Better Than Expected: Improvements in Borderline Personality Disorder in a 3-Year Prospective Outcome Study

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We report on the symptomatic outcome, predictors of outcome, and different courses of change in a 3-year prospective, naturalistic study of 37 female patients with borderline personality disorder (BPD). Results show significant improvements in several areas and no significant deterioration. Most patients showed a course of erratic improvement, and only a few showed decline over time. The main baseline predictors of good 3-year outcome were low obsessiveness and phobia symptoms. Results from the Global Assessment Scale (GAS) in this study, like five prior studies, demonstrate that by 3 years BPD patients can be expected to move from a poor to a fair level of functioning. It is suggested that over a 3-year period, improvements may be expected from BPD patients. Prior reports of poor short-term outcome may have been the result of different diagnostic criteria and outcome measurement. Limitations of this study and the need for tentative interpretation of its results are also discussed.

STUDIES OF THE long-term[1] (10 to 19 years) outcome of borderline personality disorder (BPD) patients indicate notable improvement for many, but reviews of short-term (<5 years) outcome studies generally have concluded that little or no improvement is found.[1-4] Long-term studies have reported average outcomes ranging from fair to good in areas such as global assessment of functioning,[5-8] BPD symptoms,[6] and work functioning.[5] In Stone's review[1] of these outcome studies, he concludes that, "As many as two-thirds of BPD patients will, in 8 to 10 years or more, eventually do 'well' . . . showing only minimal symptoms" (p. 119; cf. Zanarini et al.[4]). However, with regard to short-term outcome, reviews by both Stone[1] and Zanarini et al.[4] indicate that BPD patients are comparable in role functioning to schizophrenic patients, showing major impairments in work and relationships and the need for continuing psychiatric care. Indeed, these reviews have validated Schmideberg's[9] early characterization of the short-term course of BPD patients as "stable instability."

In reviewing short-term outcome studies of BPD (Table 1), it is suggested that such conclusions may be premature. First, most of the existing short-term studies were not primarily devoted to assessing changes in clinical functioning. Most were diagnostically oriented, focusing either on the stability of the BPD diagnosis,[10,11] or on the differentiation of BPD from other diagnostic categories such as schizophrenia,[11,12] affective disorder,[12,13] or other personality disorders.[10,13-14] Outcome, in terms of clinical functioning, was usually secondary. Indeed, only some of the more recent studies[10,15-18] performed a within-group statistical comparison on the BPD sample over time. Second, the studies show a diversity of results. There appears to be no "modal response" across studies, and some results are contradictory. Grinker et al.,[19] for example, reported limited social functioning; Modestin and Villiger[14] showed two thirds as having only minor problems in that area; and Mehlum et al.[16] reported scores already in the average range at baseline, with no change over time. In part, such variability is the result of methodologic differences between studies: rigorousness of the BPD diagnosis, types of outcome measures and assessment time points, prospective versus retrospective design, and blindness of raters. Since pre–DSM-III studies appear to show more negative results than those performed after the advent of DSM-III and structured interviews, this may also mean that BPD samples in early studies were actually a more impaired or heterogeneous pool than under current definitions.

In the current study, we attempt to provide an in-depth picture of 3-year outcome for BPD patients. Clearer knowledge of the course of such patients within this time framework can be helpful to clinicians to assess whether treatment

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Table 1. Studies of Short-Term Outcome of BPD

