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DOES HAVING A DYSFUNCTIONAL PERSONALITY HURT YOUR CAREER? AXIS II PERSONALITY DISORDERS AND LABOR MARKET OUTCOMES

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Abstract

Despite recent interest in how psychiatric disorders affect work outcomes, little is known about the role of personality disorders (PDs), which are poorly understood yet prevalent (15%) and impairing. We used nationally representative data for 12,457 men and 16,061 women to examine associations of PDs with any employment, full-time employment, chronic unemployment, being fired or laid off, and having trouble with a boss or co-worker. Antisocial, paranoid, and obsessive-compulsive PDs demonstrated the broadest patterns of associations with adverse outcomes. Findings suggest that PDs may have implications for the productivity of co-workers as well as that of the disordered employees themselves.

Introduction

As defined by the American Psychiatric Association (APA, 2000), Axis II psychiatric disorders, also known as personality disorders (PDs), are “pervasive, inflexible and enduring patterns of inner experiences and behavior that can lead to clinically significant distress or impairment in social, occupational, or other areas of functioning.” The prevalence of PDs among community-dwelling adults in the United States is about 9-16% (Samuels et al. 2002; Grant et al. 2004; Crawford et al. 2005; Lenzenweger 2008; Reich, Yates, and Nduaguba 1989), with an even higher prevalence among incarcerated individuals (Hill et al. 2006). Although awareness of PDs among the general public is limited, with greater attention paid to clinical disorders such as depression and schizophrenia, these disorders may be particularly relevant for understanding labor market outcomes. Although PDs range from the aberrant (e.g., antisocial PD, in severe cases sometimes referred to as “sociopathy” by laypeople) to the less pathological (e.g., obsessive-compulsive PD), all PDs can cause

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serious problems in interpersonal relationships, including those with supervisors, co-workers, and employees.

The potential workplace impairment caused by PDs may manifest itself not only in diminished labor market success of the individuals with the disorders, but may impose negative externalities in terms of the productivity of co-workers. For example, the erratic and manipulative behavior of an employee with borderline PD or the excessively controlling and critical behavior of an employee with obsessive-compulsive PD, could prove detrimental to the work performance of all workers at the firm. Negative externalities are evidence of a market failure. In the presence of a market failure, government intervention can be justified on efficiency grounds. However, few, if any, successful treatments are available for PDs (Gunderson and Gabbard 2000; Stone 2006; Gabbard 2000).

An employer's ability to terminate workers who have been professionally diagnosed with a PD is somewhat limited, due mainly to protections such individuals are afforded under the Americans with Disabilities Act (Goldman 2006b; EEOC 1997). This makes it even more important for managers and Employee Assistance Programs (EAPs) to have a clear understanding of the nature and consequences of PDs, thereby minimizing workplace conflict and employee turnover.

Despite the significant labor market problems that may be linked with PDs among the employed population, few studies have rigorously examined these linkages. Past literature has either used small, non-representative samples or focused instead on clinical psychiatric disorders. The present study seeks to extend this literature by using a representative U.S. sample from the National Epidemiological Survey on Alcohol and Related Conditions (NESARC) to examine the independent contribution of PDs as a separate class of psychiatric disorders that may contribute to work outcomes.

Background on Personality Disorders

The Diagnostic and Statistical Manual of Mental Disorders (DSM) gives diagnostic criteria for two broad classes of psychiatric disorders: Axis I, or clinical disorders (e.g., depression, anxiety, schizophrenia, bipolar disorder, etc.) and Axis II, or personality disorders (APA 2000). To be diagnosed with a PD, an individual must exhibit "an enduring pattern of inner experience and behavior that deviates markedly from the expectations of the individual's culture" (APA 2000). This pattern must manifest itself in at least two of the following ways: 1) cognition (i.e., ways of perceiving and interpreting oneself, other people, and events); 2) affectivity (i.e., the range, intensity, lability, and appropriateness of emotional response); 3) interpersonal functioning; and 4) impulse control. Furthermore, the pattern must be inflexible and pervasive across a broad range of personal and social situations; must lead to clinically significant distress or impairment in social, occupational, or other important areas of functioning; must be stable and of long duration, with onset traceable back to adolescence or at least early adulthood; and cannot be attributable to a manifestation or consequence of substance use, a medical condition, or another mental disorder.

PDs are divided into three clusters. Cluster A, which incorporates a cognitive dimension (Paris 2003), includes paranoid, schizoid and schizotypal PDs. People with Cluster A disorders are often viewed as odd or eccentric, have abnormal cognitions or ideas, speak and act in strange ways, and have difficulty relating to others (APA 2000). Cluster B, which corresponds to externalizing dimensions (Paris 2003), includes antisocial, borderline, histrionic and narcissistic PDs. People with Cluster B disorders tend to act in dramatic, emotional and erratic fashions, have difficulty with impulsive behavior, act out, and frequently violate social norms (APA 2000). They are frequently hostile toward others and/or self-abusive. Cluster C, which corresponds to internalizing dimensions (Paris 2003),

includes avoidant, dependent, and obsessive-compulsive PDs. People with Cluster C disorders are often anxious, fearful, and excessively afraid of social interactions and of feeling out of control (APA 2000). Appendix A offers a more detailed description of the traits commonly associated with each specific PD.

While most individuals are likely to exhibit at least a few of these traits at some point in their lifetime, it is the constellation, severity, and stability of a particular set of personality traits that constitute a diagnosable disorder.

Although competing theories persist regarding the relative roles of genetics and early childhood environment in determining PDs, most of the literature seems to suggest a confluence of “nature and nurture” (APA 2000; Yudofsky 2005). In other words, an individual may be born with a genetic predisposition toward development of a PD, but early childhood experiences may determine whether certain tendencies are borne out. For example, children with certain innate temperaments compatible with Cluster B PDs are more likely to develop the PD if they have been abused, neglected or abandoned by the primary caregiver and cannot develop a secure attachment to a parental figure (Karen 1998).

Despite the influence of early life events in the development of PDs, the literature is in agreement that PDs are extremely difficult to treat and change, because they develop early in life and represent “lasting patterns of perceiving, relating to and thinking about oneself and the environment” (APA 2000). Thus, unlike Axis I disorders such as depression and anxiety, which are defined for a particular time period, PDs are assessed as lifetime diagnoses. Although life events may exacerbate certain behaviors (e.g., divorce may trigger suicidal impulses among a person with borderline PD), the underlying personality traits are enduring.

PDs have been empirically linked to poor social and emotional functioning, even after adjusting for Axis I disorders (Grant et al. 2004), and psychosocial functioning improves relatively little over time among individuals with PDs (Skodol et al. 2005). Despite this evidence, less is known about how PDs influence specific measures of labor market performance, although such effects are straightforward to conceptualize. As with clinical disorders, PDs may be linked with labor market outcomes such as workplace productivity and job opportunities, as well as influencing labor supply and occupational choices.

PDs tend to cause great distress to the family members, friends, partners and co-workers of the disordered individuals (Jackson and Burgess 2000; Miller, Campbell and Pilkonis 2007). Although each PD is associated with different symptoms and behaviors, PDs are generally characterized by maladaptive coping mechanisms that can affect all interpersonal relationships, including those at work (Merck Manuals Online Medical Library 2007). For example, although all individuals “project” their own unwanted feelings, desires and thoughts onto others, individuals with certain PDs tend to do this to a greater extent. A related behavior is that they may engage in externalization of blame, in which they fault others for problems they themselves have caused (Campbell et al. 2005). Depending on the disorder, individuals with a PD might have difficulty praising the performance of subordinates, or resort to controlling and manipulative behavior, or become deceptive and vengeful, leading to interpersonal problems both on and off the job.

The primary impact of PDs on labor market outcomes may be mediated through impaired interpersonal relationships. In addition to “direct” effects, however, there may also be indirect effects of PDs mediated by marital history, childbearing and educational attainment. These indirect effects do not necessarily always predict worse labor market outcomes. For example, an individual with a severe PD may never get married nor have children, thereby permitting him to focus more time and energy on career pursuits. An individual with a borderline PD might find it difficult to attain educational goals due to frequent emotional

turbulence and “self-sabotage,” whereas an individual with narcissistic PD might achieve greater professional success due to an excessively competitive nature and willingness to exploit co-workers.

Physical health and Axis I disorders may also mediate part of the overall PD effect on labor market outcomes. For example, histrionic PD has been linked to somatization (Stern, Murphy, and Bass 1993), depression is common among individuals with borderline PD, and personality traits are considered to be important etiological factors in addiction (Verheul and Van den Brink 2005). Although it is outside the scope of our study to examine the role of these mediators in detail, we explore whether the associations between PDs and labor market outcomes are attenuated or exacerbated when different sets of possible mediators are sequentially entered into the model.

Personality Disorders and Labor Market Outcomes

Past studies have identified poor employment outcomes for individuals with an Axis I psychiatric disorder, including likelihood of employment or unemployment (Mitchell and Anderson 1989; Ettner, Frank, and Kessler 1997; Hamilton, Merrigan, and Dufresne 1997; Alexandre and French 2004; Chatterji et al. 2005; Tian, Robinson, and Sturm 2005; Baldwin and Marcus 2007), employment transitions (Gresenz and Sturm 2004), hours of work (Bartel and Taubman 1979, 1986; Ettner et al. 1997), earnings, income, and wages (Bartel and Taubman 1979, 1986; Ettner et al. 1997; Frank and Gertler 1991; French and Zarkin 1998; Jofre-Bonet et al. 2005; Tian et al. 2005; Baldwin and Marcus 2007), retirement decisions (Tian et al. 2005), absenteeism (French and Zarkin 1998; Chatterji et al. 2005), short term disability (Kessler et al. 1999), perceived at-work performance (Berndt et al. 1998), and work impairment (Kessler and Frank 1997). However, past literature has focused almost exclusively on clinical disorders. To date, relatively little is known about how PDs influence labor market outcomes (see Ettner 2009 for a comprehensive review of this literature). Of the published studies addressing this relationship, the majority are unlikely to generalize to the U.S. population because they are individual case studies (Goldman 2006a; 2006b; Trimpey and Davidson 1994; Babiak 1995), based on non-U.S. data (Rytsala and colleagues 2005; van Asselt et al. 2007; Soeteman et al. 2008; Lim, Sanderson, and Andrews 2000), or use single-site convenience samples (Miller et al. 2007; Reich et al. 1989).

