



Universiteit Leiden

**Psychologie**  
Faculteit der Sociale Wetenschappen



# **The Relationship Between Personality Functioning and Psychiatric Symptoms During Treatment for Personality Disorders.**

---

D. T. Miedema  
S0952710  
Master Thesis Clinical Psychology  
Supervisor: J. F. van den Berg, PhD  
Institute of Psychology  
University Leiden  
14-06-2015

## Table of contents

Abstract	3
Chapter 1: Introduction	4
1.1 Dimensional approach for personality disorders	4
1.2 Changeability of personality disorders	5
1.3 Comorbidity	6
1.4 Treatment duration	6
1.5 Study aim	7
Chapter 2: Methods	7
2.1 Research design, participants and procedure	7
2.2 Materials	8
2.3 Statistical analyses	9
Chapter 3: Results	11
Chapter 4: Discussion	18
4.1 Strengths and limitations	20
4.2 Concluding thoughts	21
References	23

## Abstract

**Background:** Impaired personality functioning is viewed as one of the core markers of personality disorders. However, limited research has been conducted on treatment effect on personality functioning in patients who are diagnosed with a personality disorder. The relationship between change in psychiatric symptoms and personality functioning has not yet been clarified.

**Aims:** The aim of this study is to investigate: 1) the correlation between personality functioning and psychiatric symptoms in patients with personality disorder before and after treatment, 2) the correlation between reduction of psychiatric symptoms and improvement in personality functioning and 3) treatment duration as a predictor for improvement scores.

**Methods:** A total of 243 patients received treatment in the specialized treatment program for personality disorders at PsyQ. They completed questionnaires on symptoms (KKL) and personality functioning (SIPP-118) at the beginning and end of treatment.

**Results:** KKL and SIPP-118 scores showed moderate to strong correlations before and after treatment, ranging from 0.32 to 0.72. Significant improvement in both symptoms and personality functioning was found after treatment. Effect sizes were large (0.42 - 0.84). Predictive value of treatment duration was significant for improvement scores on the KKL (2%) and for SIPP-118 domains Identity Integration (4%) and Responsibility (3%).

**Conclusions:** Based on these results psychiatric symptoms and personality functioning are clearly correlated in patients with a personality disorder, both before and after treatment. Treatment duration had small predictive value on most improvement scores.

## Introduction

The *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; APA, 2000) uses a categorical system to classify personality disorders (PD). The description of a PD according to the DSM IV-TR is: “An enduring pattern of inner experience and behaviour that deviates markedly from the expectations of the individual's culture, is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time, and leads to distress and impairment” (APA, 2000, p.689). Ten PD's are described in the DSM-IV-TR. These PD's are grouped into cluster A (“odd, eccentric” cluster), cluster B (“dramatic, emotional” cluster) or cluster C (“anxious, fearful” cluster). Patients who meet general PD criteria, but who do not meet the criteria for one of the specified PD's are diagnosed with PD Not Otherwise Specified (PD NOS). The definition of a PD is based on the description of personality style and disordered personality functioning (Parker et al., 2002). Each PD consists of a number of symptoms and in order for a patient to be diagnosed with a specified PD a minimum number of criteria must be fulfilled. By definition, PD is either present or absent (APA, 2000). The categorical model for PD in the DSM-IV-TR has been widely criticized for its many limitations, such as high heterogeneity among patients with the same diagnosis, limited empirical support and excessive diagnostic comorbidity (Regier, Narrow, First, & Marshall, 2002; Trull & Durrett, 2005). Also, the relationship between structures and functions of normal personality and PD were not included in this description (Livesley, 2011).

### **Dimensional approach for personality disorders**

Due to the limitations of a categorical model there is a growing consensus for a dimensional approach to the assessment of PD. Dimensional models view normal and abnormal personality constructs on the same continuum. In a dimensional approach, PD symptoms can be explained as maladaptive expressions of normal personality traits (Widiger & Trull, 2007). Also, dimensional models can benefit effective treatment planning and decision making more than categorical models (Verheul, 2005). Several dimensional models have been proposed. However, a unified integrated dimensional model has not yet been developed (Widiger & Simonsen, 2005). In the DSM-5 (APA, 2013) an alternative dimensional model for PD has been introduced in addition to the existing categorical model. This dimensional model characterizes PD by impairment in personality functioning and the presence of pathological personality traits (APA, 2013). Personality functioning is viewed as one of the core features of PD and is associated with the level of severity of PD (Verheul et

al., 2008). It is argued that during PD assessment focus should lie on impaired personality functioning and secondly on underlying personality styles or traits (Parker et al., 2002; Livesley & Jang, 2000). Treatment goals in PD patients include both symptom relief and improvement in personality functioning. Reaching adequate levels of personality functioning makes patients more resilient for future life stressors (Feenstra, Hutsebaut, Verheul, & van Limbeek, 2014). Bornstein (1988) argued that the severity of impairment in personality functioning is more important to predict treatment outcome than the type of PD.

### **Changeability of personality disorders**

In 1980 PD's were placed on a separate axis in the DSM III. The main reason for the separation of PD's and other psychiatric disorders was the idea that PD's differed from other disorders in terms of temporal stability. Axis I disorders were viewed as variable in duration and 'episodic', while PD's were viewed as a life-long pattern that was a part of someone's personality (APA, 1980). On the other hand, there are several examples showing that temporal stability does not provide an adequate distinction between Axis I and Axis II disorders. For example, Axis I disorders such as schizophrenia and dysthymia have a chronic course. Also, a naturalistic longitudinal study found that PD's were less stable and anxiety disorders on the other hand were more stable over time than thought before (Shea & Yen, 2003). Another longitudinal study showed that the majority of patients with borderline PD no longer met diagnostic criteria after a six year follow-up and the symptomatic improvement seemed stable (Zanarini, Frankenburg, Hennen, & Silk, 2003). However, good psychological functioning (social and vocational competence) seems to be more difficult to achieve, even when patients do not fulfil diagnostic criteria for PD any more (Zanarini, Frankenburg, Reich, & Fitzmaurice, 2010).

