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Association between level of personality organization as assessed with theory-driven profiles of the Dutch Short Form of the MMPI and outcome of inpatient treatment for personality disorder

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The association between level of personality organization as assessed by theory-driven profile interpretation of the MMPI (Hathaway & McKinley, 1943) Dutch Short Form and treatment outcome was investigated in a naturalistic follow-up study among 121 psychotherapy inpatients who had been treated for their severe personality pathology. Treatment outcome was measured with the Brief Symptom Inventory (De Beurs & Zitman, 2006). Personality organization was associated with severity of psychopathology at baseline, the end of treatment, and 36 months after baseline. At 36 months after baseline, all patients except those with the high-level borderline organization profile and the psychotic borderline profile maintained their improvement. Contrary to expectations, (a) personality organization did not differentiate between patients with successful and unsuccessful out-

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comes, and (b) patients with a neurotic personality organization did not respond better than those with a borderline personality organization. Because of the small N, conclusions are tentative. (Bulletin of the Menninger Clinic, 78[2]160–176)

The influence of personality, as measured by various models, on treatment outcome has been confirmed in several studies. Personality has been shown to be a predictor of treatment outcome in addition to other variables, such as age, motivation, alcohol and drug abuse, and childhood trauma (Zanarini, Frankenburg, Hennen, Reich, & Silk, 2006). For example, to predict differential treatment outcome, Lenzenweger and Willet (2007) used a neurobehavioral model of personality and Vermote et al. (2009) and Digre, Reece, Johnson, and Thomas (2009) applied psychodynamic models of personality. Koelen et al. (2012) carried out a systematic review of the impact of level of personality organization (PO; Kernberg, 1984) on treatment outcome and found that, in general, higher initial levels of PO were moderately to strongly associated with better treatment outcome, especially as expressed in terms of self and relational functioning rather than in terms of general symptomatology. PO is a construct based on psychodynamic theory. It describes how affect, motives, cognitions, and behavior are interwoven, and it provides an explanation for comorbidity (Westen, 2000). Inner representations of early relationships as relatively stable structures are at the core of the PO, and they affect the quality of relationships in the present, including the therapeutic relationship. Kernberg describes three levels of PO: neurotic (NPO), borderline (BPO), and psychotic (PPO). Within the borderline PO, Kernberg (1996) and Kernberg and Caligor (2005) distinguish several subtypes, which range on a continuum from severe (with vulnerability for psychotic episodes, i.e., the lower level borderline patient) to reasonably well integrated (i.e., the higher level borderline patient).

Eurelings-Bontekoe, Onnink, Williams, and Snellen (2008) developed a theory-driven model for assessing structural personality pathology and PO, which they inferred from specific combinations of scales from the Dutch Short Form of the Minnesota Multiphasic Personality Inventory (DSFM; Luteijn & Kok,

1985). The DSFM contains five subscales: negativism, somatization, shyness, severe psychopathology, and extraversion. Three of these scales—negativism (Neg), severe psychopathology (Psy), and shyness (Shy)—are used to assess level of PO. As Eurelings-Bontekoe, Onnink, Williams, and Snellen (2008) describe, the theory-driven profile interpretation of scores on the DSFM is based on the notion that the dimensions of the DSFM should be combined into profiles based on theoretical considerations about structural personality features and organization. These a priori defined profiles have subsequently been interpreted using Kernberg's tripartite model of personality pathology (Kernberg, 1984; Kernberg & Caligor, 2005). Low scores on the Shy scale are considered to reflect a tendency toward impulsivity and acting out. High scores are related to a tendency to inhibit impulses and to be socially withdrawn. Patients with high scores on the Psy scale have a low tolerance for anxiety and a tendency to lose the ability of reality testing when under high levels of stress. Very high scores can indicate the presence of psychotic or dissociative symptoms. High scores on the Neg scale reflect a high subjective awareness of negative affect. Eurelings-Bontekoe, Luyten, and Snellen (2009a) describe how levels of PO can be distinguished based on several theory-driven combinations of the DSFM subscales shyness and severe psychopathology. In structural terms, this means that the level of control (strong, moderate, or weak control vs. undercontrolled) is being interpreted in relation to level of anxiety tolerance (good, moderate, poor). Thus, the distinctions are based on theory-driven combinations of two of Kernberg's nonspecific markers of ego weakness/ego strength (Kernberg, 1984).

