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Stability of functional impairment in patients with schizotypal, borderline, avoidant, or obsessive–compulsive personality disorder over two years

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ABSTRACT

Background. A defining feature of personality disorder (PD) is an enduring pattern of inner experience and behavior that is stable over time. Follow-up and follow-along studies have shown considerable diagnostic instability of PDs, however, even over short intervals. What, then, about personality disorder is stable? The purpose of this study was to determine the stability of impairment in psychosocial functioning in patients with four different PDs, in contrast to patients with major depressive disorder (MDD) and no PD, prospectively over a 2-year period.

Method. Six hundred treatment-seeking or treated patients were recruited primarily from clinical services in four metropolitan areas of the Northeastern USA. Patients were assigned to one of five diagnostic groups: schizotypal (STPD) ($n=81$), borderline (BPD) ($n=155$), avoidant (AVPD) ($n=137$), or obsessive–compulsive (OCPD) ($n=142$) personality disorders or MDD and no PD ($n=85$), based on the results of semi-structured interview assessments and self-report measures. Impairment in psychosocial functioning was measured using the Longitudinal Interval Follow-up Evaluation (LIFE) at baseline and at three follow-up assessments.

Results. Significant improvement in psychosocial functioning occurred in only three of seven domains of functioning and was largely the result of improvements in the MDD and no PD group. Patients with BPD or OCPD showed no improvement in functioning overall, but patients with BPD who experienced change in personality psychopathology showed some improvement in functioning. Impairment in social relationships appeared most stable in patients with PDs.

Conclusion. Impairment in functioning, especially social functioning, may be an enduring component of personality disorder.

INTRODUCTION

A defining feature of a personality disorder (PD), according to DSM-IV-TR (APA, 2000), is

‘an enduring pattern of inner experience and behavior’ that ‘is stable over time’. This traditional view of personality disorder as a stable form of psychopathology has been held despite follow-up studies that reveal that only about 50% of patients will retain a PD diagnosis over time (Perry, 1993; McDavid & Pilkonis, 1996;

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Grilo *et al.* 1998). Although many of these studies had design limitations, even recent methodologically rigorous follow-along studies have found that personality psychopathology decreases over time (Lenzenweger, 1999; Johnson *et al.* 2000) and that a majority of patients do not stay consistently above diagnostic thresholds over periods as short as 1 or 2 years (Shea *et al.* 2002; Grilo *et al.* in press). The observed instability of PD diagnoses raises the obvious question of what *is* stable about a personality disorder, and might account for the commonly held belief that PDs persist?

One logical candidate for the stable component of personality disorder is the associated functional impairment. Impairment in psychosocial functioning is one factor that distinguishes personality disorder from normal personality and 'impairment in social, occupational, or other important areas of functioning' (APA, 2000) is considered an essential feature of DSM-defined personality disorders. Even if some traits or behaviors indicative of personality disorders wax and wane over time, impairment in functioning should endure, if the concept of personality disorder as a stable entity is valid.

The purpose of this study was to determine the stability of impairment in psychosocial functioning in patients with personality disorders prospectively over a 2-year period. Of primary interest was whether PDs differed in degree of impairment or in its stability over time, whether impairment associated with PDs was more persistent in some domains of functioning than in others, and whether improvement in personality psychopathology over time would be accompanied by improvement in functioning. We compared the levels and stability of functional impairment between four different personality disorders – schizotypal (STPD), borderline (BPD), avoidant (AVPD), and obsessive-compulsive (OCPD) personality disorders – and major depressive disorder (MDD) without personality disorder. We also compared the stability of impairment in personality disorders across domains of functioning, including occupational, social, leisure, and global functioning. Finally, we examined the effect of a decrease in PD psychopathology on levels of functional impairment after 1 and 2 years. Data are from the first 2 years of the prospective, longitudinal, multi-wave Collaborative

Longitudinal Personality Disorders Study (CLPS; Gunderson *et al.* 2000). We hypothesized that (1) functional impairment would be more stable than personality psychopathology itself; (2) functional impairment in patients with severe PDs would be more stable than in patients with less severe PDs or with MDD; (3) impairment in social relations would be the most stable impairment in patients with PDs; and (4) improvement in personality psychopathology would be associated with improvement in functioning, but not to the same degree. Our final hypothesis is based on the expectation that PDs, usually beginning in adolescence or early adulthood, would disrupt normative experiences, such as establishing a career or intimate relationships outside the family of origin. Even with improvement in PD psychopathology, it could take time to overcome these deficits.