Study	Sample	Outcome Time	Main Outcome Results
Pre–DSM-III			
Grinker et al.[19] (1968)	41 "borderline syndrome" patients	1.5 to 3 years	66% did not improve; most had limited social functioning and low-level jobs; one third rehospitalized
Gunderson et al.[11] (1975)	24 BPD patients	2 years	"Little overall change in functioning;" average scores in the moderately favorable range in 4 areas (social, work, symptoms, hospitalization); similar in functioning to schizophrenic sample
DSM-III*			
Akiskal[12] (1981)	100 BPD patients	6 months to 3 years	37% developed affective episodes; 7% developed schizophrenia-related illnesses
Pope,[29] (1983)	27 BPD patients	4 to 7 years	Stability of BPD diagnosis in 67% of sample; outcomes in low-moderate range on social functioning, residual symptoms, and global assessment, moderate on occupational functioning; BPD patients with major affective disorder had better outcomes than pure BPD patients on social functioning and residual symptoms
Barasch et al.[10] (1985)	10 BPD patients	3 years	40% rate of major depression; no schizophrenia; some stability of BPD diagnosis (for 6 of 10 petients using DSM-III, for 7 of 13 using DIB scores); global functioning improved from lower to upper end of fair range, and was comparable to a sample of patients with other personality disorders
Perry[30] (1985)	23 BPD patients	1 year	Diagnosis of BPD correlated with anger, depression, anxiety, and global affective symptomatology
Perry and Cooper[13] (1985)	16 BPD patients†	2 to 3 years	Average global functioning in the fair range
Tucker et al.[15] (1987)	40 patients with borderline personality organization	1 and 2 years	Improvements in suicidal and self-destructive behavior and feelings, continuity of therapy, rehospitalization rate, close friendships, family relationships, global functioning
Modestin and Villiger[14] (1987)	18 BPD patients	4.5 years	67% rehospitalized (average 4.2 rehospitalizations), 33% in therapy, 33% on medication; one third had severe social impairment, two thirds had no/minor social impairment; 83% had anxiety symptoms, 78% depression symptoms, 17% other symptoms; 50% working at least part-time, 22% on disability
Linehan et al.[28] (1991)	22 BPD patients compared with 20 control BPD patients‡	1 year	Significantly greater reduction in parasuicidal behavior, fewer psychiatric hospital days, and longer continuation of therapy for 22 BPD patients treated in outpatient dialectic behavior therapy *v* 20 BPD control patients
Stevenson and Meares[17] (1992)	30 BPD patients	3 years	Significant improvement in all 7 behavioral areas assessed (violence, drugs, medical visits, self-harm, work absences, hospitalizations, and length of stay), as well as number of BPD criteria met and total dysfunction scale score, in comparison of the year before a 12-month outpatient psychodynamic treatment *v* the year after treatment
DSM-III-R§			
Mehlum et al.[16] (1991)	29 BPD patients	Average of 2.8 years	Moderate improvement on Global Severity Index, improvement on Health-Sickness Rating Scale, no improvement on social adjustment (although baseline was already in average range), decreased social activity, 56% employed, 48% rehospitalized, 38% self-supporting
Karterud et al.[18] (1992)	34 BPD patients	Average of 6 months	Significant improvement on Global Severity Index, "very modest" change on Health-Sickness Rating Scale after discharge from an average of 6 months of day treatment

*DSM-III diagnosis of BPD was an inclusion criterion for all studies in this section except Tucker et al.,[15] who used a diagnosis of borderline personality organization.

†Follow-up study on same sample used in Perry[30] (1985). Note that only results for the BPD-only sample are reported (although both studies also had a BPD plus antisocial personality disorder sample).

‡All patients met DIB and DSM-III criteria for BPD (although Linehan et al. use the term parasuicidal patient rather than BPD).

§All patients met DSM-III-R criteria for BPD.

is proceeding "on track" with expectable improvements.[20] We focus on the outcome of a rigorously diagnosed BPD sample studied prospectively at four time points on a variety of measures (including symptom change, quality of life, and functional impairment). In addition, we assess baseline predictors of outcome and attempt to distinguish differential courses of change, areas as yet largely unstudied. The main questions are as follows: (1) What symptoms change over time (baseline through 3 years)?; (2) What baseline measures predict outcome at 3 years?; (3) Can subtypes of the sample be identified based on the pattern of change observed?; and (4) How do our results for global functioning compare with those of other studies?

METHOD

Subjects

The sample consisted of 37 female patients with BPD. All were recently admitted inpatients who at the start of study were beginning new psychotherapies. Inclusion criteria were as follows: (1) age 17 to 35 years; (2) diagnosis of BPD by a trained clinical rater (either a physician or a doctorate-level clinician) using the Diagnostic Interview for Borderlines (DIB)[21]; (3) no history or current diagnosis of schizophrenia, bipolar illness, or organic mental disease; (4) no current drug or alcohol detoxification; and (5) estimated IQ greater than 80. Subjects had a mean age of 26 years, a mean of three previous hospitalizations (with 25.2 weeks the average duration), and a mean of 2.4 previous individual psychotherapies. Virtually all subjects were in concurrent psychopharmacologic treatments, and some had additional family treatment or group therapies. Not all subjects were assessed at every time point. Total sample sizes were as follows: 37 at baseline, 33 at 1 year, 23 at 2 years, and 20 at 3 years. Earlier reports have detailed attrition from the study[22] and the course of self-destructiveness in the sample.[23]