Recent research (Eurelings-Bontekoe & Luyten, 2010; Eurelings-Bontekoe et al., 2008; Eurelings-Bontekoe et al., 2009a, 2009b; Eurelings-Bontekoe, Luyten, IJssennagger, Van Vreeswijk, & Koelen, 2010a; Eurelings-Bontekoe, E. H. M., Luyten, P., Remijsen, M. & Koelen, 2010b; Eurelings-Bontekoe, Peen, Noteboom, Alkema, & Dekker, 2012) has provided support for the construct and predictive validity of this assessment model. Eurelings-Bontekoe et al. (2012), in a naturalistic follow-up study of 2,062 outpatients, showed differential treatment responses of patients with various BPO profiles. Among all of the BPO pa-

tients, those with the highest level of BPO showed the largest improvement in symptomatology after six months of outpatient treatment-as-usual, whereas severity of symptomatology in patients with a psychotic BPO profile did not change. All of Eurelings-Bontekoe et al.'s research (2008, 2009a, 2009b, 2010a, 2010b, 2011) was conducted with outpatients. As yet, no research has been published on the usefulness of this model for predicting treatment outcome among patients who receive intensive inpatient treatment.

In contrast to Eurelings-Bontekoe et al.'s (2009b) study, which included only patients with a BPO profile, we also included patients with an NPO profile in the present study. Our main objective was to determine the association between various theory-driven DSFM profiles and treatment outcome. We focused on predicting treatment outcome among PD patients who were receiving intensive long-term inpatient psychotherapy. We hypothesized that different levels of PO, as measured by the DSFM, would be associated with differential treatment outcomes. Because patients with a NPO profile are considered to have the highest level of integration and ego strength, we also hypothesized that, compared to BPO patients, NPO patients would show the most favorable treatment response, both at the end of the treatment and at follow-up. The study was an attempt to bridge the gap between psychodynamic theory, personality assessment, and clinical practice (Castonguay, 2011).

Method

Participants
A total of 179 patients were recruited. They were consecutive admissions to one of two mental health centers (Center of Psychotherapy, Pro Persona, Lunteren, and Center of Psychotherapy De Viersprong, Halsteren) for inpatient psychotherapy for personality disorders. Patients were selected based on information obtained from standardized assessment instruments and clinicians' judgments. Patients were included if they (a) were between 18 and 65 years old, (b) had a significant personality disorder, and (c) had been referred for psychotherapy. Most patients who are

referred for this kind of treatment have a long history of mental health treatments but with no or limited success. Potential participants were excluded if they had an inadequate command of spoken Dutch, organic cerebral impairment, or a lack of verbal or psychological skills, or if they suffered from an addiction disorder, mental retardation, or schizophrenia.

Of the 179 patients, 58 had missing data at the 36-month follow-up. Among the remaining 121 patients, four had missing DFSM data. Because there were only two patients with a latent psychotic PO, they were also excluded, leaving 115 patients for the analyses. Table 1 shows levels of PO of the patients included in and excluded from the study. A chi-square test showed that level of PO was marginally significantly associated with missing data, χ^2 (6, $N = 172$) = 12.334, $p = .055$. In particular, patients with a low-level BPO tended to have missing data.