METHOD

Detailed descriptions of the CLPS rationale, recruitment, subject demographics, diagnostic assessments (Gunderson *et al.* 2000), and reliability (Zanarini *et al.* 2000) are available elsewhere. Axis I and Axis II co-morbidity typical of patients with PDs was present (McGlashan *et al.* 2000).

Subjects

Participants 18–45 years of age were recruited primarily from clinical services affiliated with each of the four recruitment sites of the CLPS. Additional subjects were recruited via postings or advertising. All were previously or currently in treatment (Bender *et al.* 2001). Participants were prescreened to determine age eligibility and treatment status and to exclude patients with active psychosis, acute substance intoxication or withdrawal or other confusional states, or a history of schizophrenia or schizoaffective disorder. All participants signed written informed consent after the study procedures had been fully explained.

The current report is based on 600 of the original 668 patients (89.8%) on whom complete follow-up data on functioning and diagnostic criteria were available over 2 years. The patients were assigned to one of five diagnostic groups: STPD ($n=81$, 13.5% of the total), BPD ($n=155$, 25.8%), AVPD ($n=137$, 22.8%),

OCPD ($n=142$, 23.7%) or MDD ($n=85$, 14.2%). The majority of the patients were women (63.5%), white (76.2%), and from Hollingshead and Redlich social classes II or III (65%). They were roughly equally distributed across the age range included in the study (mean age 32.9 years, $s.d.=8.1$). There were no differences in the diagnostic distribution or on any demographic variables between patients in the study *versus* those who were not followed over the 2 years.

Assessment

All patients were interviewed by experienced raters with the *Structured Clinical Interview for DSM-IV Axis I Disorders, Patient Edition* (SCID-I/P; First *et al.* 1996) and the *Diagnostic Interview for DSM-IV Personality Disorders* (DIPD-IV; Zanarini *et al.* 1996). Raters were trained using live or videotaped interviews under the supervision of the senior author of the DIPD-IV (MCZ) at McLean Hospital. The four personality disorder diagnoses had good inter-rater and test-retest reliabilities (STPD: 100% agreement (n insufficient to calculate kappa) and kappa=0.64, respectively; BPD: kappa=0.68 and 0.69; AVPD: kappa=0.68 and 0.73; OCPD: kappa=0.71 and 0.74) (Zanarini *et al.* 2000). Inter-rater reliability kappa for MDD was 0.80. For the assignment of patients to the study groups, diagnoses obtained from the DIPD-IV received convergent support from the results of either of two contrasting approaches to Axis II diagnosis: the self-report Schedule for Nonadaptive and Adaptive Personality (SNAP; Clark, 1993) or an independent clinician's rating on the Personality Assessment Form (PAF; Shea *et al.* 1987).

Patients were reinterviewed at 6, 12, and 24 months following the baseline assessment. The course of the four PDs was assessed using a modification of the DIPD-IV, the *Diagnostic Interview for DSM-IV Personality Disorders Follow-Along Version* (DIPD-FAV), to record the presence of traits or behaviors indicative of each criterion for the PDs for each month of the follow-up period. Reliability for the retrospective reporting on the DIPD-FAV was tested and found to be good (STPD, kappa=0.78; BPD, kappa=0.70; AVPD, kappa=0.73; OCPD, kappa=0.68) for month 6 of follow-up,

assessed during both the 6-month and 12-month interviews.

To assess psychosocial functioning, interviewers administered the Longitudinal Interval Follow-Up Evaluation (LIFE; Keller *et al.* 1987). The LIFE includes questions to assess functioning in employment; household duties; student work; interpersonal relationships with parents, siblings, spouse/mate, children, other relatives, and friends; recreation; and three ratings of global functioning: global satisfaction, global social adjustment, and the DSM-IV Axis V Global Assessment of Functioning Scale. Most areas of functioning are rated on five-point scales of severity (1 = no impairment, high level of functioning or very good functioning; 2 = no impairment, satisfactory level of functioning or good functioning; 3 = mild impairment or fair functioning; 4 = moderate impairment or poor functioning; and 5 = severe impairment or very poor functioning). The Global Assessment of Functioning Scale (GAFS) is rated on a 100-point scale, with 100 indicating the highest possible level of functioning. Reliability of the LIFE social functioning scales (Warshaw *et al.* 1994) has been previously established. Ratings were made for each patient's typical functioning in the month before the baseline evaluation. The LIFE was then re-administered at the 6-, 12-, and 24-month follow-ups to track the monthly course of impairments in functioning.