Measures

Eight assessment measures were used at four time points (baseline, 1 year, 2 years, and 3 years): (1) DIB,[21] a structured interview from which was obtained a total score of borderline pathology and four subscales (impulses, affects, interpersonal relationships, and psychosis, scaled 0 to 2); (2) Hopkins Symptom Checklist-90 (SCL-90),[24] a patient self-report measure of symptoms, from which a total score and 10 subscales were derived (somatization, psychosis, paranoia, phobia, anger, anxiety, depression, interpersonal sensitivity, obsessiveness, and vegetative symptoms, scaled 0 to 4); (3) a Problem Scale, on which the patient described three problems she considered most difficult and rated them 0 to 7; (4) Global Assessment of Severity (GAS),[25] scaled 0 to 100; (5) Satisfaction Ratings, patients' self-reported satisfaction with six areas of their lives (relationship, living situation, family, friends, school, and work) on a five-point scale; (6) Demographic Self-Report Questionnaire, which provided ratings of a variety of descriptive variables, most notably drug/alcohol use; (7) Borderline Personality Organization Questionnaire,[26] a self-report measure with three subscales designed to tap borderline personality disturbances (identify diffusion, reality testing, and personality disturbance) on a five-point scale; and (8) Social Adjustment Scale (SAS),[27] a self-report measure assessing functioning in work, home, leisure, relationships, and finances on a five-point scale.

Analyses

Three main sets of analyses were performed, using all or parts of the following variables: total scores for each measure, subscales of the DIB, SCL-90, Satisfaction, Borderline Personality Organization Questionnaire, and SAS measures, self-ratings of drug/alcohol use, and demographic data. To assess change over time on the eight outcome measures, paired t tests were used to compare baseline values with each subsequent time point. To assess global change over time, a composite score of the outcome measures was calculated for each time point, such that higher scores equal worse symptomatology; then the baseline composite score was compared with each subsequent time point via paired t tests. Although multivariate analyses would be preferable to t tests to reduce type I error, missing data precluded their use. To analyze baseline predictors of change, baseline variables were correlated with the DIB total score at 3 years. To study the time course, each patient's results (per time point) on the DIB total score were categorized into one of four subtypes: steady improvement (each time point higher than the previous one); steady decline (each time point lower than the previous one); erratic improvement (3-year data higher than baseline but with varying data in between); and erratic decline (3-year data lower than baseline, with varying data in between). Only patients with data at $\geq$ three time points were used.

RESULTS

Change Over Time

Table 2 lists 28 of 126 variables (both total score and subscales for each measure) that were significant in t-test comparisons of baseline versus each subsequent time point. Analysis of global change over time (using a composite outcome score) was not significant for any time point.

Baseline Predictors of 3-Year Outcome

Eight of 62 baseline variables were significantly correlated with 3-year total DIB scores (with higher scores signifying greater psychopathology): GAS ($r = -.80$, n = 7, $P < .03$); SCL-90 subscales depression ($r = .43$, n = 21, $P < .05$), obsessiveness ($r = .57$, n = 21, $P < .007$), anxiety ($r = .53$, n = 21, $P < .01$), inter-

Table 2. Course of Symptom Change

Measure	1 Year Mean	1 Year No.	2 Years Mean	2 Years No.	3 Years Mean	3 Years No.
GAS	52.00*	16	59.00*§	11	59.00†	6
DIB						
Total‖	.93†	26	.77‡§	22	.65‡§	20
Subscales						
Impulses	3.63*	27	2.96‡§	23	2.33‡§	21
Affects	5.26*	27	4.44†	23	4.19†	21
Psychosis	4.33	27	3.04	23	2.38*	21
Satisfaction						
Total	2.84	26	3.10*	20	3.16*	21
Subscales						
Friends	2.92	24	3.40*	20	3.40	20
Family	2.22	23	2.20	20	3.24*	21
SCL-90						
Total	1.59	21	1.33	22	1.19*	21
Subscales						
Psychosis	1.13	21	.88*	22	.68†	21
Somatization	.84	21	.68	22	.38†	21
Depression	2.24	21	1.91	22	1.54‡	21
Vegetative	1.69	21	1.69	22	1.47†	21
Drug/alcohol use	1.28	25	1.43¶	20	1.15*	20
SAS						
Total	2.35	16	2.15*	13	2.00	8
Subscale						
Work functioning	2.89	9	2.27*	11	2.33	8
Problem Scale	4.33*	4	3.78*	6	3.33	3

NOTE. Results are only for variables that were significant on at least one time point. Although the total number of *t* tests was high (126, including all total scores and subscales), the number significant (28, not including trends) well exceeds the number that would be expected by chance using the .05 probability level.[6] For all measures except GAS and Satisfaction scales, higher scores indicate worse outcome.