Treatment outcome analyses were conducted using data of the 115 patients (68.7% female) with valid scores on the Dutch version of the Brief Symptom Inventory (BSI; De Beurs & Zitman, 2006) at baseline, posttreatment, and the 36-month follow-up. The mean age of the sample was 30.5 ($SD = 8.6$) years. Educational level was low (7.2%), medium (62.1%), or high (30.6%), or the information was missing (3.5%). Regarding marital status, 82.6%, 14.5%, and 2.6% of the sample was unmarried, married, or divorced or widowed, respectively. Axis II disorders were assessed using the Dutch version of the Structured Interview for *DSM-IV* Personality Disorders (SIDP-IV; De Jong, Derks, Van Oel, & Rinne 1996; Pfohl, Blum, & Zimmerman, 1997). All patients had one or more personality disorders: 65.1% had only a Cluster C personality disorder (i.e., without a comorbid Cluster A or B personality disorder, but which might include a Not Otherwise Specified [NOS] personality disorder); 15.2% had only a Cluster B personality disorder; 2.8% had a Cluster A personality disorder; and 1.9% had both Cluster C and Cluster A personality disorders. The combinations of Cluster B and Cluster C and of Cluster A and Cluster B were found among 12.4% and 2.8% of the sample, respectively. Regarding type of PO, patients had either NPO (45.2%), immature BPO (20%), low-level BPO (4.3%), high-level BPO (4.3%), psychotic BPO (6.1%), or nar-

Personality organization and treatment outcome for personality disorder

Table 1. Personality organization of missing-data and research groups

	Missing-data group	Research group	Percentage missing
Narcissistic BPO	11	23	32.4
Neurotic BPO	16	52	23.1
High-level BPO	1	5	16.7
Low-level BPO	9	5	64.3
Psychotic border PO	2	7	22.2
Immature BPO	13	23	36.1
(Latent) Psychotic PO	5		
Missing PO	7		
Total	65	115	36.3

cissistic BPO (20%). Compared to the prevalence of profiles that Eurelings-Bontekoe et al. (2009b) and Eurelings-Bontekoe et al. (2010b) found among outpatients with a variety of Axis I disorders, patients with a NPO profile were overrepresented in the present study (45.2% versus 28.3% and 17.8%, respectively), and patients with a low-level BPO profile were underrepresented (4.3% versus 13.2% and 14.2%, respectively).

Procedure

The two mental health centers offer a variety of psychotherapeutic treatments tailored to patients with a personality disorder. The different treatments vary in intensity, duration, theoretical framework, and content. For patients in the current study, the minimal treatment was 6 months of inpatient psychotherapy; the maximum was 1 year of inpatient psychotherapy. The treatment programs all include a combination of group psychotherapy (twice-weekly); art, drama, and other forms of nonverbal therapy; and participation in the ward environment as part of the treatment. A psychotherapeutic framework combined with a therapeutic milieu was the common factor in all of the treatments. All therapists were licensed psychiatrists or psychologists. On average, the therapists had 14.9 years ($SD = 10.1$) of postgraduate clinical experience. They were not specifically trained for the present study.

Measures

Patients' demographic variables included age, gender, number of personality disorders as measured with the SIDP-IV, and treatment length. Treatment length was defined as the total number of days of inpatient treatment.

Psychiatric symptomatology was measured using the Dutch version of the BSI (De Beurs & Zitman, 2006). The BSI is a short version of the Symptom Checklist-90-Revised (SCL-90-R; Arrindell & Ettema, 2000; Derogatis & Melisarotos, 1983). Items are answered on a 5-point Likert scale. The Global Severity Index (GSI), which is the mean total score of the 53 items on the BSI, was the primary outcome measure; scores can range from 1 to 5. The BSI was administered at the beginning and the end of the primary treatment and 36 months after the beginning of the primary treatment. The reliability of the GSI (Cronbach's alpha) has been reported to be .96 in a Dutch general population sample and in mental health outpatients (De Beurs & Zitman 2006).

The DSFM was obtained at baseline only for research purposes. The results were not available to the therapists to use in the treatment. The DSFM comprises 83 MMPI items, seven of which are from the original MMPI. All of the DSFM items are, however, included in the most recent version of the Dutch MMPI-2 (Derksen, De Mey, Sloore, & Hellenbosch, 2006). Unlike the MMPI, the DSFM does not contain validity scales; nevertheless, some of the items were derived from the MMPI L and F validity scales. The DSFM assesses five personality dimensions: negativism, somatization, shyness, severe psychopathology, and extraversion. Luteijn and Kok (1985) reported the reliability of the five personality scales based on seven clinical groups. The ranges in coefficients were as follows: negativism (.76 to .83), somatization (.71 to .88), shyness (.82 to .92), severe psychopathology (.61 to .81), and extraversion (.66 to .81).