The changeability of PD during treatment has been extensively studied and the body of evidence for the effectiveness of several types of psychotherapy in the treatment of PD is growing. High remission rates were found for patients with PD during treatment compared to a naturalistic study of patients who were diagnosed with a borderline PD (Perry, Banon, & Ianni, 1999). A positive treatment effect for psychotherapy was generally found in patients with borderline, dependent and avoidant PD, and for PD NOS. For the schizoid-, antisocial-, narcissistic-, and histrionic PD there is less evidence regarding positive effects of psychotherapy (Verheul & Herbrink, 2007).

A possible explanation for the changeability in PD is to make a distinction between personality traits and the severity or expression of PD, whereas personality traits are viewed

to be more stable and characteristic adaptations (personality functioning) are seen as the changeable component of PD (Grilo et al., 2004; Shea et al., 2002). For example, adaptive capacities make it possible to respect ourselves and others, and enable us to control our emotions and impulses. Patients with maladaptive personality functioning lack some or most of these adaptive capacities (Verheul et al., 2008). Therefore, the main focus of psychotherapy should be on improving someone's characteristic adaptations rather than changing personality traits (Harkness & Lilienfeld, 1997).

### **Comorbidity**

Among patients who are diagnosed with PD, the comorbidity with Axis I disorders is very high (Lenzenweger, Lane, Loranger, & Kessler, 2007). Comorbidity is the co-occurrence of two or more mental disorders (Clark, 2007). For example, patients who are diagnosed with borderline PD are also likely to meet criteria for mood disorders, substance abuse or post-traumatic stress disorder (Lenzenweger, et al., 2007; Zanarini et al., 1998) and patients with an avoidant PD have a high co-occurrence with social phobia (McGlashan et al., 2000).

There are several models that attempt to explain the relation between PD and Axis I disorders. One of these models is the *continuity model*, in which PD are viewed as predisposing factors for Axis I disorders (Emmelkamp & Kamphuis, 2007). For example, one longitudinal study found that borderline PD patients with a comorbid major depression more often first showed improvement on their borderline PD symptoms followed by improvement on their depressive symptoms than vice versa (Gunderson et al., 2004). Another conceptual model that provides a possible explanation for the co-occurrence between Axis I and PD is the *psychobiological model of temperament and character* (Cloninger, Svrakic, & Przybeck, 1993). It is argued that comorbidity is caused by their joint relation to temperament dimensions. For example, temperament dimension 'harm avoidance' is associated with all PD Cluster C and also with major depressive disorder and anxiety disorders (Battaglia, Przybeck, Bellodi, & Cloninger, 1996).

### **Treatment duration**

Complex disorders such as PD often require a longer treatment duration than more simple disorders (Perry, et al., 1999). A comorbid PD has a negative effect on treatment outcome of most Axis I disorders (Zimmerman, Chelminski, & Young, 2008). Patients with a comorbid PD have higher rates of drop-out and more interpersonal problems in therapy (Reich, 2003). A meta-analysis study found positive correlations between outcome, duration and intensity of

psychotherapy. Patients who were diagnosed with PD or a chronic mental disorder benefit more from a long-term psychotherapy than from short-term therapy (Leichsenring & Rabung, 2011). Another meta-analysis estimated that 25,8% of patients with PD who received psychotherapy recovered every year compared to 3,7% recovery each year in naturalistic follow-up studies (Perry et al., 1999).

### **Study aim**

Symptom reduction during treatment for PD has been widely studied (Perry et al., 1999). However, limited research has been conducted on treatment effect on in personality functioning for PD patients. Based on earlier findings it is expected that patients with poor personality functioning experience more psychiatric symptoms. In addition, it is also expected that treatment for PD is effective in both symptom reduction and improvement in personality functioning. Third, it is expected that longer treatment duration is associated with more psychiatric symptoms and poorer personality functioning at the beginning of treatment. In order to assess the relationship between psychiatric symptoms and personality functioning the following research questions were addressed:

- 1) Is there a correlation between personality functioning and psychiatric symptoms before and after treatment?
- 2) Is there a correlation between reduction of psychiatric symptoms and improvement in personality functioning and if so, is the correlation stronger on one of the domains of personality function compared to other domains?
- 3) Is treatment duration a predictor of improvement in psychiatric symptoms and personality functioning?

## **Methods**

### **Research design, participants and procedure**

The data was collected from all specialized treatment programs for personality disorders from PsyQ Parnassia Group. PsyQ is a mental health institution with 19 outpatient treatment facilities throughout the Netherlands. PsyQ uses Routine Outcome Monitoring for treatment evaluation. In order to measure the psychiatric symptoms the self-report questionnaire “Korte Klachten Lijst” (KKL) is used (Huijbrechts, Appelo, Korrelboom, van der Heiden, & Bos, 2009). In order to assess (mal)adaptive personality functioning, PsyQ uses the Severity Indices of Personality Problems (SIPP-118) (Verheul et al., 2008). Both are self-report scales.

Patients were eligible for the study when they had been admitted to one of the specialized PD programs at PsyQ and had completed the SIPP-118 and the KKL at the beginning of the treatment at the same assessment, and during or at the end of treatment (also at the same assessment). Patients were included when they were diagnosed with PD. Patients with a treatment duration of less than three months were excluded, because no treatment effects for PD can be expected in such a short interval.