*$P < .05$.

†$P < .01$.

‡$P < .001$.

§Results meet Bonferroni criterion of $P < .0004$.

‖Standardized (*z*) score.

¶Note that some means, such as this, appear higher than earlier points due to slightly different samples used in paired *t* tests at each time point; it does not necessarily reflect increased symptomatology.

personal sensitivity ($r = .49$, n = 21, $P = .02$), and phobia ($r = .66$, n = 21, $P = .001$); total SCL-90 score ($r = .47$, n = 21, $P = .03$); family's support of past therapy ($r = .48$, n = 17, $P < .05$); and patient's rejection of treatment recommendation ($r = .45$, n = 20, $P < .05$). However, we also must note that only two results in this analysis pass the Bonferroni correction for chance findings (obsessiveness and phobia on the SCL-90). Also, to explore further the item family's support of past therapy (since the result was not in the expected direction), we correlated that variable with four other baseline variables (patient's number and weeks of previous hospitalization and number of previous individual therapies and other past therapies). Only number of previous individual therapies was significant ($r = -.41$, n = 24, $P = .02$).

Time Course Patterns

Frequency data for the four subtypes on the course of change in DIB total score were as follows: steady improvement (n = 8), steady decline (n = 0), erratic improvement (n = 20), and erratic decline (n = 4). χ^2 analysis showed significant difference between these groups ($\chi^2 = 28, df = 3, P < .001$).

Comparison of Global Functioning

Table 3 lists results for global functioning on the GAS in all available short-term outcome

Table 3. Comparison of GAS Scores (and sample sizes) Across Studies

Study	Baseline	6 Months	1 Year	2 Years	3 Years	14 to 16 Years*	Notes
This study	44.0 (20)	49.0 (18)	50.9 (22)	59.1 (21)	57.1 (19)	—	Significant differences between baseline and all subsequent time points
Barasch et al.,[10] 1985	51.4 (10)	—	—	—	59.2 (10)	—	No significant difference over time
Perry and Cooper 1985[13]	—	—	—	50.8 (16 with BPD)	—	—	GAS used 3-12 times over 1 year, at 2-3 years follow-up
Tucker et al.,[15] 1987	(1) 29.7 (40 at admission) (2) 41.6 (40 at discharge)	—	50.3 (40)	56.5 (40)	—	—	Significant difference between admission and all subsequent time points
Plakun et al.,[7] 1985	34.9 (54)	—	—	—	—	67 (54)	
Stone et al.,[8] 1987	—	—	—	—	—	65.6 (205)	

NOTE. Scaling for GAS: good (GAS > 60), fair (GAS 51-60), and poor (GAS < 50). Numbers in parentheses are numbers of subjects at each time point.

*Average length of follow-up study for the two long-term studies reported here.

studies. All show increases over time, with all in the fair range by 1 to 3 years.

DISCUSSION

Do BPD patients improve in the short term? In this study, every significant measure of change was in the direction of improvement. This included the areas of global functioning, borderline traits, social functioning, substance abuse, transient psychotic symptoms, somatization, depression, vegetative signs, impulsivity, and work functioning. Additionally, we reported improvements in two areas not previously studied: BPD patients' life satisfaction and idiographic, self-defined problem areas.

Our results are largely congruent with comparable recent short-term studies that also showed improvements over a 1- to 3-year period.[10,15-18,28] Each of these studies used functional measures of outcome, a comparison of baseline to follow-up data, and multiple outcome criteria, and most were prospective in design. Other DSM-III studies are more difficult to compare with ours because of different methodologies. For example, Pope,[29] Perry,[30] Perry and Cooper,[13] and Modestin and Villiger[14] did not provide a comparison of baseline ratings with follow-up ratings. It can also be noted that there may be a difference between studies such as ours (which focused on symptom and functional changes) and studies that rest on other diagnostic indices. Studies that assess diagnoses over time in borderline samples tend to report the persistence of borderline and affective diagnoses over time[10,12,29]—and it is likely that diagnoses per se are slower to change than specific symptoms and areas of functioning associated with the diagnoses. However, a notable exception was the study by Stevenson and Meares,[17] who found that 30% of their sample no longer met criteria for BPD. They suggest that use of a therapy specific for BPD patients provided in a focused and coherent way may account for their results. The point is well-taken: the two treatment studies reviewed that used a theoretically based treatment with attempts to ensure adherence[17,28] both found marked improvements after the relatively short period of 1 year of treatment. We can also note that the treatment developed by Linehan et al.[28] evidenced reductions in impulsivity in their sample, consistent with our finding of reduced impulsivity by the second year. Specifically targeting this symptom early in treatment may thus prove particularly fruitful.