Analyses

Repeated measures analysis of covariance (ANCOVA) using the multivariate approach was used to compare mean ratings of impairment in functioning in seven domains that had been shown previously (Skodol *et al.* 2002) to differ at baseline between the diagnostic groups. Ratings for the month prior to assessment at baseline and 12-month and 24-month follow-ups were compared between and within the five diagnostic groups on seven measures of functional impairment: employment; social relationships with parents, spouse/mate, and friends; recreation; the GAFS; and a scale of global social adjustment (which does not include symptoms). The covariates included in the repeated measures ANCOVA analyses were diagnostic group, site, gender, age, ethnicity, and number of co-morbid Axis I and Axis II

Table 1. Psychosocial functioning at three points in time for patients with schizotypal, borderline, avoidant, or obsessive-compulsive personality disorder and patients with major depressive disorder

Area of functioning*	STPD (n=81)			BPD (n=155)			AVPD (n=137)		
	T ₀ X (s.d.)	T ₁ X (s.d.)	T ₂ X (s.d.)	T ₀ X (s.d.)	T ₁ X (s.d.)	T ₂ X (s.d.)	T ₀ X (s.d.)	T ₁ X (s.d.)	T ₂ X (s.d.)
Employment	3.1 (1.3)	2.8 (1.2)	2.3 (1.3)	3.2 (1.6)	2.2 (0.9)	2.2 (1.3)	2.4 (1.4)	1.8 (1.0)	1.8 (1.0)
Relationships with									
Parents	3.2 (1.2)	3.4 (1.6)	3.3 (1.8)	3.1 (1.3)	3.6 (2.0)	3.4 (1.9)	2.7 (1.2)	3.3 (1.9)	3.3 (1.9)
Spouse/mate	2.8 (1.1)	2.1 (0.9)	2.7 (1.3)	2.8 (1.4)	2.9 (1.2)	2.6 (1.3)	2.6 (1.1)	2.3 (1.2)	2.3 (1.3)
Friends	3.6 (1.1)	3.5 (1.1)	3.2 (1.2)	3.2 (1.2)	2.9 (1.1)	2.6 (1.1)	3.0 (1.3)	2.7 (1.1)	2.7 (1.2)
Recreation	3.4 (1.2)	2.9 (1.2)	2.5 (1.2)	3.4 (1.2)	3.0 (1.2)	2.8 (1.3)	2.8 (1.1)	2.6 (1.1)	2.5 (1.1)
Global adjustment	4.2 (0.7)	3.9 (0.9)	3.7 (1.0)	4.0 (0.9)	3.7 (1.0)	3.6 (1.0)	3.5 (0.8)	3.3 (1.0)	3.0 (1.1)
Axis V GAFS	51.8 (9.9)	54.0 (10.7)	53.1 (12.2)	53.1 (9.4)	56.0 (11.3)	53.4 (13.0)	59.7 (10.5)	61.2 (11.7)	62.0 (13.0)
	OCPD (n=142)			MDD (n=85)					
Area of functioning*	T ₀ X (s.d.)	T ₁ X (s.d.)	T ₂ X (s.d.)	T ₀ X (s.d.)	T ₁ X (s.d.)	T ₂ X (s.d.)			
Employment	2.1 (1.2)	1.7 (0.9)	1.9 (1.1)	2.4 (1.3)	1.7 (1.1)	1.6 (0.8)			
Relationships with									
Parents	2.4 (1.1)	3.1 (1.8)	3.1 (2.0)	2.3 (1.1)	3.0 (2.1)	3.0 (2.0)			
Spouse/mate	2.1 (1.0)	2.0 (0.8)	2.0 (0.9)	2.6 (1.2)	1.8 (1.1)	1.8 (1.0)			
Friends	2.6 (1.2)	2.4 (1.0)	2.2 (1.0)	2.5 (1.0)	2.1 (1.0)	1.8 (0.9)			
Recreation	2.6 (1.2)	2.4 (1.1)	2.3 (1.1)	2.9 (1.1)	2.2 (0.9)	2.1 (1.1)			
Global adjustment	3.1 (1.0)	2.9 (0.9)	2.8 (1.0)	3.4 (0.8)	2.7 (1.1)	2.6 (1.3)			
Axis V GAFS	64.1 (10.5)	64.9 (11.2)	65.8 (11.1)	61.3 (10.2)	68.3 (13.1)	66.3 (12.6)			

* From the Longitudinal Interval Follow-up Evaluation.