## **Materials**

### *Psychiatric symptoms*

For the assessment of psychiatric symptoms the Korte Klachten Lijst (KKL) (Huijbrechts et al., 2009) was used. The KKL is a short self-report questionnaire of psychiatric symptoms consisting of 13 items, representing common psychiatric symptoms. Symptoms assessed with the KKL are anxiety, concentration difficulties, memory difficulties, depression, agitation, relational difficulties, suicidal thoughts and/or attempts, eating disorders, deliberate self-harm, sexual problems, disordered sleep, and addiction. Symptoms can be assessed on a scale of 0 (not at all) to 4 (very much). Scores on the individual items are added up. The higher the score on the KKL, the more psychiatric symptoms were reported. The total score of KKL is labelled as :

< 8	Very low
8-11	Low
12-15	Below average
16-18	Average
19-22	Above average
23-28	High
> 28	Very high

(Huijbrechts et al., 2009)

The KKL is administered after the first contact to all patients coming into treatment at PsyQ. The KKL is then administered at regular intervals and also at the end of the treatment.

### *Personality functioning*

The Severity Indices of Personality Problems (SIPP-118) (Verheul et al., 2008) is a self-report questionnaire for assessing the core components of personality functioning. The SIPP-118 consists of 118 items that can be scored by the patient on a 4-point scale. The response categories range from 1 to 4 and are described as fully disagree, partly disagree, partly agree,

or fully agree. The SIPP-118 has been developed to assess the changeable aspects of personality for patients with a PD (Verheul et al., 2008). The responses to the 118 items are allocated to one of 16 facets. These facets are then clustered into five higher order domains. The higher order domains are Self-Control (consists of facets emotion regulation and effortful control), Identity integration (consists of facets self-respect, stable self-image, self-reflexive functioning, enjoyment and purposefulness), Responsibility (consists of facets responsible industry and trustworthiness), Relational capacities (consists of facets intimacy, enduring relationships and feeling recognized) and Social concordance (consists of facets aggression regulation, frustration tolerance, cooperation, and respect). Higher scores on each domain indicate more adaptive personality functioning and lower scores are indicative of maladaptive personality functioning (Verheul et al., 2008). T-scores, ranging from 0 to 100, can be calculated for every domain. T-scores are labelled as:

< 30    Very low

30-39    Low

40-59    Average

60-69    High

≥ 70    Very high

(de Viersprong, n.d.)

Data regarding sex, age, diagnosis on Axis I and II, and duration between first and last assessment were collected from the Electronic Patient Files.

### **Statistical analyses**

Descriptive statistics will be used for the variables age, sex, diagnoses, treatment duration, and scores on SIPP-118 and KKL.

Treatment duration was defined by the time between first assessment at the start of the PD program (T0) and the last follow-up assessment that was available (T1).

*1. Is there a correlation between personality functioning and psychiatric symptoms before and after treatment?*

Before conducting correlation analyses relevant model assumptions will be tested, namely normality, linearity and homoscedasticity (Meyers, Gamst, & Guarino, 2006). A correlation will be calculated between scores on the KKL and each of the five higher order domains of the SIPP-118 before and after treatment. Correlations will also be calculated on the scores of the five higher order domains of the SIPP-118 with each other before and after treatment.

*2. Do patients show improvement in psychiatric symptoms and personality functioning after treatment and do they show more improvement in some domains of personality functioning compared to other domains?*

This research question is divided into three questions:

A) Do patients show improvement on the KKL? To measure if patients show a significant improvement on the KKL a two-tailed paired samples *t*-test will be used to compare mean KKL scores of the first and last assessment. A two-tailed paired samples *t*-test will be used, because patients can improve, deteriorate or show no change in scores.

B) Do patients show improvement on the SIPP-118? To investigate if patients show a significant improvement on the SIPP-118 a two-tailed paired samples *t*-test will be used to compare mean SIPP-118 scores of each domains at the first and last assessment.

C) On which of the domains on the SIPP-118 patients show the most improvement? To assess which one of the five domains of the SIPP-118 patients shows the most improvement, pre-post change scores and effect sizes of the domains will be calculated. In order to calculate the within-condition effect size the scores from the assessment were subtracted from the last assessment score for each measure and then divided it by the standard deviation of the score at the first assessment (Perry et al., 1999). An effect size from 0.20-0.50 is considered to be small, 0.50-0.80 is medium and  $\geq .80$  is large (Cohen, 1988).

*3. Is treatment duration a predictor of improvement in psychiatric symptoms and personality functioning?*

Prior to hierarchical multiple regression analyses relevant model assumptions will be tested, namely normality, linearity and homoscedasticity (Meyers et al., 2006). To investigate if treatment duration predicts improvement scores of the KKL and the five higher order domains of SIPP-118, six different hierarchical multiple regression analyses are conducted. The improvement scores are adjusted for mean scores at the first assessment. Treatment duration is calculated by subtracting the date of the first assessment of the date of last assessment. Improvement scores of the KKL and the domains of the SIPP-118 are calculated by subtracting the mean scores of the last assessment of mean scores of the first assessment. Treatment duration and mean scores of psychiatric symptoms or domains of personality functioning are independent variables, and improvement scores of psychiatric symptoms and the five higher order domains of personality functioning are dependent variables. Mean scores will be entered during the first step to control for pre-treatment scores. Treatment duration is

entered during the second step in order to assess its predictive value on improvement scores, controlled for pre-treatment scores.

## Results

### *Descriptive statistics*

A total of 330 patients from the department of personality disorders completed the KKL and SIPP-118 at the beginning of the treatment at the same time and during or at the end of the treatment (also at the same time). Patients were excluded if they had not been diagnosed with a personality disorder. Patients were also excluded if the interval between the first and last assessment was 90 days or less, because change in personality pathology cannot be expected in such a short time frame. A total of 243 patients could be included.

