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The relationship between dimensional personality models and quality of life in psychiatric outpatients

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Abstract

This study examines the relationship between personality and quality of life (QOL) in psychiatric outpatients ($N=495$). Personality was conceptualized using two-dimensional models, respectively, the five-factor model (FFM) and Cloninger's seven-factor model. The WHOQOL-100 was used for assessing QOL. Neuroticism and Harm Avoidance had negative correlations with QOL, whereas Extraversion, Conscientiousness and Self-Directedness correlated positively with QOL. A considerable part of the QOL variance was explained by personality; Cloninger's character factors were superior to the FFM domains. Although not fully comparable, in general our findings are in accordance with earlier studies. Therefore, paying attention to personality and temperament is recommended in future diagnostic procedures, treatment policies, and program evaluations.
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Keywords: Personality; Quality of life; Psychiatric outpatients

1. Introduction

In psychiatric research, quality of life (QOL) has become an important outcome measure for medical interventions (Gladis et al., 1999; Power et al., 1999). QOL is the result of a complex interplay between internal and external factors. Amongst the internal factors, personality seems to play a substantial role with respect to QOL or related concepts, such as life satisfaction and well-being (Larsen and Buss, 2005). Narud et al. (2005)

examined QOL in a sample of psychiatric outpatients with personality disorders of whom 75% had at least one co-morbid Axis-I disorder (according to DSM-IV classification). They found that patients with personality disorders have globally poor QOL compared to age- and gender-adjusted norm data.

For describing personality, there exist two main types of frameworks: categorical and dimensional models (Cloninger and Svrakic, 2000). The first type of models, featuring the assignment to categories, facilitates treatment decisions in practice and simplifies professional communication. Dimensional models define graded and continuous behaviour dimensions and specify individual differences as quantitative variations along these dimensions. This framework features

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multiple personality traits that are more or less prominent and adaptive rather than simply present or absent. Consequently, dimensional models conserve more information about individual patients than categorical models (Cloninger and Svrakic, 2000).

A large number of dimensional models for describing personality has been proposed, such as the five-factor model (FFM) (McCrae and Costa, 1999) and Cloninger's seven-factor model (Cloninger and Svrakic, 1994). The FFM of personality is a purportedly comprehensive taxonomy that summarizes commonalities and differences in both the natural language trait adjectives that are used to describe personality, and the wide variety of personality tests developed by psychologists. The FFM dimensions, Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness, are assumed to underlie both normal and abnormal personality characteristics (O'Connor and Dyce, 1998). Cloninger and Svrakic (1994; see also Cloninger et al., 1994, 1998) have proposed an empirically derived seven-factor model, consisting of four temperament (Novelty Seeking, Harm Avoidance, Reward Dependence, and Persistence) and three character (Self-Directedness, Cooperativeness, and Self-Transcendence) dimensions.

Concerning the relationship between the FFM personality dimensions and QOL-related concepts, several studies have been conducted. Some dimensional personality traits have proven to be related to happiness and well-being. In studies by Costa and McCrae (1980) and McCrae and Costa (1991), it was found that extraversion and neuroticism predicted the amounts of positive and negative emotions in people's lives and hence contributed substantially to subjective well-being. Other correlational studies have replicated these findings (e.g., Rusting and Larsen, 1998).

In the few existing studies (Eklund et al., 2004; Fassino et al., 2004; Hansson et al., 2001; Ritsner et al., 2003) in which the relationship between personality features based on Cloninger's seven-factor model and QOL or QOL-related concepts has been investigated, Novelty Seeking, Reward Dependence, Self-Directedness, and Cooperativeness were positively associated with QOL. Negative correlations were obtained between Harm Avoidance and QOL.

