Psychometric Properties of the Italian Version of the Narcissistic Personality Inventory

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Introduction

The construct of narcissism, though still controversial, has considerable implications not only for clinical psychology (Kernberg, 1992; Kohut, 1971), but also for social psychology and individual differences (Baumeister, 1999). The lack of measurement tools for narcissism applicable by researchers from different theoretical backgrounds and working in different contexts is one of the factors that has slowed down the research into this particular aspect of the personality.
The Narcissistic Personality Inventory (NPI; Raskin e Hall, 1979; Raskin e Terry, 1988) is a self-administered tool, constructed to assess narcissism in a dimensional perspective also in the non clinical population. Although the scale does not measure Narcissistic Personality Disorder, the conceptualization of narcissism that underlies it is based on behavioral criteria for the narcissistic personality included in the DSM-III (American Psychiatric Association, 1980). This makes it a potentially interesting tool, given that it uses criteria applicable also in the clinical domain assessed in dimensional modalities that also make it potentially suited for use in the social field and that of individual differences. Moreover it is based on an explicitly a-theoretical definition of narcissism (American Psychiatric Association, 1980) – or perhaps it would be better to say trans-theoretical – which represents a "common language" both in clinical activity and in research. This makes the NPI a tool that can be used by researchers of different theoretical orientations, allowing the comparison of results and the exchange of scientific information.
The construct underlying the NPI considers narcissism a personological style characterized by grandiosity, fantasies of success, beauty and unlimited power, sense of entitlement, high sensitivity to criticism and manipulation in interpersonal relations (these characteristics have been retained almost unchanged in the two later editions of the DSM).
The development of theories on narcissism and the availability of easy-to-use measurements like the NPI have favored the growth of research into narcissism, with an increase in the number of articles indexed in PsychInfo from 405 in the decade 1969-1978, to 1791 in the decade 1989-1998 (Soyer, Rovenpor, Kopelman, Mullins & Watson, 2001). A recent study showed that there are 146 studies indexed in PsychInfo in the period 1979-2003 that use the NPI as the measurement of narcissism (Del Rosario & White, 2005). Based on this data, it can be stated that the NPI is a widely used tool accepted as a dimensional measurement of narcissism in the non clinical domain. So far the evidence of the validity of the NPI as a *clinical* measurement of narcissism is limited to one single work (Prifitera & Ryan, 1984).

Development and description of the scale

The NPI was developed starting from an original pool of 223 items. Each item consists of a pair of antithetical statements, related to the subject's personal attitudes; the person to whom the test is administered is instructed to choose the statement he most agrees with. From this first version of 223 items, through a series of analyses, a 54-item version of the NPI was devised (Raskin & Hall, 1979, 1981). Emmons (1984, 1987) made a factorial analysis of the 54-item version, suggesting that the NPI may not be a unidimensional measurement of narcissism and suggesting the existence of four components that he called *Leadership/Authority*, *Superiority/Arrogance*, Self-absorption*/Self-admiration*, Exploitativeness*/Entitlement*; each sub-scale was composed of from 9

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to 12 items not included in other sub-scales. Emmons (1984, 1987) reported similar values of internal consistency (Cronbach's α) in both the studies; in the first study, Emmons (1984) calculated values of Cronbach's α of .86, .79, .69, .69 and .74 for the total NPI and for each of the four sub-scales respectively; the respective values of Cronbach's α reported in the second study (Emmons, 1987) were .87, .69, .70, .81 and .68. Further confirmation of the reliability and validity of the 54-item version of the NPI were provided by a series of other studies (Prifitera & Ryan, 1984; Raskin & Hall, 1979, 1981; Watson, Grisham, Trotter & Biderman, 1984; Watson, Hood & Morris, 1984).

With the study by Raskin & Terry (1988), the NPI reached its present form of 40 items. Based on the results of a principle component analysis, Raskin and Hall (1981) reduced the NPI to 40 items, but suggested calculating, as well as the total NPI, also the scores on seven sub-scales corresponding to seven principle components identified in the study and called *Authority*, *Exhibitionism*, *Superiority*, *Entitlement*, *Exploitativeness*, *Self-sufficiency* and *Vanity*. Each sub-scale is composed of from 3 to 8 items which are not included in other sub-scales. However, with a very large sample size (N = 1018), the coefficients of internal consistency (Guttman's λ 3, a similar coefficient to Cronbach's α) showed acceptable values only for the total NPI (.83) and for the subscale *Authority* (.73). Similar results were recently reported by Del Rosario & White (2005) in a sample of 175 US university students of which the majority were females. Surprisingly, so far no further study of the reliability and validity of the 40-item version of the NPI has been published.

Overall, the NPI seems to be a tool widely used in the literature, providing a highly reliable total score, both in terms of internal consistency (Raskin & Terry, 1988), and temporal consistency (Del Rosario & White, 2005), and giving proof of construct validity, at least in the previous 54-item version. The factorial structure of the scale however does not appear to be so positive; while on the one hand a multifactor structure is suggested for the NPI, on the other the number of factors does not appear to be consistently replicated in independent studies. Moreover, the clinical usefulness of the scale, above all in the 40-item version, needs further evidence.

Apart from the language, the Italian version of the NPI does not differ in any way from the original version. The Italian translation of the scale was done by clinical psychologists (A.F. and S.B.) with a good knowledge of English; in order to minimize the risk of language distortions, the Italian translation was checked and rechecked by a professional English-native-speaking translator through the back version method.

The general design of the study of the psychometric properties of the Italian version of the NPI was inspired by the principle of replicability, which is a cornerstone of scientific research. In order to provide estimates of the psychometric properties of the NPI that are replicable in independent samples with different characteristics, and to be able to generalize results of the study to a wide range of conditions, the Italian study involved the following samples: 1. one sample of non clinical adolescent subjects; 2. two samples, independent of each other and of the adolescent sample, of non clinical adults; 3. one sample independent of all those previously indicated, of clinical adults.

In view of the scarcity of studies about the psychometric properties of the 40-item version of the NPI, in the study of the Italian version of the scale it was decided to test both the reliability of internal consistency and the test-retest reliability, although the latter could only be examined in two sub-samples. In the present study particular attention was paid to the verification of dimensionality – i.e. the number of principle components – of the matrix of correlation of the 40 items making up the NPI. Despite its advantages, the use of factorial analysis as confirmation in the study of the structure of personality measurements has recently been strongly criticised (McCrae, Zonderman, Costa, Bond & Paunonen, 1996) and alternative methods have been proposed (McCrae, Zonderman, Costa, Bond & Paunonen, 1996). These considerations led us to use an alternative method (McCrae, Zonderman, Costa, Bond & Paunonen, 1996) to analyse the replicability of the factorial structure of the NPI items, also in the light of the lack of independent studies showing consistent replicability of a factorial structure.

Lastly, as further proof of the construct validity of the Italian version of the NPI and evidence of its clinical usefulness, the verification of the scale's capacity to distinguish clinical adults with DSM-IV diagnosis (American Psychiatric Association, 1994) of Narcissistic Personality Disorder (with any other co-diagnosis of Personality Disorder) was carried out blind as regards NPI scores with a reliable semi-structured interview for the diagnosis of the Personality Disorders included in the DSM-IV, with:

a) clinical adult subjects with other diagnosis of Personality Disorders, without diagnosis of Narcissistic Personality Disorder;
b) clinical adults without diagnosis of Personality Disorder, but with other Axis I diagnosis;
c) two independent samples of non clinical adult subjects.