The age of patients ranged from 18 to 64 years ( $M = 35.51$ ,  $SD = 10.39$ ). The gender of the selected patients was 34% men and 66% women. The duration between the first and last assessment varied from 91 to 1028 days ( $M = 377.74$ ,  $SD = 198.17$ ). Characteristics of the patients in the sample are shown in Table 1.

### *1. Is there a correlation between personality functioning and psychiatric symptoms before and after treatment?*

Prior to conducting a correlation analyses relevant assumptions of a linear correlation were tested. The variables used for correlation analyses were the five higher order domains of the SIPP-118 (Self-Control, Identity Integration, Responsibility, Relational Capacities and Concordance) and the KKL scores, both at the first and last assessment, respectively. An analysis of standardized residuals was carried out for the variables KKL scores and scores of the five higher order domains for the SIPP-118 at the first and last assessment on the data to identify any outliers. Scatterplots, histograms and normal P-P plots of standardised residuals were created.

At the analysis of the first assessment four participants were identified as outliers and were removed from the analyses. The scatterplots showed a random display of points and the assumption of homogeneity of variance and linearity were met. The histograms indicated normally distributed errors in the data and the P-P plots were nearly in line.

At the analysis of the last assessment four participants were also identified as outliers and were removed. The scatterplots also showed a random display of point and the assumption of

Table 1

*Clinical characteristics at baseline (N=423)*

		<i>N (%) = 243</i>
Age	≤25 years	47 (19.3)
	26-35 years	90 (37.0)
	36-45 years	64 (26.3)
	46-55 years	30 (12.3)
	56-65 years	12 (4.9)
Sex	Male	82 (33.7)
	Female	161 (66.3)
Axis II disorders	<i>Cluster A</i>	4 (1.6)
	Paranoid PD	4 (1.6)
	<i>Cluster B</i>	53 (21.8)
	Borderline PD	46 (18.9)
	Histrionic PD	2 (0.8)
	Narcissistic PD	5 (2.1)
	<i>Cluster C</i>	58 (23.9)
	Avoidant PD	31 (12.8)
	Dependent PD	12 (4.9)
	Obsessive-compulsive PD	15 (6.2)
	<i>Personality disorder NOS</i>	148 (60.9)
Comorbid Axis I disorders	Mood disorders	80 (32.9)
	Anxiety disorders	36 (14.8)
	Attention deficit hyperactivity disorder	19 (7.8)
	Eating disorders	18 (7.4)
	Substance abuse	17 (7.0)
	Other diagnoses	53 (21.8)
	No Axis I diagnosis	66 (27.2)
	Axis I diagnosis deferred	19 (7.8)

Note: The sum of the number of patients in the different diagnostic groups is higher than the total number of patients because patients can be diagnosed with more than one (personality) disorder.

homogeneity of variance and linearity were met. The histograms did seem to be slightly skewed right, but still indicated a normal distribution of errors. Also, the normal P-P plots were not entirely in line, but close.

A linear two-tailed correlation analysis was performed to assess the relation between KKL scores and the five higher order domains the SIPP-118 at the first and last assessment. At the first assessment correlation analyses showed moderate negative correlations between the KKL and the SIPP-118 domains Self-Control, Identity Integration, Relational Capacities and Social Concordance. A weak negative correlation was found between KKL scores and SIPP-118 domain Responsibility. The correlation between psychiatric symptoms and domains of personality functioning are presented in Table 2.

Table 2

*Bivariate correlations between psychiatric symptoms and domains of personality functioning at first assessment (N = 239)*

Subscale	1	2	3	4	5	6
1. KKL	–	-.50**	-.54**	-.32**	-.40**	-.42**
2. SIPP-118 Self-Control		–	.64**	.51**	.45**	.67**
3. SIPP-118 Identity integration			–	.39**	.68**	.53**
4. SIPP-118 Responsibility				–	.35**	.43**
5. SIPP-118 Relational capacities					–	.54**
6. SIPP-118 Social concordance						–

Note: Correlations marked with two asterisks (\*\*) were significant at  $p < .001$ .

At the last assessment a linear two-tailed correlation analysis showed a strong negative correlation between KKL scores and the SIPP-118 domain Identity Integration. Moderate negative correlations were found for KKL scores and the SIPP-118 domains: Self-Control, Responsibility, Relational Capacities and Social Concordance. The correlations between KKL scores and the domain scores of the SIPP-118 at last assessment are presented in Table 3.

Overall, higher scores on the KKL were correlated with lower scores on all five SIPP domains.

Table 3

*Bivariate correlations between psychiatric symptoms and domains of personality functioning at last assessment (N=239)*

Subscale	1	2	3	4	5	6
1. KKL	–	-.66**	-.72**	-.49**	-.62**	-.54**
2. SIPP-118 Self-Control		–	.83**	.66**	.68**	.78**
3. SIPP-118 Identity integration			–	.63**	.85**	.72**
4. SIPP-118 Responsibility				–	.57**	.61**
5. SIPP-118 Relational capacities					–	.71**
6. SIPP-118 Social concordance						–

Note: Correlations marked with two asterisks (\*\*) were significant at  $p < .001$ .

*2. Do patients show improvement in psychiatric symptoms and personality functioning after treatment and if so, are there specific domains of personality functioning showing greater improvement than others?*

Two-tailed paired samples *t*-tests were conducted to compare KKL scores and the scores of the five higher order domain scores of SIPP-118 at first assessment and last assessment. Significant differences between the first and last assessment were found for the KKL and the five higher order domains of the SIPP-118. Lower levels of KKL scores and higher levels of SIPP-118 domain scores were found at the last assessment when compared to the scores at the first assessment. The results are presented in Table 4.