So far, research on the relationship between dimensional personality models and QOL mainly has focused on the FFM and to a lesser extent on Cloninger's model. Data on the relationship between the FFM and QOL-related concepts predominantly emerged from research using samples of healthy persons (students). In contrast, studies involving the TCI focused predominantly on participants with specific psychiatric disorders, such as schizophrenia (e.g., Eklund et al., 2004). This makes the interpretation of these data for clinical use in general populations of psychiatric patients rather difficult. Moreover, QOL has been assessed mainly in terms of happiness and well-being, and not in a comprehensive (Breslin, 1991; Jenkins et al., 1990), culturally sensitive (Bullinger et al., 1993; Kuyken et al., 1994; Sartorius and Kuyken, 1994), and subjective way (Laman and Lankhorst, 1994), paying attention to the relative importance of the various facets of QOL (Hays et al., 1993).

The aim of the present study was to investigate the relationships between both the FFM and Cloninger's personality model, and QOL in psychiatric outpatients. It was expected that concerning the FFM, Extraversion was significantly correlated with the QOL dimension Psychological Health, whereas Neuroticism was expected to correlate negatively with this QOL dimension. Since research concerning the relationships between the other dimensions of the FFM and QOL is scarce, these relationships were investigated in an exploratory manner. Concerning Cloninger's model and QOL, a positive correlation was expected between Self-Directedness and QOL, whereas Harm Avoidance was predicted to correlate negatively with QOL. The remaining correlations between Cloninger's model and QOL were, a priori, unclear because the available data on this subject were scarce or the described correlations were rather weak. It was expected (Ritsner et al., 2003) that personality dimensions would explain a sizeable amount of QOL variance. Which personality dimensions were most prominent in explaining QOL variance was examined in an explorative way.

2. Method

2.1. Participants

The study was conducted at GGZ-Midden Brabant, the community mental health center in Tilburg, the Netherlands, after approval by the local ethics committee. Participants were outpatients of Dutch ethnic origin aging 21–50 years, referred to the center between March 1, 2001 and March 1, 2002. Participants could enter the study in two ways: (i) through a random selection procedure in which one third of all referrals was selected directly for psychiatric evaluation or (ii) through internal referral by colleagues. Internal referrals were considered in order to enlarge the sample size. Written informed consent was obtained. Exclusion criteria were inability to undergo the investigation protocol due to severe mental illness, illiteracy, dyslexia, mental retardation,

problems with sight or hearing, and cerebral damage. From the persons referred to the outpatient clinic of the centre ($N = 3892$; 40.4% male), 1559 were potential participants (42.2% male). From these 1559 patients, 533 (male: 46.2%) were selected to enter the study (438 by a random selection procedure and 95 by internal referral). From these 533 patients, 26 were unable to undergo the research protocol, due to severe substance related disorder ($N = 2$), psychotic disorder ($N = 8$), major depressive episode ($N = 9$), dyslexia ($N = 2$), mental retardation ($N = 3$), and visual handicap ($N = 2$). In addition, 12 patients refused to participate (non-participants) of whom eight were diagnosed with antisocial personality disorder and four with substance related disorder. Thus, from the total group of 533 patients, 495 fully completed the test booklet (92.9%; 44.2% male, mean age 34.6 years, S.D. = 8.6, range 21–50 years; 55.8% female, mean age 32.6 years, SD = 8.5, range 21–50 years).

2.2. Measures

In order to provide insight into the composition of the participants regarding their psychopathology, they underwent two semi-structured interviews for obtaining Axis-I and Axis-II diagnoses, according to DSM-IV.

DSM-IV, Axis-I diagnosis. For the Axis-I diagnosis, the Schedules for the Clinical Assessment in Neuropsychiatry (SCAN 2.1), were used (Giel and Nienhuis, 1996; Wing et al., 1990). The SCAN is a comprehensive semi-structured diagnostic interview, developed under auspices of the WHO, aimed at the assessment and classification of psychiatric disorders in adults (Giel and Nienhuis, 1996; Wing et al., 1990, 1998). The SCAN has sufficient psychometric properties (Rijnders et al., 2000).

DSM-IV, Axis-II diagnosis. For the Axis-II diagnosis, the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II) (Spitzer et al., 1990), 2.0 (First et al., 1997), Dutch version (Weertman et al., 2000), was used. The SCID-II, 2.0 is a semi-structured interview covering the personality disorders included in DSM-IV Axis-II. The SCID-II has shown to have good interrater reliability and internal consistency (Maffei et al., 1997).