Method

Subjects

Group 1. Group 1 was composed of 662 high school students. 164 subjects (24.8%) were female and 498 (75.2%) male; the average age was 16.13 years, *DS* = 1.56 years. All the subjects joined the study voluntarily after signing written consent in which the research was presented in detail. For underage subjects, parents or legal guardians were asked to sign the written consent. Moreover, the schools involved were asked to approve the study, since the administration of questionnaires took place in the schools in group sessions supervised by psychologists not involved in designing the research or in analysing the data.

Group 2. This group was made up of 385 non clinical adults who voluntarily joined the study after signing written consent in which the research was presented in detail. All subjects who had at least finished primary school and declared that they had not received - and were not receiving – psychological or psychiatric treatment, were admitted to the study. 222 subjects (57.7%) were female and 163 (42.3%) male; the average age was 32.59 years, *DS* = 9.26 years. 307 subjects (79.7%) were workers active in the community, while 78 (20.3%) were university students. Among the workers the most frequent occupations were clerk (*n* = 119, 38,8%), housewife (*n* = 20, 6,5%), teacher (*n* = 17, 5,6%), and factory worker (*n* = 15, 4,9%). Workers and students did not present significant differences in the male/female ratio, χ^2 = 0.14 (1, *N* = 385), *p* >.70, φ = -.03. Obviously the university students (*M* = 23.27 years, *SD* = 2.51) were considerably younger than the active workers (*M* = 34.96 years, *SD* = 8.85), *t* for separate variance (379)= 20.19, *p* <.001.

Group 3. This group comprised 318 non clinical adult subjects who joined the study voluntarily after signing written consent in which the research was presented in detail. All subjects who had at least finished primary school and declared that they had not received - and were not receiving – psychological or psychiatric treatment, were admitted to the study. 105 subjects (33.0%) were male and 213 (67.0%) female; the average age was 31.37 years, *DS* = 14.14 years. 141 subjects of Group 3 voluntarily joined the retest study, agreeing to recompile the NPI after 90 days; of these 101 (71.6%) were female and 40 (28.4%) male. The average age of the subjects included in the retest sample was 30.62 years, *DS* = 15.53. The retest sub-group did not present any significant difference compared to Group 3 regarding the male/female ratio, χ^2 = 2.11 (1, *N* = 318), *p* >.10, φ = -.09, and to the age, *t* (316) = 0.85, p >.30, *d* = 0.10.

Group 4. Group 4 was made up of 366 psychiatric outpatients later admitted to the San Raffaele Turro Clinical Psychology and Psychotherapy Service in Milan. All the subjects gave their informed consent to participate in the study after receiving a detailed description of the research. To be admitted to the sample, the subjects could not present any of the following exclusion criteria: a) IQ <75; b) diagnosis of Schizophrenia, Schizophreniform Disorder, Delirious Disorder, Dementia or Organic Mental Disorder based on the diagnostic criteria listed in the DSM-IV; c) education level below the completion of primary school. 128 subjects (35%) were male and 238 (65%) female; the average age was 35.06 years, *DS* = 10.11 years. 167 subjects (45.6%) had at least one Axis I diagnosis; due to multiple Axis I diagnoses, the cumulative rate of Axis I diagnosis exceeded the rate of subjects with at least one Axis I diagnosis. Anxiety Disorders (*n* = 73, 19.9%), of Substance Abuse/Dependence (n=35 9.6%), Eating Disorders (*n* = 33, 9%), and Mood Disorders (*n* = 21, 5.7%) were the most frequently diagnosed Axis I disorders in Group 4. Lastly, 13 subjects (3.6%) had other Axis I diagnoses (Sleep Disorders, Somatoform Disorders, etc.). As well as the NPI, the Structured Clinical Interview for DSM-IV Axis II Personality Disorders, Version 2.0 (SCID-II 2.0, First, Spitzer, Gibbon, Williams & Benjamin, 1994) was administered to all the clinical subjects.

SCID-II 2.0 is a semi-structured interview of 140 items organized by diagnosis, which provides both a categorial assessment, and a dimensional assessment (i.e. the number of criteria found) of the Personality Disorders listed in the DSM-IV. The Italian translation of SCID-II 2.0 was done by one of the authors (A.F.) and the accuracy of the Italian version was verified by a professional English-mother-tongue translator using the back translation method. In the present study, SCID-II 2.0 was administered on the remission of acute Axis I symptoms. The SCID-II 2.0 interviews were carried out blind as regards the NPI scores, and the NPI questionnaires were scored blind as regards the SCID-II 2.0 diagnosis. Inter-rater reliability of the DSM-IV diagnosis and the dimensional assessments of Personality Disorders generated through the administration of the Italian version of SCID-II 2.0 has been demonstrated (Maffei, Fossati, Agostoni, Barraco, Bagnato, Donati and collaborators., 1997). In the present study, the *inter-rater reliability* of the SCID-II 2.0 dimensional assessments of Personality Disorder PD was evaluated in the first 50 patients later admitted through a *pair wise interview* design. The intraclass correlation coefficients were included between .59 (Schizophrenic Personality Disorder) and .97 (Dependent Personality Disorder).
Based on SCID-II 2.0, 242 subjects (66.1%) received at least one DSM-IV diagnosis of Personality Disorder; the average number of Personality Disorder diagnoses was 1.32 (*DS* = 0.62). Among the subjects that had at least one Personality Disorder diagnosis, 25.2% had two or more Personality Disorder diagnoses. Narcissistic Personality Disorder (NPD, *n* = 50, 13.7%), Mixed Personality Disorder (n=42, 11%), Obsessive-Compulsive Personality Disorder (*n* = 35, 9.6%), Borderline Personality Disorder (*n* = 35, 9,6%); Avoidant Personality Disorder (*n* =31 8.5%) and Histrionic Personality Disorder (*n* = 31, 8,5%). In line with what is underlined in the scientific literature, in this sample various significant correlations were observed between the dimensional assessments of the Personality Disorders. Among the most significant, there was the correlation between Avoidant Personality Disorder and Dependent Personality Disorder (*r* = .25, *p* <.001) and Obsessive-Compulsive (*r* = .20, *p* <.001), between Schizotypical Personality Disorder and Schizoid (*r* = .40, *p* <.001) and Paranoid Personality Disorder (*r* = .46 (*p* <.001), and lastly between Narcissistic Personality Disorder and Histrionic (*r* = .28, *p* <.001) and Passive-Aggressive Personality Disorder (*r* = .51, *p* <.001).