In order to test differences between start and end of treatment the KKL scores and the five higher order domains of the SIPP-118 effect sizes were calculated. The effect sizes found for the domains of SIPP-118 Self-Control and Identity integration were large. The effect sizes of KKL and SIPP-118 Responsibility were medium. The domains Responsibility and Social concordance showed small effect sizes. The results are presented in Table 4.

In summary, Self-Control and Identity Integration were the domains of personality functioning showing the largest change.

Table 4

*Paired t-test results psychiatric symptoms and domains of personality functioning*

Subscale	First assessment <i>M (SD)</i>	Last assessment <i>M (SD)</i>	Mean difference <i>(SD)</i>	95% CI for Mean Difference	<i>t</i>	<i>d</i>	<i>p</i>
KKL	18.07 (8.28)	11.53 (9.25)	-6.54 (8.79)	-7.65, -5.43	-11.61	.75	<.001
SIPP-118 Self-control	51.11 (10.24)	59.66 (11.57)	8.55 (10.01)	7.28, 9.81,	13.31	.81	<.001
SIPP-118 Identity integration	53.91 (10.89)	63.24 (13.62)	9.33 (11.30)	7.90, 10.76	12.87	.84	<.001
SIPP-118 Responsibility	52.30 (8.96)	56.19 (9.10)	3.88 (7.37)	2.95, 4.81,	8.21	.42	<.001
SIPP-118 Relational capacities	52.96 (10.07)	57.93 (12.23)	5.97 (9.75)	4.74, 7.21	9.53	.58	<.001
SIPP-118 Social concordance	50.38 (9.74)	55.15 (10.71)	4.76 (8.66)	3.67, 5.86,	8.58	.47	<.001

Note: Degrees of freedom (*df*) = 242, CI is Confidence Interval

### *3. Is duration of treatment a predictor of improvement in psychiatric symptoms and personality functioning?*

Before conducting hierarchical multiple regression analyses the relevant model assumptions of a linear regression were tested. The independent variable used for regression analyses was treatment duration. The dependent variables used for these analyses were  $\Delta$  KKL,  $\Delta$  Self-Control,  $\Delta$  Identity integration,  $\Delta$  Responsibility,  $\Delta$  Relational capacities and  $\Delta$  Social concordance, respectively. An analysis of standardized residuals was carried on the data to identify any outliers. Five participants were identified as outliers and were removed from the analyses. Scatterplots, histograms and normal P-P plots of standardised residuals were created. The scatterplots showed a random display of point and the assumption of homogeneity of variance and linearity were met. The histograms did seem to be slightly skewed right, but still indicated a normal distribution of errors. Also, the normal P-P plots were not entirely in line, but close.

Six different hierarchical multiple regression analyses were conducted. The independent variable was treatment duration and the dependent variables were  $\Delta$  KKL,  $\Delta$  Self-Control,  $\Delta$  Identity integration,  $\Delta$  Responsibility,  $\Delta$  Relational capacities and  $\Delta$  Social concordance. The regression analyses showed that treatment duration is a significant predictor of  $\Delta$  KKL scores,  $\Delta$  Identity Integration and  $\Delta$  Responsibility. Mean scores of the KKL and the five higher order SIPP-118 domains from the first assessment were entered during the first step to control for pre-treatment scores. Treatment duration was entered during the second step in order to assess its predictive value on improvement scores, controlled for pre-treatment scores. Treatment duration accounted for 2% explained variance of  $\Delta$  KKL, 4% of explained variance  $\Delta$  SIPP-118 Identity Integration and of 3% explained variance of  $\Delta$  Responsibility. The longer the treatment, the higher the difference between the assessments before and after treatment for these scales. Treatment duration was not a significant predictor for  $\Delta$  Self-Control,  $\Delta$  Relational Capacities and  $\Delta$  Social Concordance. The results of these analyses are presented in Table 5.

Table 5

*Summary of hierarchical regression analyses predicting improvement scores (N=238)*

	<i>R</i>	<i>R</i> <sup>2</sup>	$\Delta R^2$	<i>B</i>	SE <i>B</i>	$\beta$	<i>p</i>
KKL	.44	.20		.47	.06	.44	< .001
Step 2	.47	.22	.02				
KKL				.47	.06	.45	.007
Treatment duration				.01	< .01	.15	.010
SIPP-118 Self-Control	.35	.12		-.34	.06	-.35	< .001
Step 2	.36	.12	.01				
SIPP-118 Self-Control				-.34	.06	-.35	< .001
Treatment duration				< .01	< .01	.08	.188
SIPP-118 Identity integration	.23	.06		-.24	.07	-.24	< .001
Step 2	.30	.09	.04				
SIPP-118 Identity integration				-.22	.06	-.22	< .001
Treatment duration				.01	< .01	.19	< .001
SIPP-118 Responsibility	.41	.17		-.31	.05	-.41	< .001
Step 2	.44	.19	.03				
SIPP-118 Responsibility				-.31	.05	-.40	< .001
Treatment duration				.01	< .01	.16	.008
SIPP-118 Relational capacities	.25	.06		-.23	.06	-.25	< .001
Step 2	.27	.07	.01				
SIPP-118 Relational capacities				-.23	.06	-.24	< .001
Treatment duration				.01	< .01	.11	.081
SIPP-118 Social concordance	.31	.10		-.25	.05	-.31	< .001
Step 2	.31	.10	< .01				
SIPP-118 Social concordance				-.25	.05	-.31	< .001
Treatment duration				< .01	< .01	-.02	.793

Note: KKL scores and SIPP-118 scores are mean scores at the first assessment. Dependent variable is the improvement score of the respective scale.

## Discussion

In this study, we used data from routine outcome monitoring to investigate the relationship between personality functioning and psychiatric symptoms during treatment in adult patients who are diagnosed with PD during out-patient treatment. The results of this study can provide an addition to the limited research that has been done so far.