STPD, schizotypal personality disorder; BPD, borderline personality disorder; AVPD, avoidant personality disorder; OCPD, obsessive-compulsive personality disorder; MDD, major depressive disorder; GAFS, Global Assessment of Functioning score; T₀, baseline assessment; T₁, 1-year follow-up assessment; T₂, 2-year follow-up assessment.

disorders at baseline. Follow-up posterior analyses of significant multivariate effects were performed to examine mean differences between groups.

In order to determine the effects of improvement in personality disorder psychopathology on improvement in functioning, the proportion decrease in the number of criteria met by patients in each diagnostic group from baseline to the 12-month follow-up was calculated. Correlations between the month 12 rating of PD psychopathology from the DIPD-FAV and the other 11 months of the first year were >0.90 for each PD, indicating that the month 12 ratings could be taken to represent the amount of change in PD psychopathology over this interval. A series of forward, stepwise multiple regression analyses were then performed with proportion decrease in number of criteria, gender, age, ethnicity, number of co-morbid Axis I and Axis II disorders, and the baseline value of the dependent psychosocial functioning variable as predictors of functional impairment levels in the seven domains at the 1-year and 2-year

follow-ups. For entry into the model, each variable's contribution to the model was tested against the null hypothesis of making no contribution ($p < 0.50$). After evaluating all variables included in the model, the stepwise method removed any variable that did not produce an *F* statistic significant at the 0.10 level.

At a significance level of 0.05, 1 in 20 test results would be positive by chance alone. We performed 28 comparisons. Since we believed that a full Bonferroni correction would be too conservative and would result in an excessive Type II error rate, we used 0.005 as the level of significance in this study. All statistical analyses were conducted using SAS Version 8.2 (SAS Institute Inc., Cary, NC, USA).

RESULTS

Table 1 shows means and standard deviations of ratings in seven domains of psychosocial functioning for the each of the four personality disorders and the comparison group with major

depressive disorder at baseline, 1-year follow-up, and 2-year follow-up assessments.

Averaging across time-points for between subject-effects, repeated measures ANCOVAs revealed significant main effects of diagnostic group for impairment in employment ($F=5.38$, $df=4$, $p=0.0004$), social relationships with friends ($F=12.75$, $df=4$, $p<0.0001$), recreation ($F=5.33$, $df=4$, $p<0.0003$), global social adjustment ($F=19.99$, $df=4$, $p<0.0001$), and GAFS ($F=20.41$, $df=4$, $p<0.0001$), but not for social relationships with parents ($F=1.05$, $df=4$, $p=0.38$) or with spouse or mate ($F=1.71$, $df=4$, $p=0.15$). Follow-up analyses revealed significantly worse employment functioning among patients with BPD in comparison to those with OCPD ($F=12.48$, $df=1$, $p=0.0005$) or AVPD ($F=11.16$, $df=1$, $p=0.001$), and significantly worse employment functioning among patients with STPD in comparison to those with OCPD ($F=12.48$, $df=1$, $p=0.0005$) or AVPD ($F=11.16$, $df=1$, $p=0.001$). With regards to social relationships with friends, significantly more impairment was found among patients with STPD in comparison to those with OCPD ($F=33.63$, $df=1$, $p=0.0001$) or MDD ($F=32.36$, $df=1$, $p=0.0001$). Similarly, significantly more impairment was found among patients with AVPD in comparison to those with OCPD ($F=17.72$, $df=1$, $p=0.0001$) or MDD ($F=19.57$, $df=1$, $p=0.0001$) in this domain. Significantly more recreational impairment was found among patients with BPD in comparison to patients with OCPD ($F=20.56$, $df=1$, $p=0.0001$). Significantly worse global social functioning scores were found among patients with STPD in comparison to patients with AVPD ($F=22.38$, $df=1$, $p=0.0001$), OCPD ($F=57.14$, $df=1$, $p=0.0001$) or MDD ($F=24.58$, $df=1$, $p=0.0001$). A similar pattern was found among patients with BPD; worse global social functioning scores were found among patients with BPD in comparison to those with AVPD ($F=16.98$, $df=1$, $p=0.0001$), OCPD ($F=54.73$, $df=1$, $p=0.0001$) or MDD ($F=18.67$, $df=1$, $p=0.0001$). With regard to GAFS differences between diagnostic groups, significantly worse GAFS scores were found in patients with STPD in comparison to patients with AVPD ($F=24.22$, $df=1$, $p=0.0001$), OCPD ($F=55.00$, $df=1$, $p=0.0001$), or MDD ($F=27.96$, $df=1$, $p=0.0001$). Significantly worse GAFS scores

