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Defense Mechanisms Reported by Patients with Borderline Personality Disorder and Axis II Comparison Subjects Over 16 Years of Prospective Follow-up: Description and Prediction of Recovery

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Abstract

Objective—This study assessed the defensive functioning of 290 borderline patients and compared it to that of 72 patients with other forms of axis II psychopathology over 16 years of prospective follow-up. It also assessed the relationship between time-varying defenses and recovery from borderline personality disorder.

Method—The Defense Style Questionnaire, a self-report measure with demonstrated criterion validity and internal consistency, was initially administered at study entry. It was readministered at eight contiguous two-year long follow-up periods.

Results—Borderline patients had significantly lower scores than axis II comparison subjects on one mature defense mechanism (suppression) and significantly higher scores on seven of the other 18 defenses studied. More specifically, borderline patients had significantly higher scores on one neurotic-level defense (undoing), four immature defenses (acting out, emotional hypochondriasis, passive aggression, and projection), and two image-distorting/borderline defenses (projective identification and splitting). In terms of change, borderline patients were found to have had significant improvement on 13 of the 19 defenses studied. More specifically, they had significantly higher scores over time on one mature defense (anticipation) and significantly lower scores on two neurotic defenses (isolation and undoing), all immature defenses, and all image-distorting/borderline defenses except primitive idealization. In addition, four time-varying defense mechanisms were found to predict time-to-recovery: humor, acting out, emotional hypochondriasis, and projection.

Conclusions—Taken together, the results of this study suggest that the longitudinal defensive functioning of borderline patients is both distinct and improves substantially over time. They also suggest that immature defenses are the best predictors of time-to-recovery.

Almost half a century ago, Kernberg published his seminal paper describing his view of the essential features of borderline personality organization—a broader construct than the DSM-defined borderline personality disorder (1). Among these features, he listed five defense mechanisms: devaluation, omnipotence, primitive idealization, projective identification, and splitting. Despite substantial interest by dynamically oriented clinicians, relatively little research has been conducted in this area in the ensuing decades. This gap has been due in large measure to the lack of reliable methods for assessing the presence of a range of defenses or at least, their conscious derivatives. In the past quarter century, only 10 studies have been published that have attempted to delineate the mechanisms of defense used by borderline patients (2–10) and only eight of these studies have tried to determine if these

defenses discriminate borderline patients from those with other diagnoses (2,3,5,6,8–10). Four of these eight studies (2,6,9,10) relied on information obtained from videotaped clinical interviews rated according to reliable criteria developed by Perry (11). The other four (2,3,5,8) used the Defense Style Questionnaire, a paper and pencil self-report measure developed by Bond and his colleagues (12) that is designed to assess the conscious derivatives of unconscious mechanisms of defense.

Six of these eight cross-sectional studies found that borderline patients had significantly higher scores than axis II comparison subjects on scales measuring maladaptive action and image distorting/borderline defenses (2,3,5,6,8,9). In one of these studies, it was also found that female borderline patients had a significantly higher score than female axis II comparison subjects on the scale measuring adaptive defenses (3). In another study, borderline patients were found to have higher scores than axis II comparison subjects on self-sacrificing defenses as well as maladaptive action and image distorting/borderline defenses (8).

The current study is an extension of the last cross-sectional study described above. It is distinguished by the large size of the patient groups being studied and the rigor with which they were diagnosed. It is the first study to assess the presence of specific defenses in patients with criteria-defined borderline personality disorder and axis II comparison subjects longitudinally. It is also the first study to use time-varying defense mechanism scores as predictors of time-to-recovery from borderline personality disorder.

Methods

The current study is part of the McLean Study of Adult Development (MSAD), a multifaceted longitudinal study of the course of borderline personality disorder. The methodology of this study, which was reviewed and approved by the McLean Hospital Institutional Review Board, has been described in detail elsewhere (13). Briefly, all subjects were initially inpatients at McLean Hospital in Belmont, Massachusetts. Each patient was screened to determine that he or she: 1) was between the ages of 18–35; 2) had a known or estimated IQ of 71 or higher; 3) had no history or current symptomatology of schizophrenia, schizoaffective disorder, bipolar I disorder, or an organic condition that could cause serious psychiatric symptoms; and 4) was fluent in English.

After the study procedures were explained, written informed consent was obtained. Each patient then met with a masters-level interviewer blind to the patient's clinical diagnoses for a thorough psychosocial and treatment history as well as diagnostic assessment. Four semistructured interviews were administered: 1) the Background Information Schedule (14), 2) the Structured Clinical Interview for DSM-III-R Axis I Disorders (15), 3) the Revised Diagnostic Interview for Borderlines (16), and 4) the Diagnostic Interview for DSM-III-R Personality Disorders (17). The inter-rater and test-retest reliability of all four of these measures have been found to be good-excellent (18–20).