The study focussed on the following main questions:

- 1) Is there a correlation between personality functioning and psychiatric symptoms before and after treatment?
- 2) Is there a correlation between reduction of psychiatric symptoms and improvement in personality functioning and is the correlation stronger on one of the domains of personality function compared to other domains?
- 3) Is treatment duration a predictor of improvement in psychiatric symptoms and personality functioning?

In regard to the first question, correlation patterns were observed between psychiatric symptoms and the five high order domains of personality functioning, both the first and last assessment. These results clearly suggest that there is a relation between personality functioning and psychiatric symptoms. These results are consistent with earlier findings that found high co-occurrences between Axis I disorders and PD (Lenzenweger, et al., 2007; McGlashan, et al., 2000). Also, simultaneous improvement in personality functioning and psychiatric symptoms when compared before and after treatment has been found before (Jensen, Mortensen, & Lotz, 2008). However, the results do not allow us to draw conclusions about the causal relation between personality functioning and psychiatric symptoms. Further research could clarify more about the relationship between psychiatric symptoms and personality functioning by adding regular assessments during treatment and also by adding a follow-up study to investigate the long term effects. It is possible that the correlations can partly be explained by an overlap on a conceptual or measurement level. For example, KKL item 'relationship problems' may show overlap with SIPP-118 higher order domain Relational capacities. Apart from these conceptual issues, improvement in personality functioning could lead to a decrease in psychiatric symptoms or vice versa, or changes in underlying mechanisms could influence both symptoms and personality functioning.

The strongest correlations were found between psychiatric symptoms and the personality functioning domain Identity Integration before and after treatment. According to the SIPP-118 Identity Integration is defined as: "The capacity to experience self-worth, purposefulness,

enjoyment, a sense of self continuity, and an understanding of internal and external events” (de Viersprong, n.d.). In the DSM5 the importance of the concept of Identity for understanding PD is expressed in the new research criteria for PD. Disturbance in identity is viewed as one of the core features of impaired personality functioning. One of the specific diagnostic markers for borderline PD is identity disturbance (APA, 2013). Further research could indicate if identity integration has a stronger predictive value for improvement in psychiatric symptoms than the other domains.

The second research question was divided into four sections. First of all, the results showed that patients reported less psychiatric symptoms and improved on all the domains of personality functioning during treatment. PsyQ treatment program for patients with PD consists of several evidence based treatments, such as schema-focused therapy, dialectical behavior therapy, cognitive behavior therapy and pharmacotherapy. The decrease in psychiatric symptoms after treatment was consistent with earlier findings (Perry et al., 1999; Bateman & Fonagy, 2000; Gabbard et al., 2000). The improvement on the domains of personality functioning was also in line with earlier findings (Verheul et al., 2008). The largest positive change was found for the domain Identity integration.

The third research question addressed in this study was: Is treatment duration a predictor of improvement in psychiatric symptoms and personality functioning? Predictive values for treatment duration were found for improvement scores in psychiatric symptoms and in two domains of personality functioning: Identity integration and Responsibility. Although predictive values were found, the contribution to the explained variance was small. These results were inconsistent with an earlier finding that treatment should be long-term in order to be effective for patients with PD (Bateman & Fonagy, 2000) and a longer treatment duration was associated with higher remission rates (Perry et al., 1999). A possible explanation for this result was the presence of confounding variables correlates with treatment duration and treatment outcome. Variables, such as age, gender, social economic status, treatment setting and motivation, may confound the relation between treatment duration and improvement scores. Another reason for the limited predictive value of treatment duration for improvement scores was that duration needed for improvement may vary per patient. Patients may show the same amount of improvement, but the necessary treatment duration to achieve the same levels can differ. This possibility can be clarified by providing regular assessment during treatment (for example every three months) in order to have more insight in the course of psychiatric symptoms and personality disorder during treatment.

Another possible explanation was the *ceiling effect*, where the upper limit on the dependent variables can impact the amount of change measured after treatment. Improvement scores were calculated by subtracting pre-treatment scores from post-treatment scores. Some patients reported few psychiatric symptoms and/or good personality functioning at the first assessment. It is possible that these patients improved even more, however the assessed improvement scores are limited due to the questionnaires used in this study.

### **Strengths and limitations**

This study had a number of strengths. First, the sample size was large. Also, the distribution of the PD in this sample was consistent with results previously found in other clinical samples. Cluster C PD were most common, followed by Cluster B disorder. Cluster A was least diagnosed. The percentage of patients who were diagnosed with PD NOS in this sample is high compared to other studies, but in line with studies based on clinical diagnosis instead of diagnostic interviews. (Zimmerman, Rothschild & Chelminski, 2005; Verheul & Widiger, 2004). The *t*-scores of the five higher order domains of SIPP-118 before treatment corresponded to moderate impairment in personality functioning in a clinical sample. This indicates that the level of personality functioning found in this study is common in a clinical sample (de Viersprong, n.d.). These factors contribute to the generalizability of results to other outpatient samples in specialized treatment programs for PD.

However, this study also had a number of limitations. Firstly, we only selected patients who completed the KKL and SIPP-118 at least twice at the same time during treatment. By doing so, the last assessment used in this study does not have to be at the end of their treatment. Due to this missing information it is possible that some patients may have received more treatment after the last assessment, and also experienced further change in symptoms and personality functioning. Also, patients who did not complete the KKL and SIPP-118 twice at the same time were not analysed in this study. There are numerous reasons why patients did not complete the questionnaires. For example, patients who dropped out of treatment are not likely to complete the questionnaires at the end of treatment. Earlier research showed that patients with PD, who dropped out of treatment, are less motivated to change and to attend a therapeutic program. These patients rated their expectations of the effectiveness of the therapeutic program lower than patients who completed the program (Martino, Menchetti, Pozzi & Berardi, 2012).