Levels of PO are defined based on theory-driven combinations of the negativism, shyness, and severe psychopathology subscales. Patients with good-to-moderate anxiety tolerance and who are overcontrolled are classified as having a neurotic PO. Within the borderline PO domain, Eurelings-Bontekoe et al. (2009a) distinguish, in increasing order of severity of structural

personality pathology, four subgroups that are characterized by
having (a) moderate or good anxiety tolerance and, relative to
their anxiety tolerance, moderate control (immature borderline
PO); (b) good anxiety tolerance but undercontrol (narcissistic
borderline PO); (c) poor anxiety tolerance and strong control,
relative to their anxiety tolerance (high-level borderline PO); and
(d) poor anxiety tolerance and undercontrol (low-level borderline
PO). Finally, patients with PPO or psychotically vulnerable BPO
have poor anxiety tolerance and weak control. This interpreta-
tion is based on the theoretical notion that psychotic vulnerable
patients will try to control their tendency to act out as long as it
is possible to do so. PPO patients or psychotic BPO patients are
distinguished by their degree of negativism. Negativism is aver-
age to low among patients with a PPO because their lack of ego
strength necessitates the separation of aggressive impulses from
their consciousness. By contrast, psychotically vulnerable BPO
patients, who have more ego strength, are more able to tolerate
their aggressive impulses, and this is reflected in above average to
very high scores on negativism. Eurelings-Bontekoe et al. (2008)
have provided cutoff scores that are used for defining the differ-
ent levels of PO. For precise definitions of PO groups and cor-
responding scores on the DSFM scales, see Eurelings-Bontekoe et
al. (2008, 2009a).

Statistical analyses
To answer the main research question, we performed a repeated-
measures ANOVA, using six PO profiles (NPO, immature BPO,
high-level BPO, psychotic BPO, narcissistic BPO, and low-level
BPO) as the between-participants factor; time as the within-par-
ticipants factor; and the GSI baseline, posttreatment, and follow-
up scores as the dependent variables. Gender, age, number of
SIDP-IV diagnoses, and number of days in treatment were entered
as covariates. Effect sizes associated with the repeated-measures
ANOVAs are expressed as partial eta squared (η_p^2). According to
conventional criteria (Cohen, 1988), $\eta_p^2 \geq 0.01$ is small; ≥ 0.06 is
moderate; and ≥ 0.14 is large. For each profile group, differences
in mean GSI scores between T1 and T2 and between T2 and T3
were expressed as Cohen's *d*. According to conventional criteria

(Cohen, 1988), $d \approx .20$, ≈ 0.50, and $\approx .80$ are considered as small, medium, or large effect sizes, respectively.

Results

The repeated-measures ANOVA showed a significant main effect of time with a small effect size, $F(2, 115) = 5.987$, $p < .01$, $\eta_p^2 = .054$. None of the interactions were significant: time × gender, $F(2, 115) = .132$, $p = .876$, $\eta_p^2 = .001$, time × number of SIDP-IV diagnoses, $F(2, 115) = 2.659$, $p = .106$, $\eta_p^2 = .025$, time × number of days in treatment, $F(2, 115) = .405$, $p = .667$, $\eta_p^2 = .004$, time × patients' age, $F(2, 115) = .807$, 2, $p = .447$, $\eta_p^2 = .008$, time × type PO profile, $F(10, 115) = 1.124$, $p = .346$, $\eta_p^2 = .052$. These results indicate that GSI scores changed significantly across time irrespective of patients' Axis II diagnosis, number of days in treatment, age, or PO profile.