Quality of life was measured using the subscale for Overall QOL and General Health and the domain scores of the WHOQOL-100 (WHOQOL Group, 1994; Dutch version, De Vries and Van Heck, 1995). This 100-item instrument is a generic multidimensional measure for subjective assessment of QOL designed for use in a wide spectrum of psychological and physical disorders. We used the same four-factor structure of the WHOQOL-100, which was described in earlier studies (WHOQOL Group, 1998; Power et al., 1999; Masthoff et al., 2005): Physical Health, Psychological Health, Social Relationships, and Environment. The response scales were 5-point Likert type scales. High scores indicate good QOL. The WHOQOL-100 has good to excellent psychometric properties in patients with somatic diseases (Skevington et al., 2001) as well as in patients with psychiatric disorders (Skevington and Wright, 2001; Masthoff et al., 2005).

Personality dimensions were assessed with the NEO-PI-R (Costa and McCrae, 1992; Dutch version, Hoekstra et al., 2002) and the Temperament and Character Inventory (TCI; Cloninger et al., 1993, 1994; Dutch version by Duijsens and Spinhoven, 2000).

The goal of the NEO-PI-R is to assess the five major domains of the five-factor model of personality and the 30 facets of these five broad domains. The NEO-PI-R is a 240-item self-administered questionaire that yields continuous scores for each domain and for the six facets in each domain. Each facet is assessed by eight items with a 5-point scale (1 = strongly disagree to 5 = strongly agree). The psychometric properties of the Dutch version of the NEO-PI-R are generally qualified as good (Hoekstra et al., 2002).

The TCI assesses the four temperament and three character dimensions. Each of these higher-order temperament and character dimensions is composed of component facets (or subscales) to evaluate response patterns associated with specific stimuli. The TCI is a 240-item self-administered questionnaire with true/false answers. The Dutch TCI has a factor structure and internal consistencies similar to the original version. The reliability and validity are regarded as satisfactory and it is suggested that the TCI can be applied in psychiatric as well as normal populations (Duijsens et al., 2000).

Statistical procedures. The relationships between age and personality, and between QOL and personality were examined with Pearson correlations. Due to the large sample size, a *P*-value below 0.01 was considered significant. To determine the amount of variance of the four domain scores of the WHOQOL-100 (dependent variables) explained by personality (NEO and TCI), multiple regression analyses (stepwise) were performed. In these analyses, in addition to the personality factors, age and sex were entered as independent variables in order to control for these demographics. In order to investigate the common variance between the domains of the NEO-PI-R, on the one hand, and the domains of the TCI, on the other hand, Pearson correlations ($P < 0.01$) were used. The data were processed using

Table 1
Axis-I and Axis-II diagnosis according to DSM-IV classification ($N=495$)

Axis-I diagnosis	N[a]	Axis-II diagnosis	N[a]
Pervasive developmental disorder	5	Paranoid personality disorder	5
ADDB disorder[b]	6	Schizoid personality disorder	11
Substance related disorder	38	Schizotypal personality disorder	3
Psychotic disorder	7	Antisocial personality disorder	27
Mood disorder	127	Borderline personality disorder	71
Anxiety disorder	82	Histrionic personality disorder	8
Somatoform disorder	10	Narcissistic personality disorder	22
Sexual disorder /gender identity disorder	10	Avoidant personality disorder	49
Eating disorder	17	Dependent personality disorder	26
Impulse-control disorder	6	Obsessive-compulsive personality disorder	24
Adjustment disorder	44	Personality disorder not otherwise specified	70
Other disorder	12	Postponed diagnosis	15
Other conditions[c]	78	No diagnosis[d]	227
No diagnosis[d]	113		