Second, the majority of patients only completed the KKL and SIPP-118 twice at the same time. By doing so, we have no insight on the level of psychiatric symptoms and domains of

personality functioning during treatment and on the relation between psychiatric symptoms and personality functioning. Psychiatric symptoms might have improved more quickly than personality functioning or vice versa. On the other hand, our finding that treatment duration has only a minimal effect on the relationship between symptom change and improvement in personality functioning suggests that the two types of improvement are correlated throughout the course of treatment.

Third, there was no information on the type and intensity of treatment per patient available. During this study patients filled the self-report questionnaires at the initial assessment - before treatment. Sometimes there was a waiting list before actually starting treatment. Duration of the waiting list may vary depending on the treatment site. Also, the treatment plan may vary per patient and patients may have received different kinds of interventions and/or treatment of a different intensity.

Fourth, this study was an observational study and therefore only contains an intervention group - and no control group. If patients were randomly assigned to either the intervention group or the control group and were assessed simultaneously, threats to internal validity (history, maturation, testing and selection) would have been directly addressed (Kazdin 2010). Due to this missing information we cannot say that improvement in psychiatric symptoms and personality functioning is caused by treatment.

Fifth, the level of psychiatric symptoms and personality functioning in this study were only assessed by using self-report questionnaires. When using self-reports there is always a risk of social desirability response bias and this lowers the validity of certain measurements (Kazdin, 2010). Also, some patients want to accelerate the process before treatment by exaggerating their complaints and after treatment minimize their complaints due to the socially desirability response bias (Kazdin, 2010). In future research it is recommended to add a (semi) structured interview, such as the Mini International Neuropsychiatric Interview (MINI) (Sheehan et al., 1998).

### **Concluding thoughts**

The results of this study contribute to the discussion about dimensional models for Axis I and PD. During treatment patients improved on personality functioning and they reported less psychiatric symptoms. These findings are in line with the expectation based on earlier research. Further research could minimize the limitations of this current study and clarify the (causal) relation between personality functioning and psychiatric symptoms during treatment. Another recommendation is to add a follow-up study to assess the long-term effects of

improvement in personality functioning and psychiatric symptoms and to see if improvement in personality functioning makes patients more resilient for re-occurrence of PD than symptom reduction alone. More research is necessary to clarify the relationship between treatment duration and improvement on personality functioning.

## References

- American Psychiatric Association (2013). *Diagnostic and statistical manual of disorders* (5<sup>th</sup> ed., (DSM-V). Washington, DC: APA
- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders 4th ed., text revised*. Washington, DC: APA
- American Psychiatric Association (1980). *Diagnostic and statistical manual of mental disorders 3th ed*, Washington, DC: APA
- Bateman, A. W., & Fonagy, P. (2000). Effectiveness of psychotherapeutic treatment of personality disorder. *British Journal of Psychiatry*, 177, 138-143
- Battaglia, M., Przybeck, T. R., Bellodi, L., & Cloninger, C. R., (1996). Temperament dimensions explain the comorbidity of psychiatric disorders. *Comprehensive Psychiatry*, 37, 292-298
- Cloninger, C. R., Svrakic, D. M., & Przybeck, T. R. (1993). A psychobiological model of temperament and character. *Archives of General Psychiatry*, 50, 975-990
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2<sup>nd</sup> ed.). New Jersey: Lawrence Erlbaum
- Emmelkamp, P. M. G., & Kamphuis, J. H. (2007). *Personality Disorders*. New York: Psychology Press
- Feenstra, D. J., Hutsebaut, J., Verheul, R., & van Limbeek, J. (2014). Changes in the identity integration of adolescents in treatment for personality disorders. *Journal of Personality Disorders*, 28, 101-112
- Gabbard, G. O., Coyne, L., Allen, J. G., Spohn, H., Colson, D. B., & Vary, M. (2000). Evaluation of intensive inpatient treatment of patients with severe personality disorders. *Psychiatric Service*, 51, 893-898
- Grilo, C. M., Shea, M. T., Sanislow, C. A., Skodol, A. E., Gunderson, J. G., Stout, R. L., Pagano, M. E., Yen, S., Morey, L. C., & Zanarini, M. C. (2004). Two-year stability and change of schizotypal, borderline, avoidant, and obsessive-compulsive personality disorders. *Journal of Consulting and Clinical Psychology*, 72, 767-775
- Gunderson, J.G., Morey, L.C., Stout, R.L., Skodol, A. E., Shea, M. T., McGlashan, T. H., Zanarini, M. C., Grilo, C. M., Sanislow, C. A., Yen, S., Daversa, M. I., & Bender, D. S. (2004). Major depressive disorder and borderline personality disorder revisited: Longitudinal interactions. *Journal of Clinical Psychiatry*, 65, 1049-1056

