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Improvement in borderline personality disorder in relationship to age

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Objective: It is commonly believed that some features of borderline personality disorder (BPD) improve as individuals reach their late 30s and 40s. This study examined age-related change in borderline criteria and functional impairment, testing the hypothesis that older age would be associated with relatively more improvement than younger age.

Method: A total of 216 male and female participants with BPD were followed prospectively with yearly assessments over 6 years.

Results: Participants showed similar rates of improvement in borderline features regardless of age. A significant age by study year interaction showed functioning in older subjects to reverse direction and begin to decline in the latter part of the follow-up, in contrast to younger subjects who maintained or continued improvement over the 6 years. Despite the decline, functioning for the older subjects was comparable with or slightly better at year 6 than at year 1.

Conclusion: Improvement in borderline features is not specific to the late 30s and 40s. There may be a reversal of improvement in functioning in some borderline patients in this older-age range.

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Significant outcomes

- Age was not associated with differential improvement in BPD criteria over the 6 years of follow-up.
- Age was associated with a differential course in functioning. Despite overall improvement, functioning in older borderline participants began to decline midway through the follow-up, in contrast to maintenance or continuing improvement in younger participants.

Limitations

- Study participants began the study at different ages, and there could be age-related sampling biases influencing the findings.
- The majority of participants were recruited as out-patients, and findings may not generalize to in-patient samples. The majority of participants received treatment, and the results may not generalize to untreated samples.
- Findings are limited by the number of participants at different ages, the absence of subjects older than age 45 at the study baseline, and the length of follow-up.

Introduction

It is commonly believed that symptoms of borderline personality disorder (BPD) lessen with age.

For example, the DSM-IV states 'The impairment from the disorder and the risk of suicide are greatest in the young-adult years and gradually wane with advancing age' (1). Further noted is that

the majority of those with BPD attain greater stability in relationships and vocational functioning in their 30s and 40s.

Early studies leading to these conclusions included previously hospitalized patients with chart review diagnoses of BPD, followed up years later. McGlashan (2) assessed 81 such patients discharged over a period of 25 years, with follow-up averaging 15 years after discharge and a mean age at follow-up of 47 years. Outcome was found to vary as a function of time since discharge, with the best functioning in subjects in their 40s. McGlashan (2) concluded 'For the BPD patients...the clinical shibboleth that patients with personality disorders improve with age seems borne out by our findings, especially in the realms of symptomatic and instrumental functioning' (p. 29). However, subjects at the older end of the cohort's age group, generally in their 50s at follow-up, like the younger subjects, showed poorer functioning, suggesting a possible reappearance of difficulties with advancing age.

Another study followed up 100 former in-patients with BPD based on chart review, an average of 15 years following hospitalization and a mean age of 41 at follow-up (3). Only 25 subjects were still rated as borderline and impulsive behavior dropped off almost entirely with time. The authors concluded that the decreases in BPD scores at follow-up supported the idea that active borderline pathology decreases with age. Like McGlashan (2), they reported a shift away from intense and unstable relationships, but in the direction of avoidance of relationships.

Stone (4) reported on the long-term outcome (10–25 years) of a large sample ($n' = 502$) of in-patients later classified as having BPD or borderline personality organization. Most patients were rated as 'good' or 'recovered' (Global assessment scale score > 70) as they moved into their 30s and 40s. Stone (5) described their course as a 'ladle-shaped' curve, with a 'dip' throughout the 20s, followed by a steady and stable improvement in function throughout the 30s and above. He noted, though, that a subgroup that remained chronically angry often experienced a second downturn in their mid-40s.

Stevenson and et al. (6) used a cross-sectional design to test the hypothesis that impulsivity declines with age in BPD. Linear regression analyses examining age in relationship to affective disturbance, relationship disturbance, cognitive disturbance, and impulsive behavior were conducted in a sample of 123 out-patients with BPD (mean age of 32, range of 18–52). Impulsive behavior was significantly associated with age,

with older patients rated as less impulsive; there was no age association with the other three domains. The findings supported the idea that '...the behavioral manifestations [of BPD] "burn out" with age' (6) (p. 166).

Although all of the longitudinal studies show a decrease in manifestations of BPD, most notably in the more impulsive behaviors, the extent to which decrease in such symptoms is a function of age rather than time alone is unclear, as age and time are confounded. And in contrast to the above studies, Zanarini et al. (7) identified younger age as one of several predictors of earlier time to remission over 10 years of follow-up, challenging the belief that older age brings more improvement in BPD.

Aims of the study

The aim of this study was to examine age-related change in BPD using 6 years of prospective follow-up from a naturalistic longitudinal study of personality disorders. Based on previous literature, our hypothesis was that among BPD subjects, older age is associated with more improvement in BPD criteria and in psychosocial functioning.

Material and methods

Participants

The Collaborative Longitudinal Personality Disorders Study (CLPS) is a multi-site, naturalistic, longitudinal study examining the course of four DSM-IV personality disorders. This study has been in compliance with Human Subjects Internal Review Boards at each participating site since its inception. Detailed information regarding the study procedures and sample characteristics has been previously published (8). In brief, an initial sample of 668 participants with at least one of four personality disorders (schizotypal, borderline, avoidant, or obsessive-compulsive), or with major depressive disorder and no personality disorder, was recruited primarily from out-patient clinical sites associated with the four CLPS recruitment sites. All were currently or previously in treatment or seeking treatment. To be included, participants had to be within the age range of 18–45 years, and could not have any current condition that precluded a valid interview (e.g. active psychosis, acute substance intoxication or withdrawal), or a history of schizophrenia or schizoaffective disorder. All participants provided written informed consent after a full explanation of study procedures. Earlier publications had described high rates

of improvement and remission in the four personality disorders followed in the CLPS (9, 10).

The current investigation includes participants meeting criteria at baseline for BPD. Of this baseline sample of 240, 24 participants were excluded because they did not complete two or more years of follow-up. The 24 excluded participants did not significantly differ from the 216 in the analytic sample in demographics, axis I comorbidity, or number of BPD criteria. The numbers of participants included from study years 1–6 are: 216, 216, 204, 200, 195, and 188 respectively. At baseline these participants had a mean age of 31.97 ($SD = 8.06$) years. Table 1 lists the demographic characteristics of the analytic sample.

Assessment

Participants were interviewed at baseline and at follow-up assessments (6 months, 12 months, then yearly) by experienced interviewers with the diagnostic interview for DSM-IV personality disorders (DIPD-IV) (11), a semistructured interview for assessment of DSM-IV axis II disorders. The DIPD-IV probes for evidence of personality dis-

order criteria over the prior 2 years, and then determines, if those present have been characteristic of the individual since late adolescence or early adulthood. Interviewers were trained using live or videotaped interviews under the supervision of the author of the DIPD-IV (M.C.Z.). Interrater and test-retest kappas for BPD in the present study were 0.68 and 0.69 respectively; median reliability correlations for total criteria scores were 0.90 and 0.84 (12). To assess the longitudinal course of the study personality disorders, the DIPD-IV was modified to record the presence of each criterion for each month of the follow-up interval. Interviewers asked the standard probes for presence of each criterion; if it was present at all, the participant was then queried about any change over the interval to determine whether or when the criterion was absent. Ratings were then made for each month of the follow-up interval. For the present report, the BPD criterion ratings for the month preceding each follow-up interview were used. BPD variables examined include the total number of BPD criteria, and factor scores (disturbed relatedness, behavioral dysregulation, and affective dysregulation) derived from confirmatory factor analysis of the CLPS data (13). The disturbed relationship factor consists of criteria for unstable relationships, identity disturbance, and chronic feelings of emptiness; behavioral dysregulation consists of impulsivity and suicidal or self-mutilative behavior; affective dysregulation includes affective instability, inappropriate anger, and frantic efforts to avoid abandonment.

Interviewers assessed psychosocial functioning using the psychosocial section of the Longitudinal Interval Follow-up Evaluation (LIFE) (14). This measure assesses functioning in multiple areas including work, interpersonal relationships, and recreation. Functioning is rated on 5-point scales of severity ranging from one (no impairment, high level of functioning) to five (severe impairment, very poor functioning). The LIFE also includes ratings on the Global Assessment of Functioning Scale (GAF), a 100-point scale with 100 indicating the highest level of functioning. The Range of Impaired Functioning Tool (LIFE-RIFT) is a brief scale of functional impairment derived from the psychosocial ratings of the LIFE, and consists of items targeting the functioning in four domains: work, interpersonal relations, recreation, and global satisfaction (15). The LIFE-RIFT score is a sum of the four items, with possible scores ranging from 4 (no impairment in all areas) to 20 (severe impairment in all areas).

As described below, a number of covariates were included. Number of axis I disorders at baseline

Table 1. Sample characteristics ($n = 216$)

	Per cent (n)
Baseline age	
18–24	40.3 (87)
25–34	36.6 (79)
35–45	23.2 (50)
Gender	
Female	73.2 (158)
Male	26.9 (58)
Race	
White	71.8 (155)
Non-white	28.2 (61)
Marital status	
Single	58.3 (126)
Married/living together	21.8 (47)
Separated/divorced/widowed	19.9 (43)
Education	
High school or less	34.3 (74)
Some college	38.9 (84)
BA or more	26.8 (58)
Employment status	
Working full or part time	29.6 (64)
Student	15.7 (34)
Not employed or student	54.7 (118)
Number of axis I disorders at baseline	
0	7.4 (16)
1–2	39.8 (86)
3 or more	52.8 (114)
Number of additional axis II disorders at baseline*	
0	14.8 (32)
1–2	46.3 (99)
3 or more	38.9 (84)

* n does not add up to total N because one observation was missing on this variable.

was assessed using the structured clinical interview for DSM-IV disorders. The psychopathology section of the LIFE includes weekly psychiatric status ratings (PSRs) to quantify the course of axis I disorders. PSRs for major depressive disorder (MDD), a 6-point scale indicating status of depressive symptoms from no symptoms to severe, were used to assess depression. The LIFE also assesses mental health treatment use, with detailed ratings of pharmacological and psychosocial treatments. Medication and dosages of medications, frequency of all mental health contacts, including number of sessions, length of treatment, and number of days of in-patient and partial hospitalization are recorded. A global measure of treatment intensity was derived for use as a summary variable for treatment. Weights for levels of care (in-patient, day hospital, or out-patient) were multiplied by the amount of treatment received at each level.

Data analyses

We conducted a series of growth models to examine the extent to which change in BPD severity and functioning over the course of the study period differed according to age. Age was examined as a continuous variable. Dependent variables included the total number of BPD criteria, the three BPD factor scores, the GAF, and the RIFT. We used SAS PROC GLIMMIX to estimate all models. This procedure accommodates non-normal distributions for the dependent variable and also allows for specification of random effects. In all models, we used random effects to control for the repeated measures and the clustering of subjects within the four study sites. In addition to our predictors of interest, study year and age, we also controlled for several covariates including gender, minority status, education, number of axis I disorders at baseline, number of axis II disorders other than BPD, and baseline scores on the dependent variable. Depression and intensity of treatment were included as time-varying covariates in all of the models. These included the MDD PSR rating, and the treatment intensity rating, for the week prior to each assessment.

We ran an initial set of models specifying only main effects for study year and age. A second series of models added the interaction between study year and age. Graphs are used for illustration purposes, showing the outcome by three categories defined by age at study baseline: 18–24, 25–34, and 35–45. The choice of these age groups was somewhat arbitrary, but intended to roughly approximate developmental groupings from early adulthood

into middle adulthood. As noted, all analyses used age as a continuous variable; the categories were not used in data analyses.

Results

Results of the first set of models examining age and study year showed significant effects for study year for all variables examined except for the GAF, and age effects for the RIFT (older age associated with more impairment). Table 2 shows findings from the second series of models, adding the interaction between age and study year. There is one significant interaction, on the RIFT (d.f. = 1998) $F = 4.81$, $P = 0.029$.

The figure shows the mean scores for the three groups defined by baseline age on number of BPD criteria, the disturbed relationship factor, and the RIFT. For the two BPD criteria variables, the graphs illustrate the similar pattern of improvement across study years for all age groups. On the RIFT, there is a similar pattern of decline (improvement) among the three age groups over years 1–3, but during years 4–6 the younger cohorts remain stable or continue to improve while impairment reverses direction and begins to increase for the oldest cohort (baseline age 35–45).

Discussion

The central question of this study is whether the amount of improvement in BPD symptoms and functioning varies by age. Contrary to our hypothesis that increasing age would be associated with greater improvement, our findings show little influence of age on improvement. Younger subjects show as much improvement as older subjects. In

Table 2. Model estimates (SE) for age, study year, and their interaction as predictors of borderline personality disorder (BPD) severity and functioning over 6 years

Outcome	Age	Study year	Age* Study year
Severity			
Number of BPD criteria	0.007 (0.018)	–0.348 (0.104)***	
Disturbed relationships	0.006 (0.018)	–0.224 (0.160)	0.000 (0.005)
Behavioral dysregulation	–0.009 (0.019)	–0.119 (0.167)	0.000 (0.005)
Affective dysregulation	0.005 (0.018)	–0.157 (0.154)	–0.002 (0.005)
Functioning			
GAF	–0.076 (0.088)	0.233 (0.557)	–0.015 (0.017)
RIFT	0.010 (0.023)	–0.424 (0.157)**	0.010 (0.005)*

All models included random effects to control for repeated measures and clustering of subjects within study site, fixed effects for gender, minority status, education, number of axis I disorders at baseline, number of axis II disorders other than BPD, and baseline scores on the dependent variable, and time-varying effects of depression and treatment intensity. BPD, borderline personality disorder; GAF, Global Assessment of Functioning Scale; RIFT, Range of Impaired Functioning Tool.

*Significant at $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

terms of BPD symptoms, we find no interactions between age and study year on any of the factors or the total number of criteria. The only significant interaction between age and study year is on a measure of psychosocial functioning (the RIFT). Older subjects change direction from improvement to worsening in functioning (Fig. 1) midway through the 6 years of follow-up, in contrast to the younger aged cohorts. This pattern is compatible with findings from McGlashan (2) and Stone (4, 5) that while those in their 30s to early 40s were functioning the best, some in their mid-40s to 50s showed poorer functioning, suggesting a reappearance of difficulties with advancing age.

An important consideration for the current findings is the possible influence of age-related bias in our sample. Given that subjects had to meet criteria for BPD at baseline, it may be that older subjects in our study group – those in their late 30s to mid-40s at baseline had more severe psychopathology. If such individuals had been recruited in their 20s, perhaps there would have been more persistence in impulsive behaviors and other impairment throughout their 20s, in contrast to the improvement we find for subjects entering the study in their late teens or early 20s, who may be a more heterogeneous group. While other recent studies have similarly shown significant declines in personality disorder features among college age (16) and adolescent/early adulthood participants (17), suggesting that our younger participants are not atypical, the participants entering the study with active borderline psychopathology in their

late 30s to 40s could be a more severe or restrictive subgroup of BPD. Despite their overall improvement over the follow-up, it is notable that at least on one measure (the RIFT), the older participants reverse direction and show an increase in psychosocial impairment midway through the 6 years of follow-up. It will be important to investigate with longer follow-up whether the younger cohorts similarly show worsening when reaching the same age range.

An additional consideration is that our study excluded the individuals older than 45, limiting the older end of the age range. Further follow-up is needed to examine whether the individuals in their late 40s and 50s show the predicted pattern of improvement. The findings are also limited by the length of follow-up examined: 6 years may be too brief to show the hypothesized age patterns.

The findings of improvement across the age range raise the compelling question: what factors may explain the decreases in psychopathology, in younger as well as older subjects, now observed in multiple studies of BPD? One explanation may be the use of the DSM criteria as outcome, some of which are symptomatic behaviors (e.g. self-injury or other destructive behaviors) as opposed to traits (10, 18). In studies of clinical samples, an important factor may be the treatment. It is difficult to determine the treatment effects in naturalistic studies, but the fact that most subjects received treatment of some form is notable. Another factor in clinical samples may be that, despite emphasis on enduring behaviors in personality disorder

Fig. 1. Mean scores by age groups over time.

interviews, subjects are in more distress at the time of study recruitment, and over-report their 'usual' maladaptive behaviors and feelings. Subsequent assessments may capture their more typical level of functioning, which could be less disordered than initially reported. Similar improvements, however, have been found in non-clinical samples (16, 17). It is possible that the simple repetition of assessments draws ever more conservative responses for various reasons, including having already been accepted into the study (in which case the follow-up would be a more accurate assessment), or wishing to avoid detailed questioning that affirmative responses trigger (in which case the follow-up would be an underestimate). In this study, outcome is examined at six repeated evaluations, controlling for the baseline score, thus minimizing the impact of change from baseline to the first follow-up.

A more definitive examination of age related differences in course in BPD would include comparisons of multiple age cohorts of larger sizes over a longer interval than the 6 years of this study. Nonetheless, our findings suggest the need to revisit the idea of increasing age as the explanation for improvement in BPD psychopathology.

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