Our results also differ from early reports that had concluded a lack of short-term improvement for borderline samples.[11,19] Their findings may, in part, be the result of the pre–DSM-III diagnostic system used and limited outcome data. We believe recent reviews of BPD outcome[1-4] may have reached unnecessarily pessimistic conclusions because of undue focus on early studies rather than on the more recent, DSM-III and DSM-III-R studies.

In comparing our results with the existing

literature, it can also be observed that results for global functioning (on the GAS) have been highly similar across studies. BPD samples are typified as very symptomatic and dysfunctional at baseline (in or near the poor range). By 2 to 3 years, all have found BPD patients in the fair range. Indeed, at 3 years, the means of our sample and that of Barasch et al.[10] were only a few points from good. When we contrast these findings against the two studies with GAS data for long-term follow-up evaluation,[7-8] it suggests that most improvement on the GAS occurs early, after which improvement continues but at a lesser pace over the next decade. Tucker et al.[15] also provide the observation that extremely low baseline GAS scores may relate to the circumstance of hospitalization.

However, it must be emphasized that our findings can only be interpreted tentatively in light of the study's methodologic deficits. Most notably, our sample size is relatively small and decreases over time due to subject attrition. Patients who completed the research protocol may be a more functional subsample or otherwise nonrepresentative of the full range of BPD patients; this may have biased our results in the direction of healthier outcomes. Also, the lack of a control group and of assessment of the impact of treatment does not allow us to determine to what extent improvements observed might be due to treatment effects (which were uncontrolled in this study). The use of nonblind raters who were also researchers on the study might have resulted in an overstatement of improvements (although this would not account for patients' self-reported improvements). The large number of post hoc statistical tests increases the likelihood of obtaining false-positive results, even though the number of significant findings remains above chance levels. Improvements observed might also be the result of regression to the mean based on naturally occurring temporal fluctuations in the BPD. Moreover, rates of rehospitalization, use of treatment, and employment, which have shown conflicting results in some studies (cf. Grinker et al.[19] and Modestin and Villiger[14] with Tucker et al.[15] and Linehan et al.[28]), were not explored in our study.

Our sketch must also be refined by noting the different courses observed in our sample. Although most patients (n = 28) improved, four patients at 3 years showed worse total DIB scores than at baseline—suggesting the need for more exploration of differential outcome for the subset of patients who deteriorate or fail to improve over time. We also note that symptoms that improved by the end of follow-up study appear to be the most primitive (somatization, depression, psychosis, and vegetative signs); more neurotic-spectrum affects such as anxiety and obsessiveness had not changed.

A unique facet of the current study was the attempt to explore various baseline predictors of outcome. Few were significant: mainly depression and anxiety symptoms on the SCL-90, which predicted worse outcome at 3 years. Previous studies have shown depression and anxiety to be some of the most enduring symptoms of BPD patients aside from BPD-criterial symptoms.[12,30] Since these symptoms appear to be both long-lasting and predictive of lower-level outcome, increased targeting of such symptoms early in treatment may be helpful. Our other baseline predictors of poor outcome—low GAS scores, patient's past rejection of recommended treatments, and family's greater support of therapy—have not previously been documented. Given the low number of predictors in this study that passed the Bonferroni correction, we emphasize that these results are highly tentative and must be confirmed by future research. Also, even assuming statistical significance, the clinical significance of such predictors has yet to be determined.

Regarding measurement, the GAS is of particular value insofar as it taps functional outcome, as well as symptoms, and allows contrast with other types of patients. Also, because it has been frequently used in outcome studies for BPD, it allows a direct comparison of results and of baseline severity of the sample. The GAS, along with the SCL-90, were also among the most potent baseline variables to predict outcome. Two new measures used in this study (patients' self-reported satisfaction with their lives and self-defined problem areas) are also recommended because of obvious clinical relevance, simplicity of measurement, and sensitivity in tapping change over the short term.

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