats of the NPI (e.g., 37-item; [Emmons, 1987](#); true/false, Likert-response formats), (iii) non-survey assessments of narcissism (e.g., behavioral observation, friend reports), and (iv) traits and features related to narcissism (e.g., entitlement; [Campbell, Bonacci, Shelton, Exline, & Bushman, 2004](#)). This combined with additional research on the clinical side of narcissism will reveal how narcissism manifests in the clinical and general populations.

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