Based on the outcome of the SCID-II 2.0 interview it was possible to divide the clinical sample into three sub-groups: 1. subjects with DSM-IV diagnosis of Narcissistic Personality Disorder, with any other codiagnosis of Personality Disorder (*n* = 50); 2. Subjects with other DSM-IV diagnosis of Personality Disorder, but without diagnosis of Narcissistic Personality Disorder (*n* = 192); 3. Subjects without any DSM-IV diagnosis of Personality Disorder, but with other Axis I DSM-IV diagnosis (*n* = 124). In the present study, the Passive-Aggressive Personality Disorder (negativistic) was the main co-diagnosis presented by the subjects with DSM-IV diagnosis of Narcissistic Personality Disorder, χ^2 with Yates correction (1) = 19.58, p <.001, φ = .23, co-occurrence rate = 0.24.
The retest sub-group was made up of 30 outpatients who voluntarily joined the longitudinal part of the study, agreeing to compile NPI 3 months after the first administration. 22 subjects (73.3%) were female and 8 (26.7%) male; the average age was 33.13 years, *DS* = 8.38 years. All the subjects had a diagnosis of Anxiety Disorder. 17 subjects (56.7%) had at least one diagnosis of Personality Disorder based on the outcome of the SCID-II 2.0 interview; the most frequently diagnosed Personality Disorders in the retest sub-sample were those of: Avoidant (*n* = 6, 20.0%), Dependent (*n* = 5, 16.7%), Obsessive-Compulsive (*n* = 2, 6.7%) and Narcissistic(*n* = 2, 6.7%). The retest sub-sample did not present significant differences compared to the clinical group as regards sex, χ^2 = 1.26 (1, *N* = 396), *p* >.20, *φ* = .06, age, *t* (397) = -1.01, *p* >.30, *d* = 0.19, and the presence of any of the Axis II diagnoses, χ^2 = 0.72 (1, *N* = 396), *p* >.30, *φ* = .04.

Analysis of the data

Cronbach's α coefficient was used as the measurement of NPI internal consistency; retest reliability was assessed by calculating the Pearson correlation coefficient between the measurements obtained at the two different times. When there were systematic differences

between male and female subjects as regards NPI scores, the internal consistency analysis was replicated in the sub-groups based on sex.
In view of the importance of using the convergence of several indexes in the analysis of dimensionality of the correlation matrixes (McCrae, Zonderman, Costa, Bond & Paunonen,1996), an initial analysis of the latent dimensions underlying the tetrachoric correlations between NPI items was carried out in each group using the following criteria: a) eigenvalue over 1; b) *scree test*; c) *minimum average partial* statistics based on the calculation of the residual average partial correlation obtained after extracting the n-sigma principle component (MAP; Zwick & Velicer, 1984); the extraction of components stops when MAP reaches its minimum value; d) parallel analysis, based on the comparison of the real data curve with the average curve of 50 independent samples of random data obtained by random permutations of real data. As well as the possible convergence of these criteria, the decision on the number of components really necessary to explain the correlations between NPI items was based on the principle of replicability (Everett, 1983), which is a cornerstone in scientific discovery, since science is interested only in replicable phenomena. Based on this principle, for each number of components extracted – in the case of a 2-or-more-factor solution, both after varimax rotation and after promax rotation – the factorial scores were calculated using weights based on the sample being examined and on a different sample; the two sets of factorial scores were then correlated. Depending on the replicability criterion, only matching factors must be extracted, i.e. the factors with coefficients of correlation between factorial scores >.90 (Everett, 1983; McCrae, Zonderman, Costa, Bond & Paunonen,1996). The extraction of factors finishes when coefficients of correlation between factorial scores lower than .90 appear. In the present study, for each number of components, the solution was initially obtained in the larger sample, that is, in the group of non clinical adolescent subjects. Therefore the replicability of the solution was tested in Group 2 (non clinical adult subjects, N = 385). In turn, the replicability of these first two factorial structures were tested in Group 3 (non clinical adults, N = 318). Lastly, the replicability of the factorial structures obtained in all the groups of non clinical subjects was assessed in the sample of clinical adults (Group 4, N = 366).
A two-way analysis of covariance followed by planned contrasts was carried out to assess the NPI capacity to significantly differentiate the subjects with Narcissistic Personality Disorder from each control group, checking for the effect of age and sex. The variances were hierarchically broken down assessing firstly the effects of the covariate (subject age), then the sex of the participants, and lastly the diagnostic grouping; finally the effect of interaction was tested. The level of nominal significance of the single contrasts was corrected by using the Bonferroni procedure. The standardized mean difference d) was used to measure the effect size. Moreover, the diagnostic efficiency of the NPI was tested by carrying out the *Receiver Operating Characteristic* (ROC) analysis for the comparisons between subjects with a diagnosis of Narcissistic Personality Disorder and each of the four control groups.

Results

Reliability

The descriptive statistics and the coefficients of internal consistency of the total NPI in the various samples – cumulative and divided by sex – examined in the present study are listed in Table 1. The values of Cronbach's α are substantially in line with the values reported by the international literature (see Raskin & Terry, 1988; Del Rosario & White, 2005) and suggest a satisfactory reliability of the total NPI in non clinical adults, in non clinical adolescent subjects and also in clinical adult subjects. In all the groups, the indexes of internal consistency showed acceptable values both in female and in male subjects.
In line with previous observations (Del Rosario & White, 2005), in all the non clinical samples the average total NPI scores are significantly higher in male subjects than in female subjects; it was only in the clinical sample that this difference was not found. The reason for the failure to replicate this male/female difference in total NPI scores in adult clinical subjects lies in the fact that the effect of sex in this sample is confused in the way the total NPI is affected by Personality Disorders that

have a significantly different distribution among male and female subjects. For instance, in the clinical sample the female subjects presented an average number of traits of Dependent Personality Disorders, $r_{point\text{-}biserial}$ = .23, p <.001, and Histrionic, $r_{point\text{-}biserial}$ = .15, p <.005, significantly higher than male subjects; in turn the Dependent Personality Disorder presented a significant, but opposite, association with the total NPI, r = -.17, p <.005, compared to that shown for Histrionic Personality Disorder, r = .35, p <.005.
With the sole exception of Group 2, r = -.35 p <.001, the correlations between total NPI and subject age were non significant – Group 1: r = -.04, p >.30; Group 3: r = -.10, p >.06 – or, if significant, absolutely negligible, Group 4: r = -.14, p <.05. Both in clinical and non clinical adult subjects and in adolescent subjects no substantially replicable relations were observed between the subject age and total NPI; the data observed in Group 2 seems therefore, to depend on a non replicable idiosyncrasy of the sample. The critical moment for the distribution of NPI scores seems to be represented by the passage from adolescence to young adulthood, when there seems to be a sharp drop in NPI scores, as is shown by the fact that both groups of non clinical adults - Group 2: t (1045) = -11.57, p <.001, d = -0.74; Group 3 = t (978) = -4.90, p <.001, d = -0.35 – and the clinical adult subjects - t (1026) = -9.30, p <.001, d = -0.74 – presented average total NPI scores significantly lower than those of non clinical adolescent subjects.
In the non clinical sub-group that joined the longitudinal part of the study (n = 141), the reliability after three months of the NPI scores was satisfactory, r = .87, p <.001. Satisfactory values, although slightly lower, were observed in the small clinical sub-group that joined the retest study at three months, r = .72, p <.001.