There was, moreover, a significant main effect, with a moderate effect size, for the six PO profiles, $F(5, 115) = 2.659$, $p < .05$, $\eta_p^2 = .112$, indicating that the different PO groups differed from one another in severity of psychopathology. Table 2 shows the mean scores at baseline, end of treatment, and 36-month follow-up for each of the six profile groups; it also shows effects sizes associated with changes across the three assessment points. At the start of treatment, patients with a psychotic BPO profile had the highest GSI scores, whereas patients with a narcissistic BPO profile scored lowest. All groups had shown improvement in symptomatology from beginning to end of treatment, and these changes were associated with large effect sizes according to Cohen's (1988) criterion. The effect size for changes in symptomatology from beginning to end of treatment was largest for patients with a psychotic BPO and a high-level BPO. Despite the favorable treatment response of the high-level BPO patients immediately after treatment, they deteriorated from posttreatment to the 36-month follow-up, and this change was associated with a medium effect size. Similarly, the psychotic BPO patients also tended to have deteriorated by the time of the follow-up. In contrast, patients with a low-level PO profile tended to show further improvement from the end of treatment to the follow-up.

Table 2. Mean Global Severity Index scores of six personality organization groups at baseline, end of treatment, and 36-month follow-up with effect sizes for changes across the assessment points

PO	Neurotic PO	Immature BPO	Low-Level BPO	High-Level BPO	Psychotic BPO	Narcissistic BPO
N	52	23	5	5	7	23
GSI baseline scores	2.64	2.67	2.57	2.88	3.10	2.17
	(SD = .50)	(SD = .69)	(SD = .42)	(SD = .81)	(SD = .39)	(SD = .44)
GSI end-of-treatment scores	1.97	1.84	1.82	1.80	1.86	1.67
	(SD = .67)	(SD = .68)	(SD = .42)	(SD = .54)	(SD = .84)	(SD = .45)
GSI 36-mo follow-up scores	1.98	1.90	1.65	2.24	2.12	1.64
	(SD = .58)	(SD = .81)	(SD = .25)	(SD = .81)	(SD = .107)	(SD = .565)
Effect sizes: Baseline to end-of-treatment	1.15	1.21	1.43	1.60	2.02	1.12
Effect sizes: End-of-treatment to 36 mo follow-up	.02	-.08	.39	-.65	-.26	.06

In summary, the results suggest that improvement occurred predominantly during treatment, and that improvement was generally maintained after treatment, except in the case of patients with a high-level BPO and a psychotic BPO; they showed deterioration after treatment ended.

Discussion

The primary aim of this study was to determine whether patients with different levels of PO, as assessed by theory-driven DSFM profiles, would show differential responses to inpatient, intensive, long-term treatment for personality disorders. In contrast to other studies (Digre et al., 2009; Eurelings-Bontekoe et al., 2011; Vermote et al., 2009), there was not an overall effect of PO on outcome. Inspection of the effect sizes associated with changes in symptomatology between beginning and end of treatment and between end of treatment and follow-up showed that all patients had improved by the end of treatment, with patients with high-level BPO and psychotic BPO profiles showing the largest improvement. At follow-up, all patients except those with high-level BPO and psychotic BPO had maintained their improvement.

Contrary to our expectations, NPO patients did not show a more favorable treatment response than BPO patients, suggesting that the type of intensive treatment that was used is appropriate for patients with both lower and higher levels of PO. The long-term inpatient psychotherapy seemed to offer a climate from which all kinds of patients could profit, as shown by the low percentage of treatment dropouts (12.4%).

There are several possible explanations for the absence of an overall effect on PO level on treatment outcome. One is that the theory-driven interpretation of the profiles was not valid. However, the finding that study dropout was high, especially in the low-level BPO patients, is in agreement with the greater tendency of these patients to drop out of treatment found by Eurelings-Bontekoe et al. (2009a) and Mosterman, Eurelings-Bontekoe, and Hofstee (2008). In addition, the underrepresentation of patients with the low-level BPO and the PPO profile suggest that the therapists may have excluded patients who tend to act out, which

is presumed to be a typical feature of patients with the low-level BPO profile. The therapists may also have excluded patients with a high chance of disintegration, which is presumed to be typical of patients with PPO.