were also found in patients with BPD in comparison to those with AVPD ($F=20.71$, $df=1$, $p=0.0001$), OCPD ($F=55.12$, $df=1$, $p=0.0001$) or MDD ($F=23.48$, $df=1$, $p=0.0001$).

Repeated measures ANCOVAs revealed significant main effects of time for impairment in social relationships with spouse or mate ($F=5.92$, $df=2$, $p=0.003$), recreation ($F=7.40$, $df=2$, $p=0.0006$), and global social adjustment ($F=9.46$, $df=2$, $p<0.0001$). Significant improvements were found between baseline and 12 months and baseline and 24 months for these three domains of functioning. More improvement was seen during the first year of follow-up, followed by slight improvement during the second year.

Significant time by diagnostic group interactions were found for impairment in recreation ($F=2.52$, $df=8$, $p=0.01$) and for GAFS ($F=2.73$, $df=8$, $p=0.006$). *Post-hoc* comparisons showed that improvement in recreational functioning in the MDD group was greater in comparison to patients with AVPD or OCPD from baseline to 12 months (MDD v. AVPD: $F=10.8$, $df=1$, $p=0.001$; MDD v. OCPD: $F=8.8$, $df=1$, $p=0.003$) and from baseline to 24 months (MDD v. AVPD: $F=8.09$, $df=1$, $p=0.005$; MDD v. OCPD: $F=7.4$, $df=1$, $p=0.007$). Improvement on the GAFS was greater for patients with MDD in comparison to all PD groups from baseline to 12 months (MDD v. STPD: $F=10.0$, $df=1$, $p=0.002$; MDD v. BPD: $F=8.78$, $df=1$, $p=0.003$; MDD v. AVPD: $F=14.3$, $df=1$, $p=0.0002$; MDD v. OCPD: $F=17.0$, $df=1$, $p<0.0001$). *Post-hoc* ANCOVAs on change in social relationships with spouse or mate, recreation, and global social adjustment done on each PD group separately revealed significant within-subjects effects only for recreation in the patients with STPD ($F=8.23$, $df=2$, $p=0.0007$) and for global social adjustment for patients with AVPD ($F=7.93$, $df=2$, $p=0.0008$). None of these variables changed over time for patients with BPD or OCPD.

The proportion decrease in number of criteria met from baseline to the 1-year follow-up for each of the PD groups was as follows: STPD, mean = -0.18 , s.d. = 0.23 ; BPD, mean = -0.29 , s.d. = 0.27 ; AVPD, mean = -0.20 , s.d. = 0.30 ; OCPD, mean = -0.22 , s.d. = 0.23 . Table 2 presents the results of a series of regression analyses in which proportion decrease in number of

Table 2. *Effect of improvement in personality disorder psychopathology during first year on change in psychosocial functioning over 2 years*