At each of eight follow-up assessments, separated by 24 months, psychosocial functioning and treatment utilization as well as axis I and II psychopathology were reassessed via interview methods similar to the baseline procedures by staff members blind to baseline diagnoses. After informed consent was obtained, our interview battery was readministered. The follow-up interrater reliability (within one generation of follow-up raters) and follow-up longitudinal reliability (from one generation of raters to the next) of these four measures have also been found to be good-excellent (18–20).

The defensive style of each patient was measured by administering the Defense Style Questionnaire – an 88-item self-report measure that assesses the presence of both defensive styles and specific defense mechanisms. This measure has been found to be internally consistent and to have criterion validity (12).

Each item is rated on a nine-point Likert scale. Individual defenses are assessed using anywhere from one to nine questions. We added three items to more fully measure the defense of emotional hypochondriasis that we have described elsewhere (21). These three items (No matter how often I tell people how miserable I feel, no one really seems to believe me; No matter what I say or do, I can't seem to get other people to really understand how much emotional agony I'm in; I often act in ways that are self-destructive to get other people to pay attention to the tremendous emotional pain that I'm in) were combined with the three already present to measure the related defense of help-rejecting complaining (Doctors never really understand what is wrong with me; My doctors are not able to help me really get over my problems; No matter how much I complain, I never get a satisfactory response). The combined defense of emotional hypochondriasis was found to have an alpha measuring internal consistency of .77, compared to the alpha of .64 found for the defense of help-rejecting complaining.

Statistical Analyses

Data obtained from the Defense Style Questionnaire were assembled in panel format (i.e., multiple records per patient, with one record for each follow-up period for which data were available). Random effects regression modeling methods assessing the role of group (borderline vs. other personality disorder), time, and their interaction, and controlling for gender (as a significantly higher percentage of borderline patients than axis II comparison subjects were female) were used in analyses of mean defense score data over time. If tests of diagnostic group by time interactions were not significant, indicating that the patterns of change were the same for both groups, these analyses were re-run with main effects of group and time only. As these defense scores were positively skewed, they were logarithmically transformed prior to modeling analyses in order to achieve distributions that were more symmetric. Because analyses are based on logarithmically transformed scores, the results have interpretations in terms of relative, rather than absolute, differences. Given the large number of comparisons, we applied the Hochberg (22) correction for multiple comparisons. Finally, for administrative reasons related to funding, the Defense Style Questionnaire was administered to only a subset of patients at 2 and 4-year follow-ups. As a result, these data were collected for 135 of 342 subjects (106 with borderline personality disorder and 29 with non-borderline axis II diagnoses) at 2-year follow-up and 120 of 333 subjects at 4-year follow-up (97 and 23 respectively). A multiple imputation procedure (with 10 imputations of missing defense data) was used to conduct analyses that included observed 2 and 4-year follow-up data. The imputation procedure incorporated both group and baseline and follow-up Defense Style Questionnaire data as predictors of the missing defense data.

Discrete time survival analyses were used to assess the relationship between the 19 defense mechanisms studied and the outcome of recovery from borderline personality disorder. This outcome has been previously defined as concurrent symptomatic remission from borderline personality disorder and good social and vocational functioning (23, 24). Good social and vocational functioning have been defined as at least one emotionally sustaining relationship with a friend or partner and vocational performance that is consistent, competent, and full-time (including being a houseperson). Time-varying values for the defenses were used in these analyses. These values were not transformed for ease of interpretation. Each defense mechanism was assessed individually and then those that were significant were entered into

a multivariate survival model. Using a backward deletion method, the most parsimonious model for predicting recovery was obtained.

Results

Two hundred and ninety patients met both Revised Diagnostic Interview for Borderlines and DSM-III-R criteria for borderline personality disorder and 72 met DSM-III-R criteria for at least one nonborderline axis II disorder (and neither criteria set for borderline personality disorder). All told, the following primary axis II diagnoses were found for these comparison subjects: antisocial personality disorder (N=10, 13.9%), narcissistic personality disorder (N=3, 4.2%), paranoid personality disorder (N=3, 4.2%), avoidant personality disorder (N=8, 11.1%), dependent personality disorder (N=7, 9.7%), self-defeating personality disorder (N=2, 2.8%), and passive-aggressive personality disorder (N=1, 1.4%). Another 38 (52.8%) met criteria for personality disorder not otherwise specified (which was operationally defined in the Diagnostic Interview for DSM-III-R Personality Disorders as meeting all but one of the required number of criteria for at least two of the 13 axis II disorders described in DSM-III-R).

Baseline demographic data have been reported before (13). Briefly, 77.1% (N=279) of the subjects were female and 87% (N=315) were white. The average age of the subjects was 27 years (SD=6.3), the mean socioeconomic status was 3.3 (SD=1.5) (where 1=highest and 5=lowest) (25), and their mean GAF score was 39.8 (SD=7.8) (indicating major impairment in several areas, such as work or school, family relations, judgment, thinking, or mood). Data on co-occurring axis I and II disorders at baseline and over six years of prospective follow-up for both study groups have been reported before (26,27).