[a] The figures represent amounts of recorded diagnoses. Due to the phenomenon of comorbidity (i.e., the classification of more than one diagnosis on Axis-I or Axis-II) the totals of recorded diagnoses per Axis exceed the total number of participants.
[b] ADDB disorder, Attention-Deficit and Disruptive Behaviour disorder.
[c] Other Conditions: these conditions are classified in DSM-IV as conditions that may be a focus of clinical attention (so-called V-codes).
[d] The majority of participants with no diagnosis on Axis-I had a diagnosis on Axis-II and vice versa. A total of 42 participants did not meet criteria for a diagnosis according to DSM-IV on either Axis-I and Axis-II.

the Statistical Package for the Social Sciences (SPSS, version 13.0 for Windows).

3. Results

3.1. Composition of the sample of outpatients: diagnoses according to DSM-IV classification

For the 495 participants, Axis-I and Axis-II diagnoses according to DSM-IV were determined. The results are presented in Table 1.

3.2. Correlations between age and the NEO-PI-R and TCI dimensions

Age was significantly correlated to the NEO domains Extraversion ($R=-0.17$) and Openness ($R=-0.17$), and to the TCI domains Novelty Seeking ($R=-0.27$) and Cooperativeness ($R=0.13$).

3.3. Correlations between the NEO-PI-R and the WHOQOL-100

The relationships between the NEO-PI-R and the WHOQOL-100 are shown in Table 2. Substantial correlations were found between Neuroticism and all four WHOQOL-100 domains (average correlation = -0.45). This was also the case for Extraversion (average correlation = 0.35) and Conscientiousness (average correlation = 0.34). Openness had no and Agreeableness only one significant, but rather weak, correlation with QOL. Both Neuroticism and Extraversion had the strongest correlation with Psychological Health ($R= -0.62$ and $R=0.46$, respectively).

3.4. Correlations between the TCI and the WHOQOL-100

At the domain level significant correlations were found between all WHOQOL-100 domains and the TCI domains

Table 2
Correlations between the domains of the WHOQOL-100 and the NEO-PI-R

Domains of the NEO-PI-R	Overall QOL and general health	Domains of the WHOQOL-100			
		Physical Health	Psychological Health	Social Relationships	Environment
Neuroticism	−0.43*	−0.43*	−0.62*	−0.34*	−0.40*
Extraversion	0.33*	0.31*	0.46*	0.38*	0.26*
Openness	−0.08 (n.s.)	−0.10 (n.s.)	0.08 (n.s.)	0.03 (n.s.)	−0.04 (n.s.)
Agreeableness	0.08 (n.s.)	0.04 (n.s.)	0.05 (n.s.)	0.10 (n.s.)	0.12*
Conscientiousness	0.31*	0.32*	0.40*	0.24*	0.39*

Note: QOL = Quality of Life; * = $P<0.001$; ** = $P<0.01$; n.s. = not significant.

Table 3
Correlations between the domains of the WHOQOL-100 and the TCI

Domains of the TCI	Overall QOL and general health	Domains of the WHOQOL-100			
		Physical Health	Psychological Health	Social Relationships	Environment
Novelty Seeking	−0.02 (n.s.)	−0.05 (n.s.)	<0.01 (n.s.)	0.07 (n.s.)	−0.13**
Harm Avoidance	−0.36*	−0.44*	−0.53*	−0.30*	−0.30*
Reward Dependence	0.07 (n.s.)	0.02 (n.s.)	0.12 (n.s.)	0.17*	0.04 (n.s.)
Persistence	−0.03 (n.s.)	0.03 (n.s.)	0.04 (n.s.)	−0.01 (n.s.)	−0.05 (n.s.)
Self-Directedness	0.49*	0.42*	0.64*	0.39*	0.48*
Cooperativeness	0.17*	0.14**	0.23*	0.21*	0.19*
Self-Transcendence	0.08 (n.s.)	−0.18*	0.04 (n.s.)	−0.09 (n.s.)	−0.22*

Note: QOL= Quality of Life; * = $P<0.001$; ** = $P<0.01$; n.s.= not significant.