- Harkness, A. R., & Lilienfeld, S. O. (1997). Individual differences science for treatment planning: Personality traits. *Psychological Assessment*, 9, 349-360
- Huijbrechts, I. P. A. M., Appelo, M., Korrelboom, C. W., Heiden van der, C., & Bos, E. H. (2009). Routine Outcome Measurement binnen PsyQ: normering van de 4K's. *Directieve Therapie*, 29, 243-253
- Jensen, H. H., Mortensen, E. L., & Lotz, M. (2008). Do changes on MCMI-II personality disorder scales in short-term psychotherapy reflect trait or state changes? *Nordic Journal of Psychiatry*, 62, 46-54
- Kazdin, A. E. (2010). *Research design in clinical psychology (4th ed.)*. Harlow, England: Pearson Education Limited
- Leichsenring, F., & Rabung, S. (2011). Long-term psychodynamic psychotherapy in complex mental disorders: update of a meta-analysis. *British Journal of Psychology*, 199, 15-22
- Lenzenweger, M. F., Lane, M. C., Loranger, A. W., & Kessler, R. C. (2007) DSM-IV personality disorders in the National Comorbidity Survey Replication. *Biological Psychiatry*, 62, 553-564
- Livesley, W. J. (2011). An empirically-based classification of personality disorder. *Journal of Personality disorders*, 25, 397-420
- Livesley, W. J., & Jang, K. L. (2000). Toward an empirically based classification of personality disorder. *Journal of Personality Disorders*, 14, 137-151
- Martino, F., Menchetti, M., Pozzi, E., & Berardi, D. (2012). Predictors of dropout among personality disorders in a specialist outpatients psychosocial treatment: A preliminary study. *Psychiatry and Clinical Neurosciences*, 66, 180-186
- McGlashan, T. H., Grilo, C. M., Skodol, A. E., Gunderson, J. G., Shea, M. T., Morey, L. C., Zanarini, M. C., & Stout, R. L. (2000). The collaborative longitudinal personality disorders study: baseline axis I/II and II/II diagnostic co-occurrence. *Acta Psychiatrica Scandinavica*, 102, 256-264
- Meyers, L. S., Gamst, G., & Guarino, A. J. (2006). *Applied Multivariate Research*, Thousand Oaks: SAGE Publications
- Parker, G., Both, L., Olley, A., Hadzi-Pavlovic, D., Irvine, P., & Jacobs, G. (2002). Defining disordered personality functioning. *Journal of Personality Disorders*, 16, 503-522
- Perry, J. C., Banon, E., & Ianni, F. (1999). Effectiveness of psychotherapy for personality disorders. *American Journal of Psychiatry*, 156, 1312-1321
- Regier, D. A., Narrow, W. E., First, M. B., & Marshall, T. (2002). The APA classification of mental disorders: Future perspectives. *Psychopathology*, 35, 166-170

- Reich, J. (2003). The effect of Axis II disorders on the outcome of treatment of anxiety and unipolar depressive disorders: A review. *Journal of Personality Disorders*, 17, 387-405
- Shea, M. T., Stout, R., Gunderson, J., Morey, L. C., Grilo, C. M., Mc Glashan, T., Skodol, A. E., Dyck, I., Zanarini, M. C., & Keller, M. B. (2002). Short-term diagnostic stability of schizotypal, borderline, avoidant, and obsessive-compulsive personality disorders. *American Journal of Psychiatry*, 159, 2036-2041
- Shea, M. T., & Yen, S. (2003). Stability as a distinction between Axis I and Axis II disorders. *Journal of Personality Disorders*, 17, 373-386
- Sheehan, D. V., Lecrubier, Y., Sheehan, K. H., Amorim, P., Janavs, J., Weiller, E., Hergueta, T., Baker, R., & Dunbar, G. C. (1998). The Mini-International Neuropsychiatric Interview (MINI): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry*, 59, 22-33
- Trull, T. J., & Durrett, C. A. (2005). Categorical and dimensional models of personality disorder. *Annual Review of Clinical Psychology*, 1, 355-380
- Verheul, R. (2005). Clinical utility of dimensional models for personality pathology. *Journal of Personality Disorders*, 19, 283-302
- Verheul, R., Andrea, H., Berghout, C. C., Dolan, C., Busschbach, J. J. V., Kroft van der, P. J. A., Bateman, A. W., & Fonagy, P. (2008). Severity Indices of Personality Problems (SIPP-118): Development, Factor Structure, Reliability, and Validity. *Psychological Assessment*, 20, 23-34
- Verheul, R., & Herbrink, M. (2007). The Efficacy of Various Modalities of Psychotherapy for Personality Disorders: A Systematic Review of the Evidence and Clinical Recommendations. *International Review of Psychiatry*, 19, 25-38
- Verheul, R., & Widiger, T. A. (2004). A meta-analysis of the prevalence and usage of the personality disorder not otherwise specified (PDNOS) diagnosis. *Journal of Personality Disorders*, 18, 309-319
- Viersprong, de (n.d.). Interpretation. Retrieved September 2, 2014 from <http://www.deviersprong.nl/paginas/148-interpretation.html>
- Widiger, T. A., & Simonsen, E. (2005). Alternative dimensional models of personality disorder: Finding a common ground. *Journal of Personality Disorders*, 19, 110-130
- Widiger, T. A., & Trull, T. J. (2007). Plate tectonics in the classification of personality disorder - Shifting to a dimensional model. *American Psychologist*, 62, 71-83

- Zanarini, M. C., Frankenburg, F. R., Dubo, E. D., Sickel, A. E., Trikha, A., Levin, A., & Reynolds, V. (1998). Axis I comorbidity of borderline personality disorder. *American Journal of Psychiatry*, 155, 1733-1739
- Zanarini, M. C., Frankenburg, F. R., Hennen, J., & Silk, K. R. (2003). The longitudinal course of borderline psychopathology: 6-year prospective follow-up of the phenomenology of borderline personality disorder. *American Journal of Psychiatry*, 160, 274-283
- Zanarini, M. C., Frankenburg, F. R., Reich, D. B., & Fitzmaurice, G. (2010). Time to Attainment of Recovery From Borderline Personality Disorder and Stability of Recovery: A 10-year Prospective. *American Journal of Psychiatry*, 167, 663-667
- Zimmerman, M., Chelminski, I., & Young, D. (2008). The frequency of personality disorders in psychiatric patients. *Psychiatric Clinics of North America*, 31, 405-420
- Zimmerman, M., Rothschild, L., & Chelminski, I. (2005). The prevalence of DSM-IV personality disorders in psychiatric outpatients. *American Journal of Psychiatry*, 162, 1911-1918