PERSONALITY DISORDERS AND THE PERSISTENCE OF ANXIETY DISORDERS IN A NATIONALLY REPRESENTATIVE SAMPLE

Andrew E. Skodol, M.D., Timothy Geier, M.S., Bridget F. Grant, Ph.D., and Deborah S. Hasin, Ph.D.

Background: Among individuals with anxiety disorders, comorbid personality disorders (PDs) increase cross-sectional symptom severity and decrease functioning. Little is known, however, about how PDs influence the course of anxiety disorders over time. The purpose of this study was to examine the effect of PDs on the persistence of four anxiety disorders in a nationally representative sample in the United States.

Methods: Two waves of data were collected on 34,653 participants, 3 years apart. At both waves, participants were evaluated for generalized anxiety disorder (GAD), social and specific phobias, and panic disorder. Predictors of persistence included all DSM-IV PDs. Control variables included demographics, comorbid PDs, age at onset of the anxiety disorder, number of prior episodes, duration of the current episode, treatment history, and cardinal symptoms of exclusionary diagnoses for each anxiety disorder.

Results: Any PD, two or more PDs, borderline PD, schizotypal PD, mean number of PD criteria met, and mean number of PDs diagnosed predicted the persistence of all four anxiety disorders. Narcissistic PD predicted persistence of GAD and panic disorder. Schizoid and avoidant PDs also predicted persistence of GAD. Finally, avoidant PD predicted persistence of social phobia. Particular patterns of cross-cluster PD comorbidity were strong predictors of the persistence of individual anxiety disorders as well.

Conclusions: In this national sample, a variety of PDs robustly predicted the persistence of anxiety disorders over 3 years, consistent with the results of recent prospective clinical studies. Personality psychopathology should be assessed and addressed in treatment for all patients with anxiety disorders.

Key words: personality disorder; anxiety disorder; comorbidity; epidemiology; clinical course

INTRODUCTION

Anxiety disorders are prevalent in the clinic and in the community,[1–3] are associated with considerable psychosocial impairment,[4,5] and have surprisingly low rates of remission[2,6,7] suggesting a chronic burden. Among individuals with anxiety disorders, comorbid personality disorders (PDs) increase cross-sectional
symptom severity and decrease functioning. Identifying factors that contribute to a chronic course in anxiety disorders is important for prognosis and treatment planning. Little is known about how PDs influence the course of anxiety disorders over time. Three prospective studies examined associations between PDs and the course of anxiety disorders in patients. In a 6-year follow-up of Norwegian outpatients, borderline PD predicted the presence of any anxiety disorder, obsessive–compulsive PD predicted panic disorder, and avoiding PD predicted social phobia. In the Harvard/Brown Anxiety Research Program (HARP) 5-year study, DSM-III-R dependent and avoidant PDs decreased the likelihood of remission from generalized anxiety disorder (GAD) and avoiding PD decreased the likelihood of remission from social phobia. No PD affected the course of panic disorder, while borderline, schizotypal, and obsessive–compulsive PDs were too infrequent to analyze. The Collaborative Longitudinal Study of Personality Disorders Study (CLPS) prospectively examined the effects of DSM-IV PDs on the course of several anxiety disorders over 7 years, finding that a number of PDs adversely impacted the clinical course of anxiety disorders. Specifically, schizotypal PD influenced the course of social phobia, PTSD, and GAD; avoidant PD influenced social phobia and OCD; obsessive–compulsive PD influenced GAD, OCD, and agoraphobia; and borderline PD impacted the course of OCD, GAD, and panic disorder with agoraphobia.

In addition, interest is growing in PD severity as a critical variable in PD psychopathology, stimulating efforts to revise the PD sections of both DSM-5 and ICD-11. Reviews of levels of personality functioning and of other representations of PD severity suggest that severity might be the key PD factor in predicting concurrent and prospective functioning. Thus, associations of disorder chronicity with various representations of PD severity, including PD cluster, number of PD criteria, number of PDs, and “complex PD” may be significant.

Prospective studies of patient samples provide important information, but may be biased by numerous confounds and selection factors differentiating those receiving or not receiving treatment. Thus, generalization from clinical samples may be difficult and prognostic factors obscured or distorted. One prospective community study showed that having any PD by early adulthood elevated the risk of any anxiety disorder by middle adulthood. However, the sample size precluded examination of specific PDs and specific anxiety disorders. Larger prospective studies of general population samples are needed to better understand the relationship of PDs to persistent anxiety disorders.

AIMS OF THE STUDY

The present study prospectively examines the impact of specific PDs on the persistence of four anxiety disorders assessed at two points in time in a large nationally representative sample in the United States: GAD, social phobia, specific phobia, and panic disorder. The 3-year follow-up provides a unique opportunity to determine rates of persistence of the four anxiety disorders and the specific effects of all DSM-IV PDs, and representations of PD severity, while controlling for other potentially prognostic factors. These data allow examination of the hypothesis generated in clinical populations that PDs exert strong, independent, adverse effects on the course of common anxiety disorders.

MATERIALS AND METHODS

PARTICIPANTS

Participants were respondents in Waves 1 and 2 of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). The target population was the civilian noninstitutionalized population 18 years and older in households and group quarters (e.g., college quarters, group homes, boarding houses) in the United States. Blacks, Hispanics, and adults ages 18–24 were oversampled, with data adjusted via sample weights for oversampling and household- and person-level nonresponse, in order to make standard errors of estimates accurate, and to make the findings representative of the general population. Of the 43,093 respondents interviewed at Wave 1, census-defined eligible respondents for Wave 2 re-interviews included those not deceased (N = 1,403); deported, mentally or physically impaired (i.e., too impaired to participate in an interview) (N = 781); or on active military duty (N = 950). In Wave 2, 34,653 of 39,959 eligible respondents were re-interviewed, for a response rate of 86.7%. Sample weights further adjusted for Wave 2 nonresponse. Overall, 4,755 had GAD, social phobia, specific phobia, and/or panic disorder at Wave 1. Of these, 4,010 participated in Wave 2 and constitute the present sample: 746 respondents meeting criteria for Wave 1 current GAD, 989 for social phobia, 2,579 for specific phobia, and 775 for panic disorder, with or without agoraphobia. Demographic characteristics of the entire Wave 2 sample and of those with each anxiety disorder are shown in Table 1. In general, most respondents with anxiety disorders were female, White, over age 40, married or cohabiting, and college educated.

PROCEDURES

In-person interviews were conducted at both waves by experienced lay interviewers with extensive training and supervision. All procedures, including informed consent, received full ethical review and approval from the U.S. Census Bureau and U.S. Office of Management and Budget.

ASSESSMENT AND VARIABLES

Interviewers administered the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Version (AUDADIS-IV), a structured diagnostic interview developed to assess substance use and other mental disorders in large-scale surveys. Computer algorithms produced diagnoses of DSM-IV Axis I disorders and all DSM-IV PDs.

Anxiety Disorders. GAD, social phobia, specific phobia, and panic disorder (with or without agoraphobia) were defined according to DSM-IV inclusion criteria, including all symptom, duration, and clinical significance (i.e., distress or impairment) criteria. Diagnoses additionally required that the disorders be “primary,” that is, not substance-induced or due to a general medical conditions. Other exclusionary criteria were controlled for in subsequent analyses (see below).
TABLE 1. Demographic characteristics of the full sample and by anxiety disorder at Wave 1

<table>
<thead>
<tr>
<th>Demographic characteristic</th>
<th>Full sample N = 34,653</th>
<th>GAD N = 746</th>
<th>Social phobia N = 989</th>
<th>Specific phobia N = 2,579</th>
<th>Panic disorder N = 775</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>14,564  47.92 (0.3)</td>
<td>194  29.65 (2.2)</td>
<td>340  37.28 (1.8)</td>
<td>710  31.47 (1.1)</td>
<td>206  28.75 (2.0)</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td>White 20,174  70.93 (1.5)</td>
<td>486  76.49 (2.0)</td>
<td>663  77.75 (1.9)</td>
<td>1,586  75.06 (1.4)</td>
<td>504  77.21 (2.1)</td>
</tr>
<tr>
<td>Non-White</td>
<td>14,479  29.07 (1.5)</td>
<td>260  23.51 (2.0)</td>
<td>326  22.25 (1.9)</td>
<td>993  24.94 (1.4)</td>
<td>271  22.79 (2.1)</td>
</tr>
<tr>
<td>Age</td>
<td>6,719  21.80 (0.4)</td>
<td>150  22.99 (1.9)</td>
<td>227  25.20 (1.7)</td>
<td>577  25.12 (1.2)</td>
<td>162  23.42 (2.0)</td>
</tr>
<tr>
<td>18–29</td>
<td>7,299  20.10 (0.3)</td>
<td>185  24.18 (1.8)</td>
<td>216  21.61 (1.7)</td>
<td>570  20.97 (1.1)</td>
<td>206  25.81 (1.8)</td>
</tr>
<tr>
<td>30–39</td>
<td>7,146  20.77 (0.3)</td>
<td>190  25.99 (1.9)</td>
<td>254  24.90 (1.7)</td>
<td>563  22.95 (1.0)</td>
<td>211  27.13 (1.9)</td>
</tr>
<tr>
<td>50+</td>
<td>13,489  37.33 (0.5)</td>
<td>221  26.84 (1.8)</td>
<td>292  28.28 (1.7)</td>
<td>869  30.96 (1.1)</td>
<td>196  23.63 (1.9)</td>
</tr>
<tr>
<td>Education</td>
<td>Less than college</td>
<td>15,699  43.68 (0.6)</td>
<td>355  47.80 (2.3)</td>
<td>495  48.79 (2.2)</td>
<td>1,161  43.33 (1.3)</td>
</tr>
<tr>
<td>College or higher</td>
<td>18,954  56.32 (0.6)</td>
<td>391  52.20 (2.3)</td>
<td>494  51.21 (2.2)</td>
<td>1,418  56.47 (1.3)</td>
<td>419  55.61 (2.2)</td>
</tr>
<tr>
<td>Marital status</td>
<td>Not married</td>
<td>18,413  63.06 (0.5)</td>
<td>308  54.20 (2.1)</td>
<td>468  65.85 (1.8)</td>
<td>1,341  62.36 (1.1)</td>
</tr>
<tr>
<td>Married</td>
<td>16,240  36.94 (0.5)</td>
<td>438  41.65 (1.8)</td>
<td>521  37.64 (1.1)</td>
<td>1,238  37.64 (1.1)</td>
<td>412  42.06 (2.0)</td>
</tr>
</tbody>
</table>

Persistence was defined identically for all four anxiety disorders. At Wave 1, criteria for each anxiety disorder were assessed in two time frames: (1) current, that is, during the last 12 months; and (2) prior to the last 12 months. At Wave 2, 3 years later, these criteria were again assessed in two time frames covering the time period between Waves 1 and 2: (1) current, last 12 months; and (2) prior to last 12 months, but since Wave 1. From these data, the outcome variable was created. **Persistent anxiety disorder** was defined as meeting full criteria for current disorder at Wave 1, and full criteria for the same disorder during each time period of the 3-year follow-up. The AUDADIS has fair to good test–retest reliability for these anxiety disorders \( (K = 0.40–0.52) \) similar to or better than other instruments used in epidemiological studies.\[26, 27\]

**Predictors of Outcomes.** The main predictors of anxiety disorder persistence were all 10 individual DSM-IV PDs and the PD Clusters A, B, and C. In addition, various representations of PD severity were tested, including having more than one PD, cross-cluster comorbidity or “complex PD,” mean number of PD criteria, \[17, 29\] and mean number of PDs.\[17\] Frequencies of the individual PDs and other PD variables by each anxiety disorder are shown in Table 2. Control variables included (1) demographic characteristics, (2) comorbid PD, (3) clinical characteristics of anxiety disorder course, (4) treatment history, and (5) cardinal symptoms of exclusionary diagnoses for each anxiety disorder (see below).

**Personality Disorders.** PDs, except for antisocial, were assessed with an introduction and repeated reminders asking respondents to answer about how they felt or acted “most of the time, throughout your life, regardless of the situation or whom you were with.” Respondents were instructed not to include symptoms occurring only when depressed, manic, anxious, drinking heavily, using drugs, recovering from the effects of alcohol or drugs, or physically ill. PD criteria items were adapted from items in the DSM-IV versions of semistructured diagnostic interviews (e.g., the Structured Clinical Interview for DSM-IV Personality Disorders and Personality Disorder Examination). For all symptoms coded positive, respondents were asked about distress and social/occupational dysfunction: “Did this ever trouble you or cause problems at work or school, or with your family or other people?” Scoring algorithms for diagnoses required associated distress or social/occupational dysfunction, in addition to the specified number of criteria.\[30–34\]

Avoidant, dependent, histrionic, obsessive-compulsive, paranoid, and schizoid PDs were assessed at Wave 1; borderline, narcissistic, and schizotypal were assessed at Wave 2. Lifetime antisocial PD (including both childhood and adult criteria) was assessed at Wave 1, with adult criteria reassessed at Wave 2. Antisocial PD was considered present if respondents met criteria for lifetime disorder at Wave 1 and at least three adult criteria persisted at Wave 2. NESARC test–retest studies indicate reliability from fair (paranoid, histrionic, avoidant, \( K = 0.40–0.45 \)) to very good (schizotypal, antisocial, narcissistic, borderline, \( K = 0.67–0.71 \)),\[23, 35\] generally comparable to the range reported for patient studies.\[36\] Good convergent validity for these diagnoses is indicated by significant associations with separate measures of impairment.\[30–34\]

Because not all PDs were measured at Wave 1, we investigated their validity at both waves in the present sample, using two methods. The first used weighted linear regressions to compare respondents with each PD to those with no PD on impairment at Waves 1 and 2.
measured with the Mental Component Summary of the SF-12v2.[37] Some between-wave change in scores occurred, consistent with prior research, but the participants with any of the PDs, with the exception of antisocial PD, consistently had significantly greater impairment (P < .01) in both waves, regardless of the wave in which the disorder was assessed. The second method used logistic regression to compare respondents with each PD to those with no PD on Wave 1 and Wave 2 life events suggesting impaired functioning, such as breaking up of relationships; problems with friends, employer, or finances; being fired or laid off; and being unemployed and looking for work. In general, respondents with PDs were more likely to experience the events at both Waves 1 and 2, regardless of whether their disorder was diagnosed. The consistency of association of both impairment indicators with PDs at Waves 1 and 2, regardless of when their disorder was assessed, supported the validity of the PD diagnoses. [Details available on request.]

**Demographic Characteristics.** These included gender, race/ethnicity, age, education, and marital status.

**Clinical Characteristics of Anxiety Disorder Course.** Since early onset, recurrence, and prior chronicity predicted persistent anxiety disorder in other studies,[38, 39] analyses included age at first onset, number of prior episodes, and duration (years) of current episode.

**Treatment.** Current treatment for internalizing (mood or anxiety) disorder was examined, including outpatient services (counselor, therapist, physician, or other professional), inpatient services (hospitalization or overnight or longer), and prescribed medication.[40]

### STATISTICAL ANALYSES

Weighted means, frequencies, and univariate associations were computed for GAD, social phobia, specific phobia, and panic disorder. Relationships between each predictor (PD and control) and the binary outcome variables representing the persistence of each anxiety disorder were tested with separate multiple logistic regression models, producing adjusted odds ratios (ORs) and 95% confidence intervals (CIs). Standard errors and 95% CIs for the predictors were estimated with SUDAAN, using Taylor series linearization to adjust for design effects of complex sample surveys.

To test the effect of PDs on the persistence of each anxiety disorder, we first tested individual models for each PD, PD cluster, two or more PDs, and cross-cluster comorbidities, adjusting for demographic factors. Next, we tested a model incorporating demographic factors and the binary outcome variables representing the persistence of each anxiety disorder. The model was then repeated with inclusion of PDs, adjusting for demographic factors and PDs. Finally, all predictors were entered into the model together. The adjusted odds ratios (ORs) and 95% confidence intervals (CIs) are reported.

### RESULTS

#### GENERALIZED ANXIETY DISORDER

Of the respondents with GAD in Wave 1, 119 (15.1% [SE = 1.6]) had persistent GAD in Wave 2, meeting criteria for the disorder during each time period of the 3-year follow-up. Of the demographic and clinical variables, only age (40–49) (OR = 2.45, 95% CI = 1.14–5.27) and treatment (OR = 1.86, 95% CI = 1.09–3.16) predicted persistence in univariate analyses. In the final multiple regression models, any PD and two or more PDs were significantly related to GAD persistence (see Table 3). Cluster B PD only predicted persistence (OR = 3.62, 95% CI = 1.02–12.88). Of the specific PDs, narcissistic (OR = 3.28, 95% CI = 1.58–6.77), schizotypal (OR = 2.88, 95% CI = 1.50–5.51), schizoid (OR = 2.59, 95% CI = 1.45–4.64), borderline (OR = 2.84, 95% CI = 1.36–4.77), and avoidant (OR = 2.26, 95% CI = 1.15–4.44) PDs all predicted persistence of GAD controlling for demographics, any other PD, age at onset, number of episodes, duration of current episode, treatment, and final controls for cardinal symptoms of disorders that according to DSM-IV would exclude GAD (see Table 3). Of the PD severity measures, comorbidity across Clusters A and B only (OR = 4.27, 95% CI = 1.48–12.28); A and C only (OR = 3.43, 95% CI = 1.41–8.38); and A, B, and C (OR = 5.14, 95% CI = 2.76–9.55); mean number of PD criteria (OR = 1.08, 95% CI = 1.05–1.11); and mean number of PDs (OR = 1.58, 95% CI = 1.35–1.85) predicted persistence of GAD.

#### SOCIAL PHOBIAS

Of the respondents with social phobia in Wave 1, 174 (17.6% [SE = 1.5]) had persistent social phobia in Wave 2. No demographic variable was associated with persistence. Of other clinical variables, only receiving treatment was associated with persistence (OR = 2.91, CI = 1.64–5.19). Any PD and two or more PDs were significantly related to social phobia persistence (see Table 3). Any Cluster C PD only predicted persistence (OR = 2.26, 95% CI = 1.03–4.99). Specific PDs associated with persistent social phobia included schizotypal (OR = 2.77, 95% CI = 1.64–4.66), borderline (OR = 2.59, 95% CI = 1.49–4.40), and avoidant PD (OR = 1.96, 95% CI = 1.20–3.20). Clusters A and B comorbidity (OR = 10.31, 95% CI = 4.29–24.78), Clusters B and C comorbidity (OR = 3.66, 95% CI = 1.30–10.28), mean number of PD criteria (OR = 1.04, 95% CI = 1.02–1.06), and mean number of PDs (OR = 1.30, 95% CI = 1.16–1.45) predicted persistence of social phobia.

#### SPECIFIC PHOBIAS

Of respondents with specific phobia at Wave 1, 571 (21.9% [SE = 1.0]) persisted over 3 years. Having received treatment was associated with persistence (OR = 1.97, 95% CI = 1.13–3.44). Any PD and two or more PDs were significantly related to specific phobia persistence (see Table 3). Cluster B PD only predicted...
TABLE 3. Personality disorders (PDs) as predictors of anxiety disorder persistence among those who had anxiety disorders at Wave 1: odds ratios (OR) and 95% confidence intervals (CI)

<table>
<thead>
<tr>
<th>Personality disorder</th>
<th>Generalized anxiety disorder&lt;sup&gt;a&lt;/sup&gt; (N = 119)</th>
<th>Social phobia&lt;sup&gt;a&lt;/sup&gt; (N = 174)</th>
<th>Specific phobia&lt;sup&gt;a&lt;/sup&gt; (N = 571)</th>
<th>Panic disorder&lt;sup&gt;a&lt;/sup&gt; (N = 115)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antisocial</td>
<td>3.82 (0.58–25.19)</td>
<td>1.97 (0.41–9.58)</td>
<td>2.12 (0.57–7.94)</td>
<td>1.63 (0.19–13.72)</td>
</tr>
<tr>
<td>Avoidant</td>
<td>2.26 (1.15–4.44)</td>
<td>1.96 (1.20–3.20)</td>
<td>1.21 (0.77–1.90)</td>
<td>1.18 (0.52–2.69)</td>
</tr>
<tr>
<td>Borderline</td>
<td>2.54 (1.36–4.75)</td>
<td>2.59 (1.49–4.50)</td>
<td>1.68 (1.15–2.46)</td>
<td>4.54 (2.36–8.71)</td>
</tr>
<tr>
<td>Dependent</td>
<td>2.40 (0.84–6.83)</td>
<td>0.98 (0.31–3.10)</td>
<td>2.06 (0.91–4.67)</td>
<td>2.13 (0.59–7.71)</td>
</tr>
<tr>
<td>Histrionic</td>
<td>1.04 (0.39–2.78)</td>
<td>1.40 (0.70–2.79)</td>
<td>1.21 (0.71–2.04)</td>
<td>1.12 (0.42–2.96)</td>
</tr>
<tr>
<td>Narcissistic</td>
<td>3.28 (1.58–6.77)</td>
<td>1.71 (0.96–3.03)</td>
<td>1.13 (0.73–1.75)</td>
<td>2.22 (1.11–4.44)</td>
</tr>
<tr>
<td>OCPD&lt;sup&gt;d&lt;/sup&gt;</td>
<td>1.84 (0.97–3.52)</td>
<td>0.75 (0.44–1.28)</td>
<td>0.94 (0.68–1.29)</td>
<td>1.55 (0.82–2.95)</td>
</tr>
<tr>
<td>Paranoid</td>
<td>1.94 (1.00–3.74)</td>
<td>1.18 (0.71–1.96)</td>
<td>1.31 (0.86–2.01)</td>
<td>0.69 (0.33–1.46)</td>
</tr>
<tr>
<td>Schizoid</td>
<td>2.59 (1.45–4.64)</td>
<td>1.12 (0.66–1.91)</td>
<td>1.05 (0.70–1.57)</td>
<td>1.45 (0.65–3.32)</td>
</tr>
<tr>
<td>Schizotypal</td>
<td>2.88 (1.50–5.51)</td>
<td>2.77 (1.64–4.66)</td>
<td>2.53 (1.67–3.85)</td>
<td>2.26 (1.03–4.96)</td>
</tr>
<tr>
<td>Any PD</td>
<td>3.82 (1.96–7.45)</td>
<td>3.07 (1.72–5.50)</td>
<td>1.59 (1.22–2.07)</td>
<td>2.14 (1.08–4.24)</td>
</tr>
<tr>
<td>2+ PDs</td>
<td>4.00 (2.17–7.39)</td>
<td>3.01 (1.77–5.11)</td>
<td>1.90 (1.41–2.55)</td>
<td>3.06 (1.66–5.63)</td>
</tr>
<tr>
<td>Any Cluster A&lt;sup&gt;d&lt;/sup&gt;</td>
<td>— —</td>
<td>1.47 (0.55–3.95)</td>
<td>1.53 (0.89–2.63)</td>
<td>0.47 (0.14–1.63)</td>
</tr>
<tr>
<td>Any Cluster B</td>
<td>3.62 (1.02–12.88)</td>
<td>1.21 (0.34–4.32)</td>
<td>1.90 (1.18–3.05)</td>
<td>1.83 (0.65–5.19)</td>
</tr>
<tr>
<td>Any Cluster C</td>
<td>2.10 (0.69–6.40)</td>
<td>2.26 (1.03–4.99)</td>
<td>0.98 (0.61–1.58)</td>
<td>1.21 (0.34–4.29)</td>
</tr>
<tr>
<td>Any Cluster A + B</td>
<td>4.27 (1.48–12.18)</td>
<td>10.31 (4.29–24.78)</td>
<td>2.30 (1.32–4.02)</td>
<td>5.70 (2.30–14.12)</td>
</tr>
<tr>
<td>Any Cluster B + C</td>
<td>0.27 (0.04–1.65)</td>
<td>3.66 (1.30–10.28)</td>
<td>1.30 (0.64–2.65)</td>
<td>7.26 (2.27–23.26)</td>
</tr>
<tr>
<td>Any Cluster A + C</td>
<td>3.43 (1.41–8.36)</td>
<td>1.84 (0.86–3.96)</td>
<td>1.81 (1.12–2.94)</td>
<td>0.71 (0.12–4.07)</td>
</tr>
<tr>
<td>Any Cluster B + C</td>
<td>5.14 (2.76–9.55)</td>
<td>1.53 (0.92–2.53)</td>
<td>1.37 (0.90–2.09)</td>
<td>2.11 (0.90–4.92)</td>
</tr>
<tr>
<td>PD symptoms (0–79)&lt;sup&gt;e,f&lt;/sup&gt;</td>
<td>1.08 (1.05–1.11)</td>
<td>1.04 (1.02–1.06)</td>
<td>1.03 (1.02–1.04)</td>
<td>1.05 (1.03–1.08)</td>
</tr>
<tr>
<td>Total number of PDs (0–10)&lt;sup&gt;e,g&lt;/sup&gt;</td>
<td>1.58 (1.35–1.85)</td>
<td>1.30 (1.16–1.45)</td>
<td>1.18 (1.09–1.29)</td>
<td>1.30 (1.11–1.52)</td>
</tr>
</tbody>
</table>

<sup>a</sup> Substance and illness etiologies excluded.

<sup>b</sup> Controlled for age, sex, education, race/ethnicity, comorbid personality disorder, age at first onset, current episode duration, number of prior episodes, treatment for internalizing (mood or anxiety) disorder in past 12 months at Wave 1, and cardinal symptoms. ORs in bold indicate significant associations.

<sup>c</sup> OCPD, obsessive–compulsive personality disorder.

<sup>d</sup> Only one person had a Cluster A PD only and persistent generalized anxiety disorder.

<sup>e</sup> ORs represent change in odds of persistence given one unit change.

<sup>f</sup> Weighted mean PD criteria count by Wave 1 anxiety disorder: among those with W1 GAD, mean = 22.91 (SE = 0.70); among those with W1 social phobia, mean = 22.98 (SE = 0.52); among those with W1 specific phobia, mean = 16.99 (SE = 0.31); among those with W1 panic disorder, mean = 21.23 (SE = 0.52).

<sup>g</sup> Weighted mean number of PDs by Wave 1 anxiety disorder: among those with W1 GAD, mean = 1.86 (SE = 0.11); among those with W1 social phobia, mean = 1.83 (SE = 0.08); among those with W1 specific phobia, mean = 0.99 (SE = 0.04); among those with W1 panic disorder, mean = 1.54 (SE = 0.08).

persistence (OR = 1.90, 95% CI = 1.18–3.05). Among the specific PDs, schizotypal (OR = 2.53, 95% CI = 1.67–3.85) and borderline (OR = 1.68, 95% CI = 1.15–2.46) were associated with persistence of a specific phobia. Clusters A and B comorbidity (OR = 2.30, 95% CI = 1.32–4.02), Clusters A and C comorbidity (OR = 1.81, 95% CI = 1.12–2.94), number of PD criteria (OR = 1.03, 95% CI = 1.02–1.04), and mean number of PDs (OR = 1.18, 95% CI = 1.09–1.29) predicted persistence of a specific phobia.

**PANIC DISORDER**

Of respondents with panic disorder at Wave 1, 115 (13.3% [SE = 1.5]) persisted. Of the demographic or other clinical variables only older age (OR = 3.67 for 30+ vs. 18–29, 95% CI = 1.69–7.97) was associated. Any PD and two or more PDs were significantly related to panic disorder persistence (see Table 3). No PD cluster predicted persistence. The specific PDs associated with panic disorder persistence were borderline (OR = 4.54, 95% CI = 2.36–8.71), schizotypal (OR = 2.26, 95% CI = 1.03–4.96), and narcissistic (OR = 2.22, 95% CI = 1.11–4.44). Clusters A and B comorbidity (OR = 5.70, 95% CI = 2.30–14.12), Clusters B and C comorbidity (OR = 7.26, 95% CI = 2.27–23.26), mean number of PD criteria (OR = 1.05, 95% CI = 1.03–1.08), and mean number of PDs (OR = 1.30, 95% CI = 1.11–1.52) predicted persistence of panic disorder.

**DISCUSSION**

This study provides a rigorous test of the impact of PDs on the persistence of four anxiety disorders in a large, nationally representative sample assessed with a well-established instrument. Participants were...
ascertained independently of treatment status and reevaluated 3 years later with excellent retention to determine the rates of persistence of GAD, social and specific phobias, and panic disorder. This study tested the prognostic significance of individual PDs, PD clusters, patterns of cross-cluster comorbidity, number of PD criteria met, and number of PDs diagnosed as present, while controlling for demographic factors, other PD comorbidity, other clinical factors that could have impacted the course of the anxiety disorders, treatment history, and symptoms of exclusionary disorders and conditions. The large sample allowed for multivariate tests of predictors in a logical progression that enabled the untangling of the effects of these multiple factors in a manner not possible in previous smaller studies.

Rates of persistence of anxiety disorders varied from 13.3% (panic disorder) to 21.9% (specific phobia) in this study. These figures correspond to rates of persistence of the same anxiety disorders in the CLPS over 7 years from 16.5% (GAD) to 22.1% (panic disorder with or without agoraphobia), but are considerably lower than rates of persistence of these anxiety disorders in the HARP study over 12 years. Since the methodologies of these two clinical studies are quite similar, the differences in rates of persistence presumably are due to the nature of anxiety disorders in patients recruited for PDs (CLPS) versus those recruited for primary anxiety disorders (HARP). Our finding that treatment was associated with indicators of a more chronic course of each of the anxiety disorders other than panic disorder is consistent with the common observation in naturalistic studies that more treatment is received by patients who do not recover.

In contrast to previous NESARC findings that borderline PD was the single most robust predictor of persistence of major depressive disorder, effects for a number of PDs on the persistence of anxiety disorders were found in this study. Borderline and schizotypal PDs predicted the persistence of all four anxiety disorders. Narcissistic PD predicted persistence of GAD and panic disorder. In addition, schizoid and avoidant PDs predicted persistence of GAD. Finally, avoidant PD predicted the persistence of social phobia. Interestingly, controls for symptoms that might have excluded an anxiety disorder diagnosis according to DSM-IV did not significantly affect the association of personality pathology with the persistence of the anxiety disorders.

These findings are consistent with those from the CLPS regarding the effects of PDs on the course of anxiety disorders in clinical settings, where a number of PDs impacted the course of different anxiety disorders. For example, both studies found that avoidant PD increased persistence of social phobia. In addition, the previously unrecognized importance of schizotypal PD in influencing the course of several anxiety disorders was highlighted in both studies. There were also differences, however, in that more associations were found in the present study than in the CLPS with the persistence of the four anxiety disorders common to both studies, but owing to the broader range of types of anxiety disorders studied in the CLPS (e.g., OCD, PTSD), other associations with PDs were found in that study.

Although all 10 PDs in Section II of DSM-5 will be diagnosed using the same criteria as in DSM-IV, the results of the current study lend some support to the retention of select PDs in the alternative model for PDs in DSM-5 Section III, “Emerging Measures and Models,”[43] based on their prognostic significance. In addition to borderline PD, schizotypal, narcissistic, and avoidant PDs all had significant effects on the persistence of multiple anxiety disorders. Of the four PDs recommended for deletion as specific PDs, schizoid was the only one to show an (isolated) effect in this study; paranoid, histrionic, and dependent PDs showed no effects. Although prognostic significance is not the only consideration in determining which PDs should be retained as specific types in the DSM, it has often been mentioned as an important element of clinical utility for psychiatric diagnoses.[44]

In addition, this study provides some support for different representations of PD severity, as opposed to PD type, as predictors of anxiety disorder persistence. For example, a cross-cluster comorbidity severity construct that has been under consideration for ICD-11 is supported by the strong predictive effects of Clusters A and B, B and C, and A and C comorbidity for several anxiety disorders. Two or more PDs, the total number of PD criteria met, and the number of PDs present were also significant predictors for all four anxiety disorders. So-called “complex PDs” and severity measures based on criteria counts have been associated with poor outcomes in other epidemiologic and clinical studies.

The relationship of avoidant PD and social phobia over time has been demonstrated and suggests pathological processes common to both disorders. Other PD and anxiety disorder relationships found here are, perhaps, less expected. The “affective instability” criterion for borderline PD includes short-term anxiety and the criteria for schizotypal PD include one for “excessive social anxiety.” The findings of the current study suggest that anxiety proneness is more widespread in these two PDs than their current criteria imply. The criteria for narcissistic PD do not suggest that anxiety is a major issue. However, the concept of “vulnerable narcissism,” which often underlies overt grandiosity, reflects many traits in the domain of negative affectivity, and anxiousness in particular.

Strengths and limitations of the study are noted. Strengths include a large nationally representative sample of adults with anxiety disorders ascertained independently of treatment seeking; use of reliable and standardized measures; high retention rates over a 3-year follow-up; and multivariate analyses controlling for a comprehensive set of potential predictors. Potential limitations include data obtained with structured interviews administered by trained lay interviewers rather than clinicians; only one follow-up time point 3 years later; a single outcome for each anxiety disorder, rather than multiple possible indicators of outcome, which
should be examined in future studies; focus on DSM-IV categorical PD diagnoses (i.e., alternative dimensional models were not tested); and three PDs assessed at Wave 2. Although our impairment analyses supported the validity of the PD diagnoses regardless of the timing of their assessment, the design introduced the small possibility that the timing of the assessments might have affected some of the results. Finally, persistent anxiety disorders might be a cause of personality dysfunction rather than an effect.

CONCLUSIONS

In summary, in this nationally representative sample of adults with anxiety disorders, a variety of individual PDs, particular patterns of cross-cluster PD comorbidity, and representations of PD severity robustly predicted the persistence of individual anxiety disorders, consistent with results of recent clinical studies. These findings suggest that personality psychopathology should be assessed by clinicians, considered in prognosis, and addressed in the treatment of all patients with anxiety disorders.

Conflicts of Interest. The authors have no interests to disclose.

REFERENCES