Harm Avoidance (average correlation=−0.39) and Self-Directedness (average correlation=0.48). Although this was also the case for the TCI domain Cooperativeness, the correlations were weak (average correlation=0.19). The other TCI domains had only a few weak correlations with the WHOQOL-100 domains. The strongest negative correlation was found between Harm Avoidance and Psychological Health ($R=−0.53$). The strongest positive correlation was found between Self-Directedness and Psychological Health ($R=0.64$) (see Table 3).

3.5. Multiple regression analyses

The results of the multiple regression analyses are shown in Table 4.

The NEO-PI-R and TCI scales explained substantial portions of QOL variance, ranging from 26% (Social Relationships) to 50% (Psychological Health). The TCI domains (especially Self-Directedness and Harm Avoidance), compared to the NEO-PI-R domains, explained higher amounts of QOL variance. TCI-Self-Directedness explained the highest amount of variance in all QOL domains, with an exception for Physical Health, where TCI-Harm Avoidance appeared the most important personality domain (19.0%). NEO-Neuroticism explained only in the case of one QOL dimension a substantial portion of the variance, whereas TCI-Reward Dependence and TCI-Cooperativeness did not explain additional QOL variance. Age explained additional QOL variance in the QOL domains Physical Health (1.5%)

Table 4
Multiple Regression Analyses (Stepwise method), with QOL domains as dependent variables and domains of the TCI and the NEO-PI-R and age and sex as independent variables

Dependent variable	Final model		Independent variable	R^2 total	Beta
	F	P			
Physical Health	32.04	<0.001	Harm Avoidance (TCI)	0.19	−0.30
			Self-Directedness (TCI)	0.23	0.19
			Self-Transcendence (TCI)	0.26	−0.10
			Age	0.27	−0.17
			Openness (NEO-PI-R)	0.29	−0.16
			Novelty Seeking (TCI)	0.30	−0.15
			Extraversion (NEO-PI-R)	0.31	0.14
Psychological Health	160.38	<0.001	Self-Directedness (TCI)	0.40	0.35
			Neuroticism (NEO-PI-R)	0.47	−0.30
			Extraversion (NEO-PI-R)	0.50	0.19
Social Relationships	34.76	<0.001	Self-Directedness (TCI)	0.15	0.29
			Extraversion (NEO-PI-R)	0.21	0.28
			Age	0.24	−0.21
			Openness (NEO-PI-R)	0.25	−0.14
			Agreeableness (NEO-PI-R)	0.26	0.09
Environment	45.40	<0.001	Self-Directedness (TCI)	0.23	0.30
			Self-Transcendence (TCI)	0.27	−0.17
			Conscientiousness (NEO-PI-R)	0.29	0.26
			Persistence (TCI)	0.31	−0.16
			Extraversion (NEO-PI-R)	0.32	0.10

Note: QOL= Quality of life.

Table 5
Correlations between the domains of the NEO and the domains of the TCI

Domains of the TCI	Domains of the NEO-PI-R				
	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Novelty Seeking	n.s.	0.40	0.31	−0.30	−0.41
Harm Avoidance	0.68	−0.60	−0.16	n.s.	−0.34
Reward Dependence	n.s.	0.33	0.31	0.39	n.s.
Persistence	n.s.	n.s.	0.15	n.s.	0.42
Self-Directedness	−0.70	0.41	n.s.	0.20	0.52
Cooperativeness	−0.29	0.24	0.24	0.65	0.24
Self-Transcendence	n.s.	n.s.	0.42	n.s.	n.s.

Note: all presented correlations are significant at the 0.001 level; n.s. = not significant; the common variance between the domains of the NEO-PI-R and the domains of the TCI ranged from 0% to 46.2%.

and Social Relationships (2.7%). Sex did not explain additional QOL variance.