In terms of continuing participation, 275 borderline patients and 67 axis II comparison subjects were reinterviewed at two years, 269 and 64 at four years, 264 and 63 at six years, 255 and 61 at eight years, 249 and 60 at 10 years, 244 and 60 at 12 years, 238 and 59 at 14 years, and 231 and 58 at 16 years. All told, 87.5% (N=231/264) of surviving borderline patients (13 died by suicide and 13 died of other causes) were reinterviewed at all eight follow-up waves. A similar rate of participation was found for axis II comparison subjects, with 82.9% (N=58/70) of surviving patients in this study group (one died by suicide and one died of other causes) being reassessed at all eight follow-up waves.

Table 1 contains information related to the four defense styles derived through factor analyses of the items of the Defense Style Questionnaire (12). Mean (SD) scores for adaptive defenses, self-sacrificing, image-distorting, and maladaptive action defenses are reported for both study groups. Borderline patients had significantly higher scores on the two lower level defensive styles: image-distorting ($[1.15-1] \times 100\% = 15\%$ higher) and maladaptive action ($[1.21-1] \times 100\% = 21\%$ higher) defenses, which are similar but not identical to the image-distorting and immature defense levels described below. Those in both study groups had a significant increase in the mean score for the adaptive style ($[1.05-1] \times 100\% = 5\%$) (which is similar to the mature defenses described below) and a significant decrease in the mean score for image-distorting (17% decline) ($[1-0.83] \times 100\%$) and maladaptive action defenses (14% decline) ($[1-0.86] \times 100\%$).

Tables 2–4 contain information related to mature, neurotic, and immature defense mechanisms as defined by Vaillant's classification system (28). Table 5 contains information related to the image-distorting or borderline defenses as defined by Kernberg (1).

Table 2 details mean (SD) Defense Style Questionnaire scores for mature defenses over time for both study groups. Suppression scores were significantly lower for borderline patients

than axis II comparison subjects ($[1-0.89] \times 100\% = 11\%$ lower). In terms of change over time, anticipation scores increased significantly for those in both study groups by 11% ($[1.11-1] \times 100\%$).

Table 3 details mean (SD) Defense Style Questionnaire scores for neurotic defenses over time for those in both study groups. Between-group differences were not found for isolation or reaction formation. However, both groups reported significantly lower scores on isolation over time ($[1 - 0.77] \times 100\% = 23\%$ decline). For the defense of undoing, the relative difference of 1.41 for diagnosis indicates that the mean Defense Style Questionnaire score reported by borderline subjects at baseline is approximately 40% larger than the corresponding mean for axis II comparison subjects. The significant interaction between diagnosis and time indicates that the relative decline from baseline to 16-year follow-up is approximately 22% ($[1 - 0.97 \times 0.80] \times 100\%$) for borderline patients in contrast to the non-significant 3% decline for axis II comparison subjects.

Table 4 details mean (SD) Defense Style Questionnaire scores for the six immature defenses assessed in the current study. There were no between-group differences for either denial or fantasy. However, both groups reported a significant decline in the mean scores for denial (5% decline) and fantasy (24% decline) over time. There were significant between-group differences for the defenses of emotional hypochondriasis, passive aggression, and projection, with borderline patients reporting significantly higher scores of 40%, 16%, and 23% respectively. Both study groups also reported a significant decline in the mean scores for these three defenses over time (26%, 15%, and 16% declines respectively). In addition, a significant baseline difference was found for acting out, with borderline patients reporting scores at study entry that were 43% higher than those reported by axis II comparison subjects. The significant interaction between diagnosis and time indicates that the relative decline in acting out from baseline to 16-year follow-up is approximately 28% ($[1 - 0.87 \times 0.83] \times 100\%$) for borderline patients in contrast to the non-significant 13% decline for axis II comparison subjects.

Table 5 details mean (SD) Defense Style Questionnaire scores for the five image distorting or borderline defenses assessed in the current study. Both study groups experienced a significant decline in the mean scores for each of these defenses, except primitive idealization, over time. These declines ranged from a low of 16% (splitting) to a high of 31% (projective identification), with devaluation (22%) and omnipotence (21%) occupying a mid-range position. In addition, borderline patients reported significantly higher mean scores for the defenses of projective identification (20% higher) and splitting (23% higher).

These analyses were rerun after removing comparison subjects who had a diagnosis that would fit within the borderline personality organization rubric ($N=16$). The results for these image-distorting/borderline defenses were basically the same as when these near-neighbor subjects were included in our comparison group.