An alternative explanation for why we did not find an effect of PO level on treatment outcome is that NPO patients were over-represented in the sample, whereas low-level BPO patients and PPO patients were underrepresented. The high percentage of patients with an NPO profile might have provided a more stable group climate for the BPO patients. In this respect, it is interesting to note that Piper, Ogrodniczuk, Joyce, Weideman, and Rosie (2007) found that the larger the number of patients with a mature PO relative to the number of patients with lower levels of PO, the better the treatment outcome for all members of an outpatient psychotherapy group, regardless of individual members' level of PO. In other words, patients with low-level PO seem to function better in groups with many high-level PO patients than in groups that are dominated by patients with lower levels of PO (Koelen et al., 2012).

The results of this and Eurelings-Bontekoe et al.'s research (2009b) suggest, nevertheless, that lower level BPO patients can profit from treatment if they do not drop out. This implies that preventing dropout is an important issue to address among these kinds of patients. Eurelings-Bontekoe et al. (2009b) also found successful treatment outcomes for low-level BPO outpatients who completed their treatment. Inpatient psychotherapy, such as that evaluated in this study, has a great impact on patients' level of psychopathology, probably because of the restrictive environment and clear structure of the treatment, and because a psychotherapeutic frame of reference guided the interventions.

Eurelings-Bontekoe et al. (2012) found only a small treatment effect for outpatients with the narcissistic BPO profile. These patients were low on self-reported psychopathology at both the start and the end of treatment. Likewise, in the present study, inpatients with a narcissistic BPO self-reported the lowest level of psychopathology at baseline, but contrary to Eurelings-Bontekoe et al.'s (2012) results with outpatients, these inpatients showed improvement after treatment and maintained it at follow-up.

This difference in outcome between narcissistic inpatients and outpatients may have resulted from the strong effects of the inpatient psychotherapy. Combining participation in a therapeutic community with formal group psychotherapy for both Cluster C and Cluster B personality-disordered patients might have served to challenge the emotional barriers and affective isolation of the narcissistic patients (Bartak et al., 2010, 2011).

Although the number of patients in the high-level BPO and psychotic BPO groups was small ($n = 5$ and $n = 7$, respectively), there were some notable trends in these groups' results. Consistent with Eurelings-Bontekoe et al.'s (2012) results, patients with the high-level BPO profile showed the greatest improvement in symptomatology from beginning to end of treatment. These patients, however, were also the ones who had deteriorated most at follow-up. Further research with high-level BPO patients is needed to determine whether emphasis should be placed on reducing their tendency to internalize (Eurelings-Bontekoe et al., 2010b), thereby preventing relapse.

In contrast to Eurelings-Bontekoe et al.'s (2012) results, the psychotic BPO patients in this study showed a favorable response to treatment immediately after it ended. This suggests that these very vulnerable patients might need a more intensive treatment than Eurelings-Bontekoe et al. (2012) provided. In contrast to high-level BPO patients, patients with a psychotic BPO tend to externalize (Eurelings-Bontekoe et al., 2010a), and this might account for the latter patients' more enduring treatment response. Externalizing may provide patients with the means to reduce their stress, whereas internalizing may result in greater internal stress.

Clinical implications

The results of the present study have at least five different clinical implications. *First*, intensive inpatient treatment for personality disorders may benefit patients with either a higher or a lower level of PO. *Second*, it seems especially important to prevent low-level BPO patients from dropping out of treatment, because low-level BPO patients who remain in treatment are able to profit from it. *Third*, a relatively large number of NPO patients in a therapy

group may foster a favorable treatment response by the lower level PO patients. *Fourth*, a strong tendency to internalize might be associated with poor long-term treatment outcome; therefore, it might be important to focus on patients' tendency to internalize during their treatment. *Finally*, patients with a psychotic BPO seem to profit more, at least in the short term, from intensive inpatient treatment than from outpatient treatment.

Limitations and further research

The results of this study need to be viewed in the context of several limitations. First, this was a naturalistic follow-up study, which did not include a control group. Hence, the results need to be replicated in randomized trials. Second, the number of patients with high-level BPO, low-level BPO, and psychotic BPO profiles was very small, whereas patients with an NPO profile were over-represented; this imbalance may have affected the results. Next, the use of only one self-report measure of general symptomatology as the main outcome measure might have biased the results, because PO is likely to affect different types of outcome variables in different ways.

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