3.6. Correlations between the TCI and the NEO-PI-R

Several significant correlations were found between the domains of the NEO-PI-R and the domains of the TCI. Strong positive correlations were found between TCI-Harm Avoidance and NEO-Neuroticism ($R=0.68$), between TCI Cooperativeness and NEO-Agreeableness ($R=0.65$), and between TCI-Self-Directedness and NEO-Conscientiousness ($R=0.52$). Strong negative correlations were found between TCI-Harm Avoidance and NEO-Extraversion ($R=-0.60$), and between TCI-Self-Directedness and NEO-Neuroticism ($R=-0.70$). The results are presented in Table 5.

4. Discussion

The aim of the present study was to investigate in a general population of psychiatric outpatients the relationship between two dimensional models for personality, i.e., the FFM and Cloninger's seven-factor model, and QOL.

Although some significant correlations were found between age and the domains of the NEO-PI-R and the TCI, these correlations were rather weak.

In accordance with expectations, the FFM Neuroticism and Extraversion had the strongest, negative and positive, respectively, relationships with QOL. These findings seem to be in accordance with earlier research, although these studies, in contrast to the present study, mainly examined QOL-*related* concepts such as happiness or well-being instead of QOL as conceptualized according to current recommendations. For instance, several studies have demonstrated that extraversion and neuroticism, reflecting susceptibility to positive and negative emotions (McCrae and Costa, 1991; Rusting and Larsen, 1997), are, respectively, positively and

negatively correlated with self-perceived health (Goodwin and Engstrom, 2002). Both factors are strong personality correlates of well-being (Rusting and Larsen, 1998). Siegler and Brummett (2000) investigated associations among NEO personality assessments and well-being. In line with the results of the present study, they found significant correlations between the NEO domains Neuroticism and Extraversion and well-being.

The exploratory examination of the relationships between the remaining NEO domains and QOL revealed that Conscientiousness had positive relationships with QOL, whereas Openness and Agreeableness were not significantly related to QOL. These results are also in accordance with earlier findings (Siegler and Brummett, 2000).

Concerning the TCI domains, Harm Avoidance (negatively) and Self-Directedness (positively) had the highest correlations with QOL, thus confirming our expectations. Although similar research involving the TCI is rather scarce, these findings are reasonably comparable with a recent study among people with schizophrenia on the influence of temperament and character (assessed by the TCI) on functioning and aspects of psychological health (Eklund et al., 2004) and a study into the relationship between QOL and personality disorders among heroin abusers (Fassino et al., 2004). Ritsner et al. (2003) found that higher levels of novelty seeking were associated with better general QOL, physical health, and more positive subjective feelings. These findings were not confirmed by the present study. Furthermore, Ritsner et al. (2003) reported that higher levels of reward dependence were related to more satisfaction from social relationships. Although weak, this correlation was also found in the present study.

The regression analyses showed that the TCI domains, compared to the NEO domains, explained a higher amount of the variance of all dimensions of QOL. Especially the TCI character factor Self-Directedness

was most frequently explaining substantial portions of QOL variance. Age only explained a small amount of additional QOL variance, whereas sex did not play a role at all. Comparable studies investigating the amounts of QOL variance explained by the domains of the NEO and TCI are not available. However, it is known that part of the variance of QOL is explained by some dimensional aspects of personality. Ritsner et al. (2003) reported that temperamental factors explained 6 to 16% of the variability in QOL domain scores among patients with schizophrenia. In the present study, personality dimensions explained (cumulative) 26% to 50% of the variance of the QOL domains. Although several significant correlations were found between the domains of the NEO-PI-R and the domains of the TCI (which is in accordance with earlier results; Duijsens et al., 2000), the common variance did not exceed 46.2%. The superiority of the TCI to the NEO scales in explaining QOL variance is a remarkable and interesting finding, for which we don't have a clear explanation.

A complicating factor in comparing the results of the present study with earlier findings is that in previous research students or patients with specific psychiatric disorders participated. A limitation of the present study was the cross-sectional study design (although personality is generally considered to be stable over time).

In conclusion, we have shown that correlations between personality characteristics and QOL were strong and that these personality factors explained a considerable amount of the variance of QOL. Paying attention to personality dimensions in diagnostic procedures, treatment policies, and program evaluations is advised.

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