Analysis of dimensions and factorial structures

The number of principle components of the matrix of tetrachoric correlations of the 40 items of the NPI was 12 in Group 1 and Group 3, 13 in Group 4 and 15 in Group 2.
The *scree plots* obtained and the average curves of the random eigenvalue (n = 50) calculated in every single group are shown in Figures 1-4. Overall the scree plots are difficult to interpret given the lack of a clear downturn in the curve in all the groups examined, with the sole exception of the sample of non clinical adolescent subjects. The parallel analysis seems to suggest a 3-factor solution in the non clinical samples, while in Group 4, which is made up of adult psychiatric outpatients, it seems to indicate a 5-factor solution. It is interesting to notice that as well as indicating a non replicability of the number of factors between clinical and non clinical subjects, these results suggest a number of latent dimensions that does not replicate either the 4-factor structure suggested by Raskin & Terry (1988), or the 7-factor structure identified by Raskin & Hall (1981). Moroever, in all the samples there is a marked difference in the degree of variance expressed between the first self-value and the later self-values.
The values of the MAP statistics for the first eight principle components are listed in Table 2. It is only in Group 3 that there was a convergence with the number of factors suggested by the parallel analysis; in the remaining groups of subjects examined by the present study the results of the MAP statistics suggested extracting, for the next analysis, only the first two principle components. In any case, they are values that do not indicate a replicability of the multifactorial structure previously given in the literature for the NPI (Raskin & Terry, 1988; Raskin & Hall, 1981).
The coefficients of comparability – i.e. the coefficients of correlation between the factorial scores – of the factorial structures among the three groups of subjects that participated in the present study are listed in Table 3. The results obtained both for the orthogonal varimax rotation, and for the promax oblique rotation are substantially overlapping. As can be seen, all the unidimensional solutions showed stable replicability in samples characterised by differences in various aspects such as age, sex, clinical condition. The extraction of a second component implied the absence of *matching factors* based on Everett's criterion (1983). Consequently, it was decided to choose a unifactorial solution for the items in the Italian version of the NPI.
The values of the Kaiser-Meyer-Olkin statistics were .86, .80, .84 e .80, in Group 1, Group 2, Group 3 and Group 4 respectively; based on these values, the matrix of tetrachoric correlation of the NPI items was appropriate for a factorial analysis in all the groups of subjects examined in the present study. The percentages of variance expressed by the first principle component were

17.3%, 16.0%, 20.6% and 16.3% in Groups 1, 2, 3 and 4, respectively. Factorial saturation and communalities of the NPI items are listed in Table 4. Conventionally, they were considered indicative of an insufficient correlation of the item with the principle component, operationalizing the general construct of narcissism measured by the NPI, the saturations below .30. The number of items with correlation <.30 with the principle component was 9 (22.5%) in Group 1, 16 (40%) in Group 2, 5 (12.5%) in Group 3 and 11 (27.5%) in Group 4; this fact seems to indicate a considerable sample fluctuation in the estimates of validity of the single items. Starting from this evidence, the items that showed factorial saturations <.30 in two samples were considered "suspect", and the items that showed factorial saturations <.30 in three or more samples, "badly functioning". According to this criterion, the items that were "suspect" were item 11 ("I am determined"), 18 ("I want to be worth something in the eyes of the world"), 21 ("I always know what I'm doing), 23 ("Everybody loves listening to my stories"), 25 ("I will not be happy until I get what I deserve") and 31 ("I can live my life however I want"); "badly functioning" were items 14 ("I insist on getting the respect I'm entitled to"), 16 ("For me people are open books"), 17 ("I enjoy taking the responsibility of making decisions"), 22 ("I rarely depend on someone to finish things"), 24 ("I expect a lot from others") and 34 ("I will become a distinguished person").

Diagnostic efficacy of the NPI total

Based on the outcome of the factorial analyses, it was decided to use only the total NPI score as the general measurement of narcissism. The correlations between dimensional assessments (i.e. number of traits) of the Personality Disorders listed in the DSM-IV obtained by administering the SCID-II 2.0 semi-structured interview and the total NPI score are presented in Table 5. In line with our hypotheses, the total NPI presented a relatively high correlation, positive and significant, with Narcissistic Personality Disorder; this was also shown in the higher correlation between the SCID-II 2.0 dimensional assessments and the NPI. Considering the positive correlations of the NPI, only those with the Histrionic Personality Disorder and with Passive-Aggressive Personality Disorder were significant. It is interesting to notice that both the Passive-Aggressive Personality Disorder, $r = .51$, $p < .001$, and the Histrionic Personality Disorder, $r = .28$, $p < .001$, correlated significantly with the Narcissistic Personality Disorder; moreover, the two Personality Disorders were significantly inter-correlated, $r = .23$, $p < .001$. This inter-dependence of the dimensional diagnosis can explain the correlations observed between the NPI and Personality Disorders different form Narcissistic Personality Disorder, but correlating with it. As expected, on the basis of the hypothesis that NPI has not only convergent validity with the diagnosis of Narcissistic Personality Disorder, but also discriminating validity, the total NPI score presented significant *negative* correlations with Avoidant, Dependent and Depressive Personality Disorders, i.e. with Personality Disorders characterised by insecurity and/or a poor vision of the self (American Psychiatric Association, 1994).
The averages corrected according to the ANCOVA model observed in the clinical subjects with Narcissistic Personality Disorder, in clinical subjects with other diagnosis of Personality Disorder, but without diagnosis of Narcissistic Personality Disorder, in clinical subjects without diagnosis of Personality Disorder, but with Axis I diagnosis, and in the two samples of non clinical subjects, are listed in Table 6. Although a significant effect of age was found, F (1, 1035) = 32.23, $p < .001$, $\eta^2 = .03$, and of sex, F (1, 1035) = 7.47, $p < .01$, $\eta^2 = .01$, it was the effect of the diagnostic grouping that was most important in terms of the proportion of variance expressed, F (1, 1035) = 15.81, $p < .001$, $\eta^2 = .06$. Based on the planned contrasts, after correcting the nominal significance with the Bonferroni procedure, letting $p < .0125$, the average NPI score in subjects with DSM-IV diagnosis of Narcissistic Personality Disorder was significantly higher than that of clinical adult subjects with other Personality Disorders, $t = 5.48$, $p < .001$, $d = 0.90$, of clinical adult subjects without any diagnosis of Personality Disorder, $t = 4.89$, $p < .001$, $d = 0.84$, of non clinical adult subjects in Group 2, $t = 6.03$, $p < .001$, $d = 0.93$, and of non clinical adult subjects in Group 3, $t = 3.13$, $p < .005$, $d = 0.50$.
An effect of significant interaction was observed between sex and diagnostic grouping, F (4, 1035) = 3.21, $p < .05$, $\eta^2 = .01$; however, the degree of variance expressed was negligible. The diagram of profiles is presented in Figure 5. As can be seen, the subjects with DSM-IV diagnosis of Narcissistic Personality Disorder, both male and female, presented higher scores than subjects of

both sexes belonging to the four control groups examined in this study. It seems that the interaction effect with sex can mainly be attributed to the group with other DSM-IV diagnosis of Personality Disorder, but without co-diagnosis of Narcissistic Personality Disorder and, to a slighter extent, to the group of clinical adult subjects without DSM-IV diagnosis of Personality Disorder. The lines of the remaining three groups were in fact parallel.
The ROC analysis showed the discrimination validity of the total NPI. The area below the ROC curve – which represents the proportion of subjects correctly classified on the basis of NPI scores – for the comparison between subjects with DSM-IV diagnosis Narcissistic Personality Disorder and subjects with other DSM-IV diagnosis of Personality Disorder was equal to .75, 95% confidence interval = .67 - .82. Similar results were found for the comparison with clinical subjects without diagnosis of Personality Disorder, area below the curve = .78, 95% confidence interval = .71 - .96, and with the non clinical subjects of Group 2, area below the curve = .76, 95% confidence interval = .69 - .83. The diagnostic efficacy of the NPI resulted lower only in the ROC analysis related to the contrast between clinical subjects with DSM-IV diagnosis of Narcissistic Personality Disorder and non clinical subjects of Group 3, area below the curve = .66, 95% confidence interval = .58 - .63.

Discussion

Overall, the results of the present study seem to suggest that the NPI is a measurement with reliability and internal consistency in different samples by age, sex and clinical condition. The estimates of internal consistency of the total NPI were replicated consistently both among the four independent samples examined in the present study, and among male and female subjects in each group. The values of Cronbach's α observed in this study overlapped the internal consistency values reported by Del Rosario & White (2005) - .80/.82 – and by Rasin & Terry (1988) - .83 – for the total NPI. Retest reliability is also adequate both in non clinical adults and in clinical adults, although the latter sample was too small to be able to draw definite conclusions. This data was substantially in agreement with the retest reliability value of .81 recently reported by Del Rosario & White (2005) for the total of the 40-item version of the NPI.
The results of the factorial analysis of the Italian version of the NPI create doubts about the multifactorial structure of the NPI. Raskin & Terry (1988) and Del Rosario & White (2005) had already raised doubts about the usefulness of the NPI sub-scales, with the sole exception of Authority, due to the low values of internal consistency observed for them. The results of the present study seem to confirm these doubts, since it has not been possible to identify any replicable multifactorial solution in the various groups of subjects examined. Moreover, if we consider the factorial solutions suggested by the parallel analysis and by the MAP index without worrying about their replicability, none of these coincided with the number of factors suggested by Raskin & Terry (1988). Overall, the analysis of the dimensionality of the sources of inter-item correlation in the Italian version of the NPI suggest that the scale is substantially unidimensional – that is, the correlations between items are explained by a single latent variable, represented, in the research hypothesis, by narcissism; evidence of additional factors seems essentially to be due to spurious sources of variation linked to idiosyncrasies in the sample characteristics, unlike the distributional characteristics of the items, standard deviation and asymmetry, and the different criteria used to determine the number of factors to extract. Obviously this study does not claim to establish the specific sample characteristics responsible for spurious multifactorial solutions of the NPI items; what it does clearly show is that when only a second principle component is added, this solution substantially condenses "spurious" covariances, in the sense of the non replicability between the various samples examined. On the other hand, a single general factor of narcissism is clearly replicable in all the samples.
Starting from these observations, in the present study we have limited ourselves to a unifactorial solution, excluding the presence of possible sub-scales. Overall, the great majority (70%) of the NPI items showed satisfactory correlations (i.e. equal to or greater than .30) with the general factor of narcissism in the majority of groups of clinical subjects examined in this study. On the basis of the results of the factorial analysis of the items in the Italian translation of the NPI, only 6 (15.0%) items proved to be clearly inefficient, given that they showed consistently low factorial saturations.

For 6 other items (15.0%) which presented contrasting results with unsatisfactory factorial saturations in two samples and good levels in two other samples, it seems necessary to do further studies before accepting them as indicators of the construct of narcissism with some validity. The low communality observed in this study suggests a high level of "white noise" for the items in the Italian version of the NPI in measuring narcissism.

In the present study, the construct validity of the NPI was strongly supported both by the significant positive converging correlations of the scale's total score with the Narcissistic Personality Disorder and Personality Disorders dimensional assessments which proved to correlate with it, carried out blind as regards the NPI scores using a semistructured interview; and by the significant negative discrimination correlations with Avoidant, Dependent and Depressive Personality Disorders. To further confirm the validity of the total NPI as a general measurement of narcissism, the total of the scale proved to significantly discriminate subjects with DSM-IV diagnosis of Narcissistic Personality Disorder from all the control groups, with estimated *effect size* (i.e. standardized mean difference) that can be called "large" for all the contrasts, except for the one related to non clinical adult subjects from Group 3 which had a moderate magnitude. The ROC analysis gave similar results. The total NPI did not prove to be a measurement capable of discriminating in a significant manner the subjects with a DSM-IV diagnosis of Narcissistic Personality Disorder from all the controls, with a percentage of correct classifications of between 66% and 78%, and on average 74%. This data suggests that the Italian version of the NPI can also be helpful in the clinical domain in the diagnosis of pathological narcissism.

Obviously, the results of this study must be considered in the light of various limits. The single samples were not selected in a random way and are of moderate size; this limits the sample's representativity and the generalizability of the data. Retest data is not generalizable to adolescent subjects; moreover, for the clinical subjects the number of observations is too small to be able to draw definite conclusions. Construct validity is based on the associations between the total score on NPI and the assessments of Narcissistic Personality Disorder obtained with an independent interview administered to adult clinical subjects. Although the NPI total discriminated the subjects with a DSM-IV diagnosis of Narcissistic Personality Disorder in a significant, efficient way, also using adult non clinical control subjects, the construct validity of the Italian version of the NPI compared to other measurements of narcissism in non clinical subjects still has to be demonstrated.

In sum, even considering these limits, this study has shown that the Italian version of the NPI is a unidimensional scale which is a reliable, valid measurement of the construct of narcissism, and also potentially useful in the clinical domain.

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Table 1.
Descriptive statistics and coefficients of internal consistency of total score on the Narcissistic Personality Inventory.

	Media	*DS*	*α di Cronbach*
Group 1 (*N* = 662)	14.25	7.24	.86
M (*n* = 498)	14.81[a]	7.37	.86
F (*n* = 164)	12.55[b]	6.55	.84
Group 2 (*N* = 385)	9.14	6.25	.81
M (*n* = 163)	10.71 [a]	6.65	.84
F (*n* = 222)	7.98 [b]	5.69	.77
Group 3 (*N* = 318)	11.78	6.74	.89
M (*n* = 105)	13.55 [a]	8.59	.91
F (*n* = 213)	10.91 [b]	6.98	.87
Group 4 (*N* = 366)	10.01	6.55	.81
M (*n* = 128)	10.36 [a]	6.63	.81
F (*n* = 238)	9.82 [a]	6.52	.82

Note. In each group, the average of male and female subjects marked with letters are significantly different (p <.05).

Figure 1.
Scree plot and average curves of the eigenvalue of random data obtained in Group 1 (non clinical adolescents, N = 662)

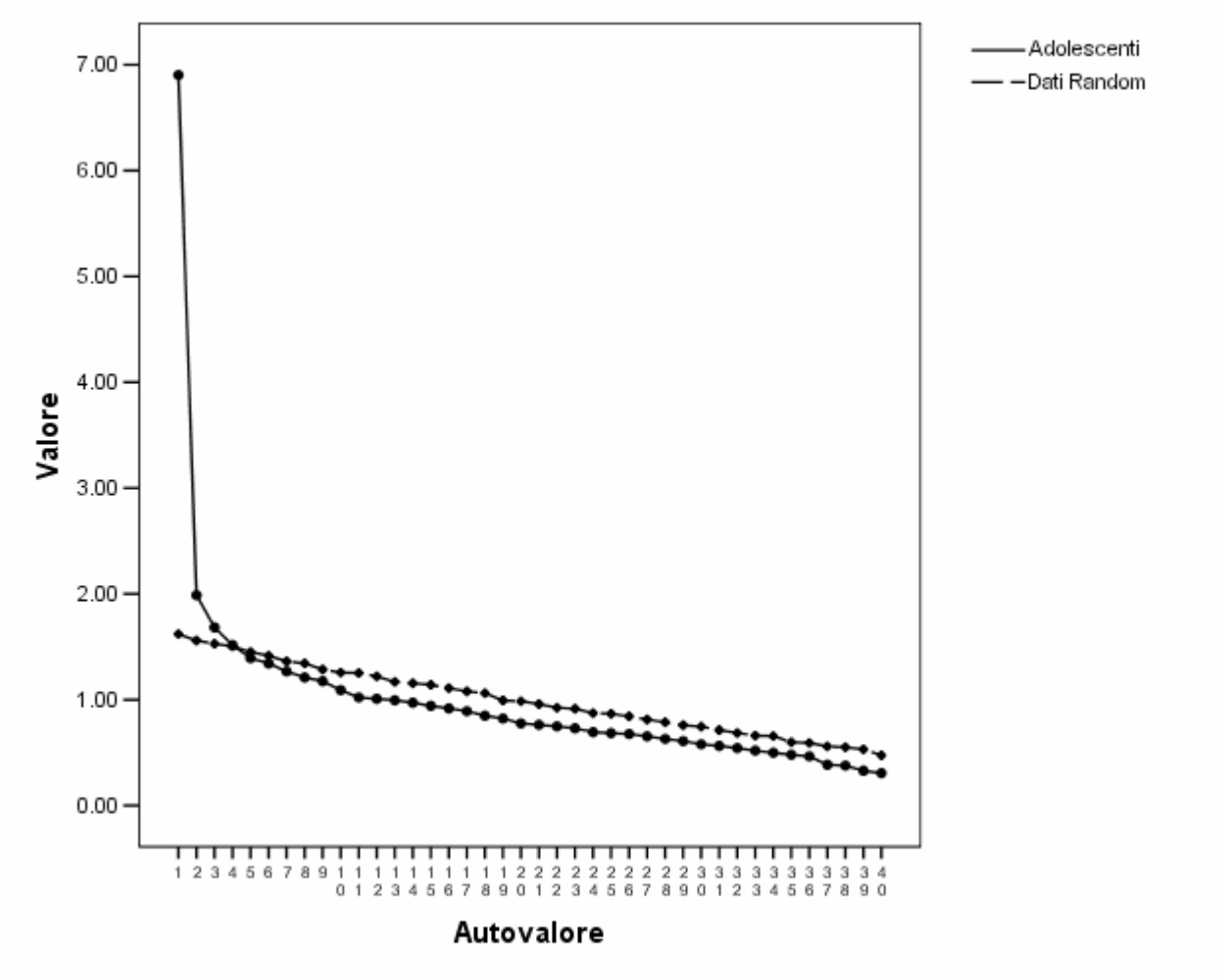

Figure 2.
Scree plot and average curves of the eigenvalues of random data obtained in Group 2 (non clinical adults, N = 385)

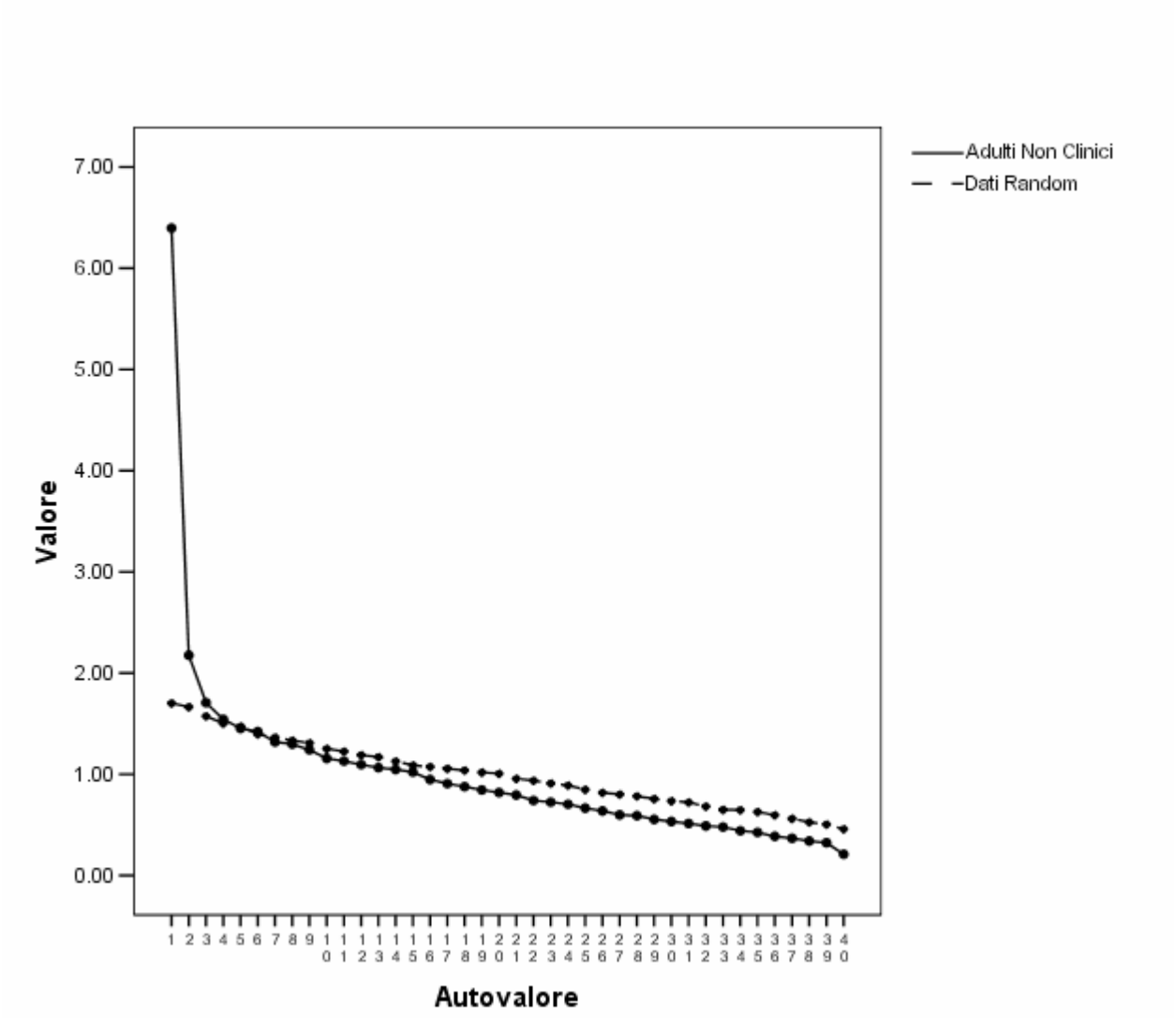

Figure 3.
Scree plot and average curves of the eigenvalues of random data obtained in Group 3 (non clinical adults, N = 318)

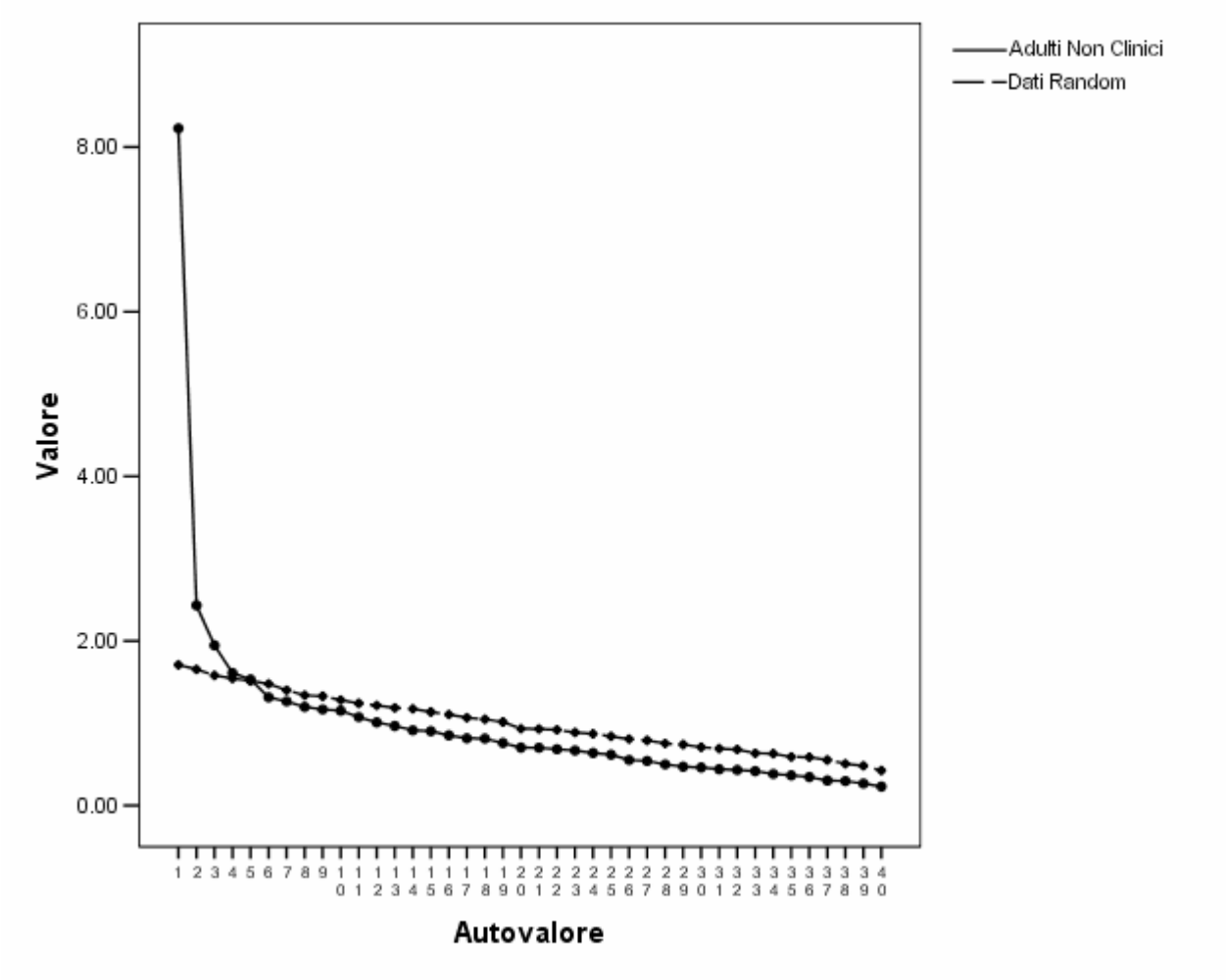

Figure 4.
Scree plot and average curves of the eigenvalues of random data obtained in Group 3 (clinical adults, N = 366)

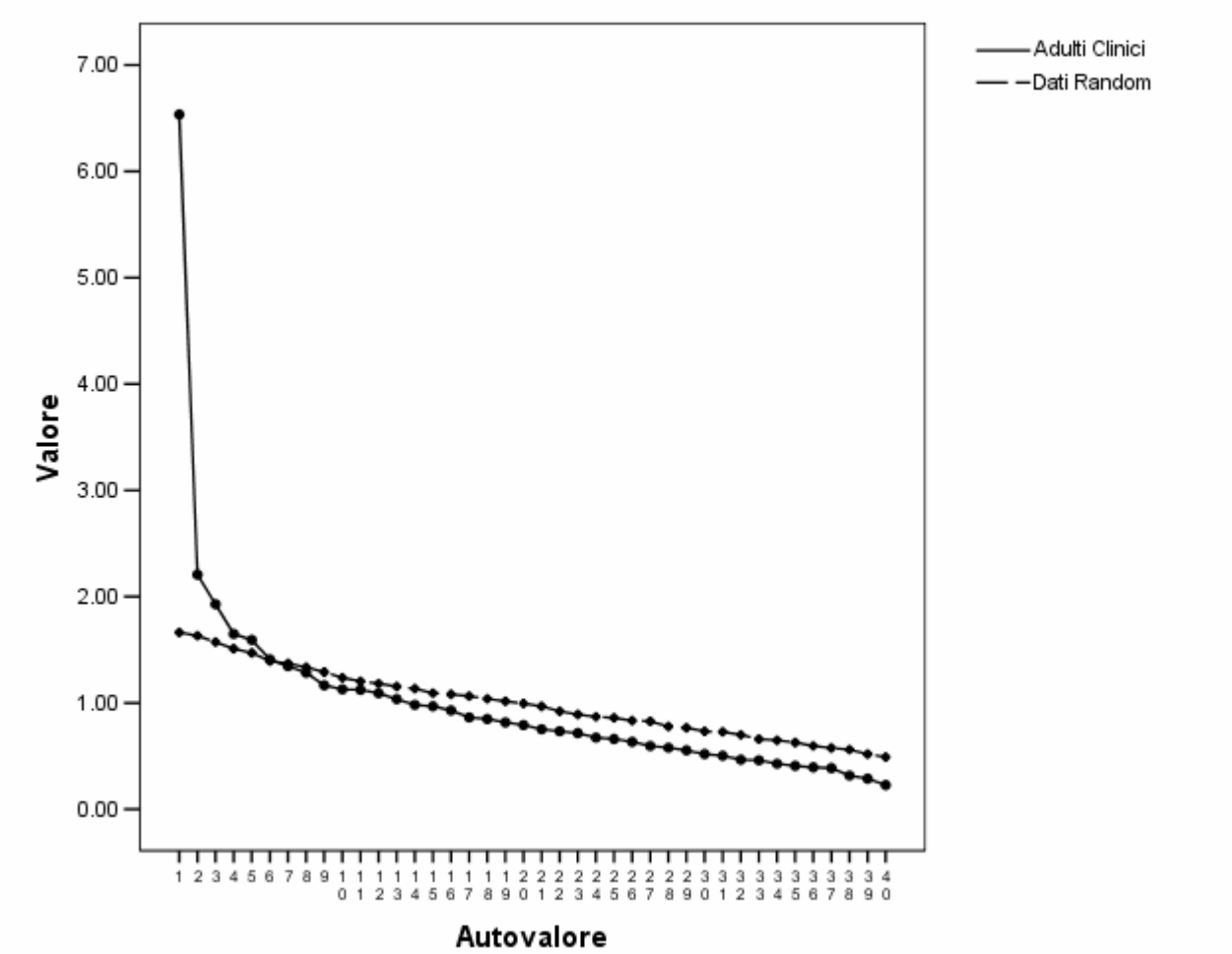

Table 2.
Results of the Minimum Average Partial statistics (MAP).

	Components							
	1	2	3	4	5	6	7	8
Group 1 (N = 662)	.0060	**.0059**	.0060	.0065	.0070	.0075	.0083	.0090
Group 2 (N = 385)	.0072	**.0067**	.0072	.0078	.0083	.0091	.0100	.0110
Group 3 (N = 318)	.0096	.0085	**.0080**	.0085	.0089	.0097	.0100	.0112
Group 4 (N = 366)	.0080	**.0077**	.0078	.0083	.0085	.0091	.0098	.0106

Note. Figures in bold show a minimum value reached by the MAP statistics in each sample.

Table 3.
Coefficients of comparability.

	Group 2		Group 3		Group 4	
	1	*2*	*1*	*2*	*1*	*2*
Group 1						
1-factor solution						
Factor 1	.95		.96		.95	
2-factor solution						
Factor 1	.88		.77		.88	
Factor 2		.90		.83		.77
Group 2						
1-factor solution						
Factor 1			.93		.97	
2-factor solution						
Factor 1			.76		.90	
Factor 2				.90		.73
Group 3						
1-factor solution						
Factor 1					.95	
2-factor solution						
Factor 1					.85	
Factor 2						.75

Note. The coefficients of comparability are coefficients of correlation between factorial scores; values over .90 indicate replicable factors.

Table 4.
Factorial saturations and communality of items in the Narcissistic Personality Inventory.

	Group 1 (*N*=662)		Group 2 (*N*=385)		Group 3 (*N*=318)		Group 4 (*N*=366)	
Item	CP 1	h^2	CP 1	h^2	CP 1	h^2	CP 1	h^2
1	.45	.20	.43	.18	.42	.18	.49	.24
2	**.05**	.00	.44	.19	.45	.21	.43	.19
3	.44	.19	.46	.22	.58	.33	.41	.17
4	.41	.17	.44	.20	.48	.23	.37	.13
5	.46	.21	.43	.18	.45	.20	.32	.10
6	.40	.16	**.22**	.05	.45	.20	.39	.16
7	.54	.30	.63	.40	.56	.31	.62	.39
8	.51	.26	.64	.41	.50	.25	.56	.31
9	.45	.21	.47	.22	.49	.24	.51	.26
10	.51	.26	.55	.31	.46	.21	.47	.22
11	.36	.13	**.23**	.05	.32	.10	**.23**	.05
12	.39	.15	.53	.28	.30	.09	.50	.25
13	.52	.27	.41	.17	.54	.29	.51	.26
14	**-.01**	.00	**.12**	.01	**.12**	.01	**.11**	.01
15	.53	.28	.42	.17	.43	.18	.39	.15
16	**.16**	.03	**.23**	.05	**.22**	.05	.35	.13

17	**.28**	.08	**.21**	.04	**.26**	.07	**.23**	.05
18	.32	.10	**.28**	.08	.44	.20	**.21**	.04
19	.52	.27	**.14**	.02	.33	.11	.30	.09
20	.48	.23	.50	.25	.54	.29	.66	.43
21	.21	.04	**.17**	.03	.34	.12	**.07**	.00
22	**.08**	.01	**.10**	.01	**.12**	.01	**-.01**	.00
23	.30	.09	**.16**	.02	.50	.25	**.26**	.07
24	**.29**	.08	**.27**	.08	.40	.16	**.23**	.05
25	**.24**	.06	.47	.22	**.29**	.09	.47	.22
26	.46	.21	.38	.15	.30	.09	.42	.18
27	.62	.38	.52	.27	.63	.39	.52	.28
28	.43	.18	**.24**	.06	.31	.10	.34	.11
29	.46	.22	.30	.09	.33	.11	**.29**	.09
30	.59	.35	.65	.42	.66	.44	.65	.42
31	**.28**	.08	**.18**	.03	.47	.22	.33	.11
32	.55	.30	.55	.30	.58	.34	.44	.19
33	.57	.33	.63	.40	.45	.20	.49	.24
34	**.21**	.04	**.02**	.00	.55	.30	**.17**	.03
35	.34	.12	**.17**	.03	.49	.24	.33	.11
36	.56	.31	.39	.16	.58	.34	.47	.22
37	.32	.10	**.27**	.07	.41	.17	.34	.11
38	.31	.09	.44	.19	.53	.29	.51	.26
39	.41	.17	.39	.15	.60	.36	.37	.14
40	.49	.24	.47	.22	.50	.25	**.25**	.06

Note. Figures in bold show factorial saturations <.30; CP = Principle component; h^2 = communality.

Table 5.
Correlations between total score on the Narcissistic Personality Inventory and dimensional assessments of the Personality Disorders listed in DSM-IV obtained from the clinical sample (Group 4, N = 366).

Personality Disorders	Narcissistic Personality Inventory
Avoidant	**-.28**
Dependent	**-.17**
Obsessive-Compulsive	-.06
Passive-Aggressive (Negativistic)[a]	**.20**
Depressive [a]	**-.21**
Paranoid	.00
Schizotypical	.01
Schizoid	.07
Histrionic	**.35**
Narcissistic	**.45**
Borderline	.13
Antisocial	.04

Note. a: category proposed for further studies. Figures in bold show significant correlations after Bonferroni correction of the nominal significance (or, p <.00417).

Table 6.
Means and standard deviations of the total scores on the Narcissistic Personality Inventory corrected for sex and age of adult clinical subjects with diagnoses of Narcissistic Personality Disorder (n = 50), with diagnoses of other Personality Disorders, without diagnoses of Narcissistic Personality Disorder (n = 192), and without any Personality Disorder (n = 124), in adult non-clinical subjects included in Group 2 (n = 385) and in adult non clinical subjects included in Group 3 (n = 318).

	Means	*DS*
Non clinical subjects (Group 3, *n* = 318)	12.05	6.93
Non clinical subjects (Group 2, *n* = 385)	9.29	6.58
No Personality Disorder (*n* = 124)	9.48	7.22
Other Personality Disorder (*n* = 192)	9.27	6.92
Narcissistic Personality Disorder (*n* = 50)	15.42	6.54

Figure 5.
Interaction between sex and diagnostic grouping: diagram of the average score profiles on the Narcissistic Personality Inventory.

Diagnostic grouping

- Non clinical adult subjects
  Group 3; N=318
- Non clinical adult subjects
  Group 2; N=385
- No personality disorder
- Other personality disorders but not NPD
- Narcissistic Personality Disorder