Area of functioning	STPD				BPD			
	Year 1		Year 2		Year 1		Year 2	
	β	(95% CI)	β	(95% CI)	β	(95% CI)	β	(95% CI)
Employment	— ^a	—	—	—	0.27	(0.05 to 0.48)	0.39 ^b	(0.19 to 0.61)
Relationships with								
Parents	—	—	—	—	—	—	—	—
Spouse/mate	—	—	—	—	0.39	(0.12 to 0.66)	—	—
Friends	0.32 ^b	(0.14 to 0.51)	—	—	—	—	—	—
Recreation	0.35 ^b	(0.15 to 0.54)	0.26	(0.04 to 0.48)	0.31 ^c	(0.17 to 0.45)	0.23 ^b	(0.08 to 0.38)
Global adjustment	0.32 ^b	(0.13 to 0.51)	0.35 ^b	(0.14 to 0.55)	0.41 ^c	(0.28 to 0.54)	0.40 ^c	(0.26 to 0.54)
Axis V GAFS	-0.39 ^c	(-0.52 to -0.26)	-0.36 ^c	(-0.50 to -0.26)	-0.29 ^b	(-0.46 to -0.11)	-0.27 ^b	(-0.45 to -0.10)
	AVPD				OCPD			
	Year 1		Year 2		Year 1		Year 2	
	β	(95% CI)	β	(95% CI)	β	(95% CI)	β	(95% CI)
Employment	—	—	0.33 ^b	(0.13 to 0.53)	—	—	—	—
Relationships with								
Parents	—	—	0.17	(0.01 to 0.18)	—	—	—	—
Spouse/mate	—	—	—	—	—	—	—	—
Friends	—	—	—	—	—	—	—	—
Recreation	0.22	(0.06 to 0.38)	0.16	(0.00 to 0.32)	0.19	(0.03 to 0.35)	—	—
Global adjustment	0.32 ^c	(0.18 to 0.46)	0.24	(0.09 to 0.39)	—	—	—	—
Axis V GAFS	-0.19	(-0.32 to -0.06)	0.22	(-0.36 to -0.08)	—	—	—	—

STPD, schizotypal personality disorder; BPD, borderline personality disorder; AVPD, avoidant personality disorder; OCPD, obsessive-compulsive personality disorder; GAFS, Global Assessment of Functioning score.

^a Not selected into model as significant.

^b $p < 0.005$.

^c $p < 0.0001$.

criteria met from baseline to 1 year is used to predict functioning in the seven domains. According to the table, change in borderline personality psychopathology appeared to have the greatest impact on functioning and change in obsessive-compulsive personality psychopathology the least. For the most part, change in functioning associated with improvement in PD psychopathology in the first year was sustained into the second year of follow-up. For avoidant personality disorder, some improvement in functioning was not evident until the second year. Improvement in PD psychopathology appeared to be associated more with improvement in employment, recreation, and global measures of functioning than with improved social relationships.

DISCUSSION

Significant improvement in psychosocial functioning over time occurred in only three

domains: relationships with spouse or mate, recreation, and global social adjustment. In the case of impairment in recreation and in global social adjustment, these improvements seemed largely the result of improvements in the group with MDD and no PD. Patients with either BPD or OCPD showed no improvement over time on these measures. Improvement in relationships with spouse or mate may come as a surprise in a sample of patients, most of whom have PDs. Only about 20% of the sample had such a relationship, however, so the finding is limited to a small minority.

In a previous study of the CLPS sample, we have shown that the majority of patients with PDs did not remain above the diagnostic threshold for their disorder for the first 12 months of follow-up (range from 56% remaining at or above threshold for AVPD to 34% for STPD) and the mean number of criteria met decreased significantly for each PD group (Shea et al. 2002). In addition, on blind reassessment

after two years, PD 'remission' rates ranged from 50% for AVPD to 61% for STPD for dropping below threshold and from 23% (STPD) to 38% (OCPD) for a stringent definition of improvement (12 consecutive months with two or fewer criteria met) (Grilo *et al.* in press).

Compared with the degree that PD psychopathology improves, the results of the present study are consistent with the hypothesis that functional impairment improves less than psychopathology over a 2-year period in patients with PDs. In addition, patients with different PDs maintained their positions on degree of impairment with which they presented at baseline relative to one another and to patients with MDD (Skodol *et al.* 2002). Patients with STPD or BPD were more impaired at 1-year and 2-year follow-up assessments than patients with OCPD or MDD. Patients with AVPD remained intermediate.

Interestingly, improvement in PD psychopathology had a greater effect on functioning for the severe PDs (STPD and BPD) than for the less severe (AVPD and OCPD). BPD and OCPD had relatively greater improvement than STPD and AVPD, however. These findings suggest that functional impairment is more closely linked to the course of personality psychopathology in severe PDs. In the case of AVPD, at least, improvement in functioning may be a slower process. A check on the effects of continuing improvement in PD psychopathology, i.e. from 12 to 24 months, revealed significant (smaller) effects on functioning at 24 months only for BPD psychopathology on employment functioning, global social adjustment, and GAFS; STPD psychopathology on social relationships with friends; and AVPD psychopathology on global social adjustment (results not shown). These findings may be due to the fact that improvement in PD psychopathology was greater in the first year of follow-up than in the second year, but they are also consistent with the hypothesis that functional impairment associated with PDs is more stable than PD psychopathology itself. After 2 years, there are as yet too few patients in any of the groups who have deteriorated following improvement to evaluate whether *increases* in psychopathology will be reflected in more rapid concomitant *increases* in functional impairment in the severe *versus* the less severe personality disorders.

Future longer-term follow-up assessments will address this question.

Despite the existence of some effective treatments for PDs, in naturalistic studies such as ours, the determination of treatment effects is confounded by the natural tendency for the most severely ill patients to receive the most treatment (Cochran, 1983; Salas *et al.* 1999). In a retrospective study of treatment utilization at baseline, Bender and colleagues (2001) found that patients with BPD were more likely to have received virtually every type of psychosocial treatment and psychotropic medication (and in greater amounts) than patients with MDD or other PDs. These results have been confirmed recently with a prospective design (Bender, personal communication). The ANCOVA analyses presented above were re-run '*post hoc*' with a composite 'treatment intensity' variable as a covariate. Treatment intensity had no effect on functioning over time for any diagnostic group.

Existing studies on functional outcomes in patients with personality disorders are difficult to compare with the present study. Most studies have focused only on BPD, some have much longer follow-up intervals, most have high rates of attrition, and none employed the LIFE measure. Tucker *et al.* (1987) and Najavits and Gunderson (1995) found significant improvements in GAFS scores for hospitalized patients with BPD 2–3 years after discharge, but Barasch *et al.* (1985) failed to find significant improvement after following outpatients with BPD for 3 years. Only 11% of the patients in the present study were recruited as in-patients and the mean GAFS of 53 at intake for the patients with BPD is comparable to that found by Barasch *et al.* (1985), but higher than that observed by Tucker *et al.* (1987) or Najavits and Gunderson (1995). At the time of hospital admission, a patient's functioning might be expected to be at a low ebb with greater opportunities to improve as the acute precipitant of hospitalization resolves. Plakun *et al.* (1985), Stone *et al.* (1987), and McGlashan (1986) report GAS scores in the mid to upper 60s for patients with BPD 15 years after hospitalization, compared with our essentially unchanged score of 53 after 2 years. It may be that more significant improvement in functioning in patients with BPD and other PDs comes only after many years. This hypothesis

will also be tested in the future using data from the ongoing annual follow-ups of the CLPS.

Mehlum and co-workers (1991) reported that patients with STPD had the lowest levels of functioning at hospital admission, discharge, and 3-year follow-up, patients with BPD the next lowest, patients with Cluster C PDs the best functioning of the PD groups, and patients with no PD, the best functioning of all. This distribution of functional impairment among diagnostic groups is highly consistent with the pattern of improvement observed across the groups in our study. The significant relationship between level of symptoms and psychosocial impairment in major depressive disorder observed in our study is consistent with other studies of disability during the course of major depressive disorder (Ormel *et al.* 1993; Judd *et al.* 2000).

In summary, although the diagnostic status of patients with PDs may change significantly over a relatively short time interval and include some dramatic improvements, functional status improves less significantly and more gradually, following improvement in psychopathology and other factors. Because personality psychopathology usually begins in adolescence or early adulthood, the potential for derailments in occupational trajectories and in the development of mature interpersonal relationships is great. For example, Roberts and colleagues (2003) have recently demonstrated that adolescents high on the personality trait of negative emotionality, common to patients with PDs, experience 'turbulent and unsuccessful transitions into the world of work', resulting in lower-prestige jobs, less job satisfaction, and less financial security in early adulthood. Even after symptomatic improvement, it might be expected to take some time to overcome these deficits and to make up the ground necessary to achieve 'normal' functioning. The possibility of chronic, residual impairment from which a person never completely recovers is real.

Improvements in BPD psychopathology appears to have the most dramatic effect on functioning; improvement in OCPD the least dramatic. Inherently more maladaptive, the emotional and behavioral dyscontrol of BPD might be expected to be more directly connected to functioning than the restricted emotions and overcontrol of OCPD. The greater or more

rapid improvement in functioning at work and at leisure than in social relationships, found in this study, probably results because many PD criteria influence the quality of interpersonal relationships and underscores the theory that disturbances in the domain of interpersonal relatedness are fundamental to all personality disorders (Benjamin, 1996; van IJzendoorn & Bakersman-Kranenburg, 1996). Successful treatment of PDs would necessarily need to address these interpersonal problems.

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DECLARATION OF INTEREST

None.

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