While the relative differences described above are a form of effect size, we also calculated Cohen's d (29) for the group effect (comparing the borderline patients to the axis II comparison subjects over time) for the 4 styles and 19 defenses studied. We found a large effect size for the maladaptive action style (0.80) and medium effect sizes for two defenses: acting out (0.64) and emotional hypochondriasis (0.58). The remaining effect sizes were small.

We next assessed significant multivariate time-varying predictors of time-to-recovery from borderline personality disorder—an outcome achieved by 60% of borderline patients by the time of the 16-year follow-up (24). It was found that four time-varying defenses (out of 14 that were significant in bivariate analyses [all but altruism, anticipation, sublimation,

reaction formation, and omnipotence]) were significant multivariate predictors of time-to-recovery. These defenses were: humor (Hazard Ratio=1.18, SE=0.07, Z-score=2.62, P-level=0.009, 95% CI=1.04-1.33); acting out (Hazard Ratio=0.81, SE=0.06, Z-score=-2.90, P-level=0.004, 95% CI=0.71-0.94); emotional hypochondriasis (Hazard Ratio=0.82, SE=0.08, Z-score=-2.01, P-level=0.044, 95% CI=0.68-0.99); projection (Hazard Ratio=0.64, SE=0.10, Z-score=-2.79, P-level=0.005, 95% CI=0.47-0.88).

Humor predicted a faster time to recovery, with an 18% increased chance of recovery for each one-point increase in the score for humor. The three immature defenses predicted a slower time to recovery. For each one-point increase in acting out, emotional hypochondriasis, and projection, the chances of recovery declined 19%, 18%, and 36% respectively.

Discussion

Three main findings have emerged from this study. The first finding is that borderline patients were found to have significantly higher scores over time than axis II comparison subjects on two lower level defensive styles (image-distorting and maladaptive action) and seven specific defenses. One of these defenses was neurotic according to Vaillant's classification system (undoing), while four of these defenses were immature according to this classification system: acting out, emotional hypochondriasis, passive aggression, and projection. All four of these defenses underlie clinical features (impulsivity, demandingness, masochism, and suspiciousness) that have been found to be extremely common among borderline patients (30). However, only demandingness has been found to be specific for the disorder (30).

Two image distorting/borderline defenses were also found to discriminate borderline patients from axis II comparison subjects. More specifically, borderline patients had significantly higher mean scores on the defenses of projective identification and splitting than axis II comparison subjects. Of equal importance is that three other image distorting/borderline defenses were not found to discriminate borderline patients from axis II comparison subjects: devaluation, omnipotence, and primitive idealization. Taken together, these results are consistent with the earlier findings of Perry and Cooper (6) who found that what they termed borderline defenses (projective identification and splitting) were strongly associated with borderline psychopathology, while what they termed narcissistic defenses (devaluation, omnipotence, and primitive idealization) were not. This finding holds whether comparison subjects with a borderline personality organization diagnosis were included in or excluded from the analyses.

The second main finding is that borderline patients were found to have had significant improvement on three of the four styles and 13 of the 19 defenses studied. More specifically, they had significantly higher scores over time on the adaptive style and one mature defense (anticipation) and significantly lower scores on two lower level styles (image-distorting and maladaptive action) and two neurotic defenses (isolation and undoing). They also had significantly lower scores over time on all immature defenses and all image-distorting/borderline defenses except primitive idealization.

The significantly higher score on the mature defense of anticipation was relatively small (11%) and might not signify much clinically meaningful change. The significantly lower scores on the neurotic defenses of isolation and undoing were somewhat more robust (23% and 22%). In terms of significant improvement in immature defenses, denial only saw a decline of 5%. The other five immature defenses had larger declines: acting out (28%), fantasy (24%), emotional hypochondriasis (26%), passive aggression (15%), and projection

(16%). In terms of significant improvement in image-distorting or borderline defenses, the following four defenses had substantial declines: devaluation (22%), omnipotence (21%), projective identification (31%), and splitting (16%).

Looked at synthetically, borderline patients seemed to be functioning in a more adaptive manner on all four levels of defense mechanisms studied. This improvement was the least robust in the mature defenses, which Vaillant (26) has described as often being mistaken for convenient virtues. Here improvement for anticipation, while significant, was only 11%.

More robust change was found for neurotic, immature, and image-distorting or borderline defenses. More specifically, 11 of the 14 defenses in these categories were found to have a significant decline of 15% or more. And seven were found to have a significant decline of 20% or more, while three were found to have a significant decline of 25% or more: acting out, emotional hypochondriasis, and projective identification.

The third main finding is that four time-varying defense mechanisms were found to be significant predictors of time-to-recovery from borderline personality disorder. It is not surprising that three of these defenses were immature according to Vaillant's classification system: acting out, emotional hypochondriasis, and projection. Clearly, continued impulsivity, unremitting complaints of being misunderstood, and chronic distrust and suspiciousness would interfere with both a good social and vocational adjustment. However, the fact that humor predicts a faster time to recovery is an unexpected finding. It may be that humor, which requires a well-functioning observing ego, paves the way for a more flexible and mature psychosocial adjustment.

Currently, there are six evidence-based treatments for borderline personality disorder (31–36). However, most clinicians do not practice any of these treatments due to their complexity and cost. Their main goal is to help their borderline patients move ahead in a more adaptive manner and in this supportive effort, they will use both dynamically and behaviorally informed strategies, such as clarifications, appropriate confrontations, and skills coaching.

These clinicians could use the defensive functioning of their borderline patients to track their symptomatic and psychosocial progress over time. The advantage of such an approach is that tracking defensive functioning fits into a number of psychodynamic frameworks (i.e., ego psychology, object relations theory, self psychology) that can help guide treatment, while viewing each act of impulsivity or each insistent and persistent demand that attention be paid to one's inner pain as a separate and somewhat surprising event can lead clinicians to feel unnecessarily discouraged or even nihilistic.

This study has a number of limitations. The most important of these is that using a self-report measure to assess defense mechanisms over time yields clinically less rich information on defensive functioning than Vaillant's longitudinal vignette method or Perry and Cooper's method of videotaped clinical encounters. In addition, subjects may provide socially acceptable answers that are not consistent with their actual defensive functioning. For example, the highest mean baseline scores reported by both study groups were for the adaptive style. Other limitations are that the subjects were all inpatients at study entry and thus, our results may not generalize to healthier outpatients or non-patients with borderline personality disorder. In addition, a substantial percentage of our subjects were in non-intensive outpatient treatment over time (37). Our results might be different than those for an untreated sample or a sample that had been treated with an empirically-based treatment for borderline personality disorder rather than the treatment as usual received by the vast majority of our subjects.

Taken together, the results of this study suggest that the longitudinal defensive functioning of borderline patients is both distinct and improves substantially over time. They also suggest that immature defenses are the best predictors of time-to-recovery.

Acknowledgments

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Table 6

Vignettes of Complex Defense Mechanisms	
Emotional Hypochondriasis	No one understands the depth of my pain. That includes you. I do not understand that. It is so obvious that I have suffered so much more than other people. Why can't you see that?
Splitting	I met a new guy last night. He is great. Good looking, smart, and sensitive to my needs. I think I really love him. --- That guy I was talking about last week turned out to be a complete jerk. He is a liar and I think he might be dealing drugs. He is a worthless bum. I regret ever spending time with him.
Projective Identification	My professor is such a jerk. He makes me mad every time I speak with him. And guess what? He says that I am making him mad and he wishes I would drop his course. He is clueless about what a pain he is. And he claims that it is me who is the pain. He says he gets furious the minute I start to speak because I have so much anger I don't own.

Change over Time: From Fruitless Complaints to Acceptance of Life's Limitations

Ms. A relied on emotional hypochondriasis as her primary defense mechanism, although using a variety of other immature and neurotic defenses as well. She often began her therapy sessions by complaining about her mother's "stupidity" for failing to recognize the severity of her emotional pain. These complaints were repetitive and often lasted for many minutes. Her therapist listened attentively and typically responded by using a clarification such as "It is hard to believe you will ever get well when the people you depend on seem so uncaring." Her therapist hoped that this type of intervention would help Ms. A feel less alone with her pain. He also hoped that she would identify with a more concise and straightforward style of thinking and speaking. Gradually, Ms. A began to function better at work and made a new friend who worked in the same building. Ms. A often spoke of this new friend as someone who was "helping her grow up." She also began to talk with her therapist about the possibility that her mother wasn't uncaring but very depressed and overwhelmed after her parents divorced. During one session several months later, she said, "I've been thinking like a little kid that my mother was put here just to take care of me. As I've talked about this with my friend, I realize that parents have a life of their own. Maybe my mother was doing the best she could. But she sure could have done better. Or maybe not. Maybe the problem is that I've missed the person she used to be before the divorce. Loving and strong. Or so I thought."

Table 1
Reported Mean Defense Style Questionnaire Scores (SDs) for Bond's Four Defensive Styles

	BL	2 YR FU	4 YR FU	6 YR FU	8 YR FU	10 YR FU	12 YR FU	14 YR FU	16 YR FU	Rel. Diff. Diagnosis Time Interaction	95% CI Diagnosis Time Interaction	P-value Diagnosis Time Interaction
Adaptive												
BPD	5.0 (1.2)	5.4 (1.3)	5.2 (1.3)	5.2 (1.3)	5.3 (1.3)	5.3 (1.3)	5.4 (1.3)	5.3 (1.3)	5.3 (1.3)	0.95	0.90, 1.00	NS
OPD	5.2 (1.1)	5.6 (1.2)	5.4 (1.2)	5.5 (1.0)	5.6 (1.2)	5.5 (1.2)	5.6 (1.2)	5.6 (1.3)	5.6 (1.1)	1.05	1.02, 1.09	0.0069
Self-sacrificing												
BPD	4.5 (1.1)	4.0 (1.5)	4.1 (1.1)	4.1 (1.1)	4.0 (1.1)	4.1 (1.1)	4.1 (1.1)	4.2 (1.1)	4.2 (1.0)	1.04	0.98, 1.10	NS
OPD	3.9 (1.1)	4.0 (1.4)	3.9 (1.1)	3.8 (0.9)	4.1 (1.2)	4.3 (1.2)	4.1 (1.1)	4.1 (1.1)	4.1 (1.1)	1.01	0.96, 1.05	NS
Image-distorting												
BPD	3.4 (1.0)	3.0 (1.4)	2.8 (0.9)	2.9 (1.0)	2.7 (1.0)	2.7 (1.0)	2.6 (1.0)	2.7 (1.0)	2.6 (1.0)	1.15	1.07, 1.24	0.0034
OPD	2.9 (1.1)	2.8 (1.4)	2.6 (0.9)	2.4 (0.8)	2.7 (1.2)	2.6 (1.3)	2.3 (0.9)	2.5 (1.1)	2.6 (1.0)	0.83	0.79, 0.86	<0.0001
Maladaptive Action												
BPD	4.8 (0.9)	4.2 (1.3)	4.1 (1.0)	4.2 (1.1)	3.8 (1.0)	4.0 (1.1)	3.8 (1.1)	3.9 (1.1)	3.9 (1.1)	1.21	1.14, 1.29	<0.0001
OPD	3.8 (0.9)	3.5 (1.3)	3.5 (1.0)	3.4 (0.9)	3.4 (1.2)	3.5 (1.2)	3.2 (1.0)	3.4 (1.2)	3.5 (1.1)	0.86	0.82, 0.89	<0.0001
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Table 2
Reported Mean Defense Style Questionnaire Scores (SDs) for Vaillant's Mature Defense Mechanisms

	BL	2 YR FU	4 YR FU	6 YR FU	8 YR FU	10 YR FU	12 YR FU	14 YR FU	16 YR FU	Rel. Diff. Diagnosis Time Interaction	95% CI Diagnosis Time Interaction	P-value Diagnosis Time Interaction
Altruism												
BPD	6.5 (2.3)	5.4 (2.5)	6.0 (2.2)	6.0 (2.2)	6.1 (2.1)	5.9 (2.3)	6.2 (2.2)	6.3 (2.2)	6.3 (2.1)	1.03	0.93, 1.13	NS
OPD	5.8 (2.4)	5.2 (2.3)	5.8 (2.1)	6.2 (1.9)	5.6 (2.1)	6.2 (2.0)	5.9 (2.2)	6.2 (2.1)	6.3 (2.2)	1.09	1.02, 1.16	NS
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Anticipation												
BPD	5.5 (2.0)	5.5 (2.1)	5.7 (2.0)	5.7 (1.9)	5.8 (1.8)	5.6 (1.7)	5.9 (1.8)	5.9 (1.9)	5.9 (1.8)	1.00	0.93, 1.10	NS
OPD	5.4 (1.8)	5.5 (2.1)	5.8 (2.0)	5.8 (1.7)	5.6 (1.8)	5.8 (1.8)	5.6 (2.0)	5.8 (2.1)	5.8 (2.0)	1.11	1.05, 1.17	0.0033
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Humor												
BPD	4.7 (1.8)	5.0 (2.1)	4.8 (1.8)	4.8 (1.7)	4.9 (1.7)	4.8 (1.8)	4.9 (1.7)	5.0 (1.8)	4.9 (1.8)	0.95	0.87, 1.04	NS
OPD	4.7 (1.8)	5.2 (1.9)	5.0 (1.6)	5.0 (1.5)	5.1 (1.5)	5.1 (1.6)	5.2 (1.4)	5.2 (1.5)	5.0 (1.5)	1.04	0.99, 1.10	NS
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Sublimation												
BPD	4.1 (2.5)	4.7 (2.5)	4.5 (2.4)	4.5 (2.6)	4.6 (2.3)	4.4 (2.4)	4.4 (2.6)	4.4 (2.5)	4.3 (2.5)	1.02	0.90, 1.16	NS
OPD	4.0 (2.5)	4.6 (2.4)	4.3 (2.3)	4.2 (2.4)	4.7 (2.4)	4.1 (2.5)	4.3 (2.7)	4.4 (2.5)	4.4 (2.5)	1.02	0.92, 1.14	NS
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Suppression												
BPD	4.5 (1.9)	4.8 (1.8)	4.9 (1.9)	4.8 (1.8)	4.8 (1.9)	4.9 (1.8)	4.9 (1.9)	4.8 (1.8)	5.0 (1.8)	0.89	0.82, 0.96	0.0405
OPD	5.3 (1.7)	5.0 (1.7)	5.3 (1.7)	5.2 (1.4)	5.3 (1.4)	5.1 (1.4)	5.4 (1.7)	5.3 (1.9)	5.4 (1.5)	1.07	1.01, 1.12	NS
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Table 3
Reported Mean Defense Style Questionnaire Scores (SDs) for Vaillant's Neurotic Defense Mechanisms

	BL	2 YR FU	4 YR FU	6 YR FU	8 YR FU	10 YR FU	12 YR FU	14 YR FU	16 YR FU	Rel. Diff. Diagnosis Time Interaction	95% CI Diagnosis Time Interaction	P-value Diagnosis Time Interaction
Isolation												
BPD	4.2 (1.6)	3.4 (1.7)	3.6 (1.7)	3.4 (1.6)	3.2 (1.5)	3.1 (1.5)	3.1 (1.5)	3.2 (1.5)	3.0 (1.5)	1.12 0.77 ---	1.01, 1.14 0.73, 0.81 ---	NS <0.0001 ---
OPD	3.7 (1.6)	3.5 (1.7)	3.4 (1.8)	3.2 (1.6)	3.3 (1.6)	3.0 (1.5)	2.7 (1.4)	2.9 (1.6)	2.9 (1.6)			
Reaction Formation												
BPD	4.6 (1.3)	4.6 (1.6)	4.3 (1.3)	4.3 (1.3)	4.1 (1.3)	4.3 (1.4)	4.2 (1.3)	4.3 (1.3)	4.3 (1.4)	1.04 0.97 ---	0.97, 1.12 0.93, 1.01 ---	NS NS ---
OPD	4.0 (1.4)	4.5 (1.6)	3.9 (1.4)	3.9 (1.1)	4.3 (1.5)	4.5 (1.5)	4.3 (1.4)	4.2 (1.4)	4.3 (1.4)			
Undoing												
BPD	4.6 (1.8)	3.9 (1.8)	3.8 (1.7)	3.8 (1.7)	3.5 (1.7)	3.5 (1.7)	3.4 (1.6)	3.4 (1.7)	3.5 (1.7)	1.41 0.97 0.80 ---	1.26, 1.59 0.87, 1.08 0.71, 0.90 ---	<0.0001 NS <0.0068 ---
OPD	3.1 (1.3)	3.0 (1.7)	3.0 (1.5)	2.9 (1.5)	3.1 (1.4)	3.2 (1.5)	3.0 (1.5)	3.0 (1.6)	3.1 (1.5)			

Table 4
Reported Mean Defense Style Questionnaire Scores (SDs) for Vaillant's Immature Defense Mechanisms

	BL	2 YR FU	4 YR FU	6 YR FU	8 YR FU	10 YR FU	12 YR FU	14 YR FU	16 YR FU	Rel. Diff. Diagnosis Time Interaction	95%CI Diagnosis Time Interaction	P-value Diagnosis Time Interaction
Acting Out												
BPD	5.6 (1.6)	4.6 (1.9)	4.5 (1.7)	4.5 (1.6)	4.0 (1.6)	4.2 (1.7)	4.0 (1.7)	4.0 (1.7)	4.0 (1.7)	1.43	1.28, 1.60	<0.0001
OPD	3.9 (1.5)	3.5 (1.7)	3.4 (1.6)	3.4 (1.4)	3.4 (1.6)	3.5 (1.7)	3.2 (1.6)	3.4 (1.6)	3.5 (1.7)	0.87	0.77, 0.99	NS
										0.83	0.74, 0.94	0.0440
Denial												
BPD	4.2 (1.1)	3.9 (1.3)	4.0 (1.1)	4.0 (1.0)	4.0 (1.1)	3.9 (1.0)	3.8 (1.1)	3.8 (1.0)	3.9 (1.0)	1.01	0.96, 1.07	NS
OPD	3.9 (0.9)	3.9 (1.2)	3.9 (1.1)	3.8 (0.9)	4.0 (1.2)	4.0 (1.2)	3.9 (1.0)	3.8 (1.2)	3.8 (1.1)	0.95	0.92, 0.98	0.0465
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Emotional Hypochondriasis												
BPD	4.9 (1.7)	3.6 (1.9)	3.5 (1.7)	3.7 (1.7)	3.3 (1.7)	3.4 (1.7)	3.3 (1.8)	3.3 (1.7)	3.3 (1.7)	1.40	1.27, 1.56	<0.0001
OPD	3.3 (1.4)	2.8 (1.7)	2.9 (1.6)	2.7 (1.5)	2.6 (1.6)	2.6 (1.6)	2.1 (1.0)	2.6 (1.6)	2.8 (1.4)	0.74	0.69, 0.79	<0.0001
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Fantasy												
BPD	4.1 (2.5)	3.7 (2.5)	3.5 (2.4)	3.7 (2.6)	3.2 (2.4)	3.2 (2.3)	3.1 (2.4)	3.1 (2.4)	3.2 (2.4)	1.11	0.96, 1.29	NS
OPD	3.8 (2.9)	3.6 (2.6)	3.4 (2.4)	3.1 (2.5)	3.2 (2.6)	3.3 (2.5)	2.8 (2.4)	2.8 (2.4)	3.3 (2.5)	0.76	0.71, 0.83	<0.0001
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Passive Aggression												
BPD	4.2 (1.2)	4.0 (1.7)	3.8 (1.1)	3.7 (1.2)	3.5 (1.2)	3.6 (1.2)	3.5 (1.2)	3.5 (1.2)	3.6 (1.3)	1.16	1.07, 1.24	0.0019
OPD	3.6 (1.3)	3.5 (1.7)	3.3 (1.1)	3.2 (1.0)	3.3 (1.5)	3.3 (1.4)	3.2 (1.3)	3.3 (1.3)	3.2 (1.1)	0.85	0.80, 0.89	<0.0001
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Projection												
BPD	3.3 (1.2)	2.8 (1.3)	2.6 (1.0)	2.7 (1.1)	2.4 (1.1)	2.7 (1.3)	2.5 (1.2)	2.5 (1.1)	2.6 (1.2)	1.23	1.13, 1.35	<0.0001
OPD	2.3 (1.0)	2.4 (1.2)	2.3 (0.9)	2.2 (0.09)	2.3 (1.2)	2.4 (1.4)	2.1 (1.0)	2.3 (1.3)	2.3 (1.2)	0.84	0.80, 0.88	<0.0001
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Table 5
Reported Mean Defense Style Questionnaire Scores (SDs) for Image-Distorting or Borderline Defense Mechanisms

	BL	2 YR FU	4 YR FU	6 YR FU	8 YR FU	10 YR FU	12 YR FU	14 YR FU	16 YR FU	Rel. Diff. Diagnosis Time Interaction	95% CI Diagnosis Time Interaction	P-value Diagnosis Time Interaction
Devaluation												
BPD	2.4 (1.6)	2.6 (1.9)	2.0 (1.2)	2.2 (1.5)	2.0 (1.5)	2.2 (1.6)	1.9 (1.5)	1.8 (1.4)	1.9 (1.5)	1.12	1.00, 1.25	NS
OPD	2.2 (1.8)	2.4 (1.9)	1.9 (1.3)	1.9 (1.2)	2.0 (1.5)	2.0 (1.7)	1.7 (1.1)	1.8 (1.5)	1.8 (1.5)	0.78	0.72, 0.84	<0.0001
Omnipotency												
BPD	2.5 (1.3)	2.8 (1.8)	2.1 (1.0)	2.3 (1.3)	2.0 (1.2)	2.1 (1.2)	2.1 (1.3)	2.0 (1.3)	2.0 (1.2)	1.08	0.98, 1.18	NS
OPD	2.5 (1.5)	2.5 (1.6)	2.1 (1.0)	2.0 (1.2)	2.1 (1.4)	2.1 (1.7)	1.8 (1.0)	2.1 (1.3)	2.2 (1.4)	0.79	0.74, 0.83	<0.0001
Primitive Idealization												
BPD	3.5 (2.1)	3.4 (2.1)	3.1 (1.8)	3.3 (1.9)	3.1 (2.0)	3.1 (2.0)	3.0 (1.9)	3.3 (2.1)	3.1 (1.9)	1.09	0.96, 1.23	NS
OPD	2.9 (1.9)	3.0 (1.9)	2.9 (1.7)	2.6 (1.8)	3.3 (2.0)	3.4 (2.0)	3.0 (1.9)	2.9 (2.0)	2.9 (2.0)	0.93	0.86, 1.00	NS
Projective Identification												
BPD	4.0 (2.8)	2.7 (2.1)	2.9 (2.2)	2.6 (2.3)	2.4 (2.2)	2.3 (2.2)	2.4 (2.2)	2.4 (2.2)	2.4 (2.2)	1.20	1.06, 1.36	0.0475
OPD	2.9 (2.6)	2.5 (1.9)	2.6 (2.0)	2.3 (2.0)	1.9 (1.8)	2.1 (2.1)	1.7 (1.5)	2.2 (1.9)	2.2 (2.0)	0.69	0.63, 0.75	<0.0001
Splitting												
BPD	3.4 (1.8)	2.7 (1.5)	2.8 (1.5)	2.8 (1.6)	2.7 (1.6)	2.7 (1.6)	2.6 (1.6)	2.6 (1.6)	2.6 (1.5)	1.23	1.10, 1.37	0.0034
OPD	2.5 (1.5)	2.3 (1.3)	2.5 (1.3)	2.3 (1.3)	2.7 (1.9)	2.4 (1.8)	2.2 (1.5)	2.4 (1.6)	2.2 (1.2)	0.84	0.79, 0.90	<0.0001