A new five factor model of psychopathology: Preliminary psychometric characteristics of the five-dimensional personality test (5DPT) ☆

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Abstract

The present study investigated the preliminary psychometric characteristics of an English translation of a new five factor model of psychopathology, the five-dimensional personality test (5DPT). Internal scale reliabilities were good (median $\alpha = .86$, $n = 683$) and test–retest reliability was excellent ($r = .92$, $n = 67$, one-week interval), replicating findings from a previous study of the Dutch version of the 5DPT. The 5DPT exhibited sufficient construct validity with a measure of Karen Horney's tridimensional theory (Horney-Coolidge Tridimensional Inventory) and a measure of personality disorders (Coolidge Axis II Inventory) to warrant further study.
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1. Introduction

The measurement of normal and abnormal aspects of personality functioning has a long and rich history. In a classic work, Eysenck proposed a three factor, theory-driven, model of personality, called PEN (referring to the dimensions of Psychoticism, Extraversion, Neuroticism; Eysenck, Eysenck, & Barrett, 1985). Van Kampen (1993, 1996, 1997, 2000) in a series of studies has offered an "improved" five factor model of psychopathology based on his objections to the nonspecific nature of Eysenck's psychoticism factor and to the lexical derivation of Costa and McCrae's 5-factor model of personality (Costa and McCrae, 1985). Van Kampen's operationalization of his own theory is called the five-dimensional personality test (5DPT), which is based on clinical studies and psychopathological literature. Van Kampen also wished to bridge the cleft between nomothetic and idiographic approaches to personality assessment, but also develop a personality inventory theoretically generated directly from clinical and abnormal literature. As such, Van Kampen's goal was to provide an assessment model that would give a comprehensive account of the core bases of abnormal behavior: psychoses, neuroses, and personality disorders, but have his model based on the appropriate clinical literature and not be driven by lexical derivations (e.g, like Costa and McCrae's 5-factor model of personality). A series of empirical studies have evaluated versions of van Kampen's model with preliminarily positive results (e.g., van Kampen, 1993, 1996, 1997, 2000). Van Kampen's five dimensions are Neuroticism, Extraversion, Insensitivity, Absorption, and Orderliness. The original 5DPT was written in Dutch and standardized on a sample of convenience of 1342 community-dwelling adults (M age = 41.5 years). All 5DPT reliabilities were sufficiently high, and the concurrent and construct validity of the five dimensions was supported by their patterns of correlations with relevant measures (see van Kampen, 1993, 1996, 1997, 2000 for further details).

The present study examined the psychometric characteristics of an English translation of the 5DPT in an American sample *vis à vis* a three factor model of personality based on the work of Karen Horney (1945/1972) (Coolidge, 1998; Coolidge, Moor, Yamazaki, Stewart, & Segal, 2001; Coolidge, Segal, Benight, & Danielian, 2004) and a measure of personality disorders (Coolidge, 2005). These latter two measures were chosen because of their expected relationships to the 5DPT, thus providing evidence of convergent validity.

2. Method

2.1. Participants and procedure

Six hundred and eighty three adults participated in the study (293 males, 390 females; M age = 32.7 years, SD = 16.7 years, age range 17–87 years; Ethnicity: 75% White; 7% Hispanic, 4% Black, 2% Asian, 1% American Indian, 11% other; Marital status: 55% single, 32% married, 13% other). This sample of convenience consisted primarily of friends, relatives, coworkers, and acquaintances of college students who received extra credit for procuring participants. Informed consent was obtained from all participants, and they were all debriefed, either verbally or written. Participants completed anonymously all assessment measures in a single session either at the university or at their homes. There were no other assessments of psychopathology in the present

study besides the measures described below. A small subsample ($N = 67$) was randomly chosen to be tested one week later in order to ascertain test–retest reliability.

2.2. Measures

2.2.1. 5DPT

The 5DPT is a 100-item self-report inventory with 20 items on each of five scales, with a yes-no response format. A brief picture of the characteristics of each of the five dimensions is as follows: Neuroticism = anxiety, apprehension, pessimism; Extraversion = friendly, lively, gregarious; Insensitivity = callousness, insensitivity to others' feelings, critical; Absorption = imaginative, aberrant, and loose thinking, unusual somatic and perceptual experiences; and Orderliness = perfectionism, strong need for order and regularity. The original Dutch standardization sample ($N = 1342$) had the following Cronbach's internal scale reliabilities: Neuroticism, $\alpha = .92$; Extraversion, $\alpha = .88$; Insensitivity, $\alpha = .82$; Absorption, $\alpha = .85$; Orderliness, $\alpha = .83$ (median $\alpha = .85$). The median test–retest reliability for the 5DPT scales was $r = .91$ over a one-month interval (low, Insensitivity, $r = .89$; high, Neuroticism, $r = .92$) suggesting strong stability over a relatively short interval, consistent with conceptualizations of personality as a relatively stable construct. The English version of the 5DPT was translated and provided by van Kampen (see author note).

2.2.2. Horney-Coolidge Tridimensional Inventory (HCTI)

The HCTI (Coolidge, 1998; Coolidge et al., 2001, 2004) is a 57-item self-report inventory that measures Horney's three personality dimensions (Horney, 1945/1972), Compliance, Aggression, and Detachment. It includes 19 items on each of the three scales with respondents answering on a 4-point scale ranging from 1 = *hardly ever* to 4 = *nearly always*. The HCTI was normed on 630 normal adults, 315 males, 315 females, ages 16–93, mean age = 30.0 years. The internal scale reliabilities (Cronbach's alpha) are as follows: Compliance scale, .78; Aggression scale, .83; Detachment scale, .82. The test–retest (one-week interval, $N = 67$) reliabilities are as follows: Compliance, .92; Aggression, .92; Detachment scale, .91.

Coolidge et al. (2001) established the three facets of each primary dimension through principal components analysis with varimax rotation. For the Compliance scale, the three facets are Altruism (items related to an altruistic nature, desire to help others, sympathy, and unselfishness), Need for relationships (a strong need to be in a relationship and the desire for others), and self-abasement (the subjugation of one's own needs to another). The internal reliabilities (from the HCTI normative sample) are .70, .71, and .65, respectively. For the Aggression scale, the three facets are Malevolence (a malevolent view of others, their motivations, and the world), power (desire to be in command and outsmarting others), and strength (values related to bravery, uninhibited behavior, and toughness). The internal reliabilities are .78, .75, and .64, respectively. For the Detachment scale, the three facets are Need for Aloneness (preference for being alone and feeling better when alone), Avoidance (avoidance and resistance of personal interactions), and Self-Sufficiency (enjoyment of living independent of family and friends). The internal reliabilities are .78, .56, and .62, respectively (Coolidge, 1998). Adequate construct validity for the three main dimensions has been established when compared to individual personality disorders (Coolidge et al., 2001) whereas the facets of the HCTI have been validated compared to personality

disorder clusters (Coolidge et al., 2004) from the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV*; American Psychiatric Association, 2000).

2.2.3. Coolidge Axis II Inventory

Personality disorders were measured by the Coolidge Axis II Inventory (CATI; Coolidge, 2005; Coolidge and Merwin, 1992). The CATI is a 225-item, self-report inventory which assesses 12 personality disorders according to the criteria of the *DSM-IV*. It also assesses two personality disorders (sadistic and self-defeating) from *DSM-III-R* (1987). The CATI uses a 4-point Likert-type scale ranging from *strongly false* (1) to *strongly true* (4). It was normed on 937 adults (*M* age = 29.2, 18–92 years; 359 males, 578 females). The 14 personality disorder scales have a mean test–retest reliability of .90 (one-week). The median internal scale consistency reliabilities (Cronbach's alpha) is .76 (range: Dependent scale = .87; Obsessive-compulsive scale = .68). The CATI attained a 50% concordance rate with clinicians' diagnoses, and it had a median concurrent validity correlation with the Millon Clinical Multiaxial Inventory-II (Millon, 1985) of .58 for the personality disorder scales. The CATI has solid evidence of reliability and validity from numerous studies (Coolidge, 2005).

3. Results

3.1. Age and gender effects

The potential effects of age and gender upon the 5DPT dimensions were assessed through correlations. For age, the correlations were all weak and ranged from $r = .14$ (Orderliness) to $r = -.17$ (Insensitivity). For gender, the correlations were also weak and ranged from $r = .20$ (Neuroticism) to $r = -.17$ (Insensitivity).

3.2. Internal scale reliabilities

Cronbach's scale reliabilities for the 5DPT on the present sample were: Neuroticism, $\alpha = .89$; Extraversion, $\alpha = .86$; Insensitivity, $\alpha = .77$; Absorption, $\alpha = .87$; Orderliness, $\alpha = .85$ (median $\alpha = .86$). These reliabilities are remarkably similar to those obtained in the original Dutch sample (median $\alpha = .85$). Similar to the original sample, the highest reliability occurred on the Neuroticism scale whereas the lowest occurred on the Insensitivity scale. Cronbach's corrected-item total analyses revealed that a single item (#4: *Are you a rather ambitious person?*) appeared to lower the reliability of the Insensitivity scale substantially in the present sample. Apparently, the word in Dutch for ambition (*eerzuchtig*) has a more negative connotation than the word *ambitious* has in English. Preliminarily, this appears to be the sole item in need of revision in the English version of the 5DPT in order to improve the internal reliability of the Insensitivity scale.

3.3. Test–retest reliability

The median 5DPT test–retest reliability over a one-week interval was $r = .92$ ($n = 67$), which is identical to the Dutch standardization sample over a one-month interval.

3.4. Principal components analysis (PCA)

A PCA (SPSS 15.0) with varimax rotation was performed upon the 100 items of the 5DPT. A 5-factor solution accounted for 30.7% of the total variance. The first component was identified as Neuroticism with an eigenvalue = 7.45 and accounted for 7.4% of the total variance. All 20 of the 5DPT Neuroticism items had their highest component loading on this component. The second component was identified as Extraversion with an eigenvalue = 6.69 and accounted for 6.7% of the total variance. All 20 of the 5DPT Extraversion items had their highest component loading on this component. The third component was identified as Absorption with an eigenvalue = 6.40 and accounted for 6.4% of the total variance. All 20 of the 5DPT Absorption items had their highest component loading on this component. The fourth component was identified as Orderliness with an eigenvalue = 5.55 and accounted for 5.6% of the total variance. Nineteen of the 20 5DPT Orderliness items had their highest component loading on this component. The 5DPT Orderliness Item #5: *Do you often enjoy some chaos around you?* loaded highest (.26) on the Extraversion dimension but its second highest loading (−.21) was on the Orderliness dimension. The fifth component was identified as Insensitivity with an eigenvalue = 4.58 and accounted for 4.6% of the total variance. Nineteen of the 20 5DPT Insensitivity items had their highest component loading on this component. The 5DPT Insensitivity Item #4: *Are you a rather ambitious person?* loaded highest (.22) on the Extraversion dimension but its second highest loading (.13) was on the Insensitivity dimension. In summary, the PCA results strongly confirmed the hypothesized factor structure of the 5DPT.

3.5. Concurrent validity with the HCTI

Pearson correlations were performed between the 5DPT scales and the three dimensions of the HCTI and the nine facets of the HCTI (see Table 1). There were nine significant correlations between the 5DPT and the three HCTI dimensions out of a possible 15 relationships.

Table 1
Pearson correlations between the 5DPT and the three main HCTI dimensions and its nine facets

HCTI	5DPT				
	Extraversion	Neuroticism	Absorption	Insensitivity	Orderliness
Compliance	.20[b]	.27[b]	.12[b]	−.19[b]	−.01
Altruism	.23[b]	−.04	.18[b]	**−.38**[b]	−.01
Need for Relationship	**.35**[b]	.14[b]	.08[a]	−.10[a]	−.03
Self-abasement	−.04	**.57**[b]	.10[a]	.03	−.02
Aggression	.03	.13[b]	−.04	**.39**[b]	.00
Malevolence	−.11[b]	.22[b]	−.07	**.31**[b]	−.01
Power	.16[b]	.06	.01	**.44**[b]	−.02
Strength	.11[b]	−.02	−.02	.22[b]	.03
Detachment	**−.42**[b]	.02	−.05	.18[b]	.09[a]
Aloneness	**−.55**[b]	−.00	−.05	.21[b]	.11[b]
Avoidance	**−.30**[b]	.14[b]	−.03	.15[b]	.02
Self-sufficiency	−.18[b]	−.08[a]	−.00	.12[b]	.07

Bold figures indicate correlations ⩽−.30 or ⩾.30.
[a] Significant at the .05 level (two-tailed).
[b] Significant at the .01 level.

The Insensitivity scale of the 5DPT correlated significantly with all three HCTI dimensions whereas both the Extraversion and Neuroticism scales of the 5DPT correlated significantly with two of the HCTI dimensions. The Absorption scale and the Orderliness scale correlated significantly with only one HCTI dimension. From the perspective of the HCTI, four of the 5DPT scales had significant correlations with the Compliance scale, three of the 5DPT scales had significant relationships with the Detachment scale, and two of the 5DPT scales had significant relationships with the Aggression scale.

An analysis of the correlations of the 5DPT scales with the nine facets revealed 25 significant correlations. Both the Extraversion and Insensitivity scales of the 5DPT correlated significantly with eight of the nine HCTI facets. Neuroticism correlated significantly with five of the nine facets, Absorption correlated significantly with three of the nine facets, and Orderliness correlated significantly with only one of the facets.

3.6. Concurrent validity with the 14 CATI personality disorder scales

Pearson correlations were also performed between the 5DPT scales and the 14 personality disorders of the CATI (see Table 2). There were 59 significant correlations (of a possible 70). The Neuroticism and Insensitivity scales of the 5DPT had significant correlations (all positive in direction) with all 14 CATI personality disorder scales, showing that higher scores on the Neuroticism and Insensitivity scales were associated with higher degrees of personality disorder pathology. The Extraversion scale of the 5DPT correlated significantly with 12 of the 14 personality disorder scales, with nine of these relationships being in the negative direction suggesting that higher scores on the Extraversion scale were associated with lower degrees of personality disorder pathology. Similarly, the Orderliness scale of the 5DPT correlated significantly with 10 of the 14 personality

Table 2
Pearson correlations between 5DPT and the 14 CATI personality disorder scales

CATI Personality disorder scales	Extraversion	Neuroticism	Absorption	Insensitivity	Orderliness
Antisocial	.09[a]	.17[b]	.06	**.51**[b]	−.26[b]
Avoidant	**−.58**[b]	**.65**[b]	.06	.17[b]	.09[a]
Borderline	.02	**.60**[b]	.26[b]	**.33**[b]	−.14[b]
Dependent	−.10[b]	**.69**[b]	.14[b]	.16[b]	−.06
Depressive	−.27[b]	**.71**[b]	.13[b]	**.30**[b]	.03
Histrionic	**.49**[b]	.30[b]	.23[b]	.19[b]	−.20[b]
Narcissistic	.09[a]	**.46**[b]	.13[b]	**.48**[b]	−.10[b]
Obsessive-compulsive	**−.44**[b]	**.32**[b]	−.09[a]	.27[b]	**.35**[b]
Paranoid	−.20[b]	**.44**[b]	−.01	**.47**[b]	.01
Passive-aggressive	−.11[b]	**.57**[b]	.10[b]	**.37**[b]	−.25[b]
Sadistic	.04	.13[b]	−.01	**.54**[b]	−.14[b]
Self-defeating	−.23[b]	**.52**[b]	.16[b]	**.37**[b]	−.10[a]
Schizotypal	**−.37**[b]	**.36**[b]	.23[b]	**.36**[b]	−.19[b]
Schizoid	**−.60**[b]	.11[b]	−.08	.22[b]	.07

Bold figures indicate correlations ⩽−.30 or ⩾.30.
[a] Significant at the .05 level (two-tailed).
[b] Significant at the .01 level.

disorder scales, with eight of these relationships being in the negative direction. Finally, the Absorption scale of the 5DPT correlated significantly with nine of the 14 personality disorder scales (with eight of the relationships in the positive direction).

4. Discussion

The results of the scale reliabilities, both internal and test–retest, provide solid preliminary evidence of the reliability of the English version of the 5DPT. The principal components analysis also provides strong support for the five hypothesized dimensions of the 5DPT, and 98 of its 100 items loaded on their appropriate dimension. With regard to the HCTI validity analyses, it appeared that the 5DPT had greater interpretability with the nine facets of the HCTI rather than the three main dimensions of the HCTI. At the facet level for the Compliance dimension, there were three significant correlations of the 5DPT with Altruism, and the strongest of these was the negative correlation with Insensitivity, as might be expected. There were four significant correlations for the 5DPT with the Need for relationships facet, with the strongest correlation with Extraversion. Finally, the Self-Abasement facet was strongly correlated ($r = .57$) with Neuroticism, also as expected.

With regard to the facets of Aggression, there were seven significant correlations with the 5DPT. As might be expected Insensitivity was significantly and positively correlated with all three facets of Aggression, suggesting that a core underlying disregard for the feelings of others may be a key feature of interpersonal aggressiveness. For the facets of Detachment, there were nine significant correlations with the 5DPT. Again, as might be expected, Extraversion was strongly and negatively correlated ($r = -.55$) with the Aloneness facet and Avoidance facet ($r = -.30$).

From the perspective of the 14 personality disorder scales, six had significant correlations with all 5 scales of the 5DPT, five had significant correlations with four 5DPT scales, and three had significant correlations with three 5DPT scales. Approximately, 37% of the 70 possible correlations of the 14 personality disorder scales and the 5DPT were $\geqslant .30$ or less than $\leqslant -.30$, indicating not only a significant relationship but a substantial portion of variance accounted for between the two measures. A cursory examination of Table 2 also reveals that the strongest 5DPT scales, in terms of explaining personality disorders, were Neuroticism and Insensitivity, which fits well within the literature of the nature of personality disorders (e.g., Coolidge et al., 2001).

Surprisingly, the Absorption dimension of the 5DPT had the weakest explanatory power across the HCTI, its facets, and the personality disorder scales. Absorption did have a significant correlation with the Schizotypal scale, consistent with expectations, but the correlation was relatively weak ($r = .23$). The modest correlation between the Absorption scale and the Borderline scale is also consistent with conceptualizations of borderline pathology as including some unusual thinking processes, especially under times of duress. Orderliness also had little explanatory power for the HCTI and its facets, although regarding personality disorders it did have one moderately strong positive correlation with the Obsessive-compulsive scale, as might be expected. It preliminarily appears that the Extraversion and Orderliness scales of the 5DPT represent the most adaptive of the 5DPT dimensions because they were largely related to personality disorder pathology in a negative direction, that is, higher scores on the Extraversion and Orderliness scales were associated with lower degrees of dysfunctional personality traits.

When the individual scale reliability analyses were conducted on the Insensitivity scale, Cronbach's corrected-item total analyses revealed that a single item (Item 4: *Are you a rather ambitious person?*) lowered the reliability of the Insensitivity scale substantially. As noted earlier, apparently, the word in Dutch for ambition (*eerzuchtig*) has a more negative connotation than the word *ambitious* has in English. A subsequent pilot study revealed that the item reworded to *Do you think you sometimes have to step on people to get what you really want?* was a better substitute. It is also important to note, throughout all of the analyses, that many of the significant correlations were of moderate strength or weaker. Thus, although the correlations were in their expected or hypothesized directions, they were not as strong as expected, and thus, undue support for the English version of the 5DPT must be tempered.

The present study had a number of limitations including using a sample of convenience, a relatively homogeneous sample, and the self-report nature of all the tests. The personality disorder scales used in the present study also had some item overlap, thus, caution should be used when interpreting this data. In summary, however, the English version of the 5DPT appears to have sufficient internal reliability and construct validity with Karen Horney's three factor model of personality and with personality disorders based on the *DSM-IV* classification system to warrant further investigation. Because the 5DPT was derived theoretically and from relevant literature pertaining to psychopathology, it may potentially have greater application to abnormal domains of personality than the popular 5-factor model of Costa and McCrae, which was derived lexically. Further studies of the 5DPT should be conducted with clinical populations, particularly those individuals with thinking disturbances to explore further the nature of the Absorption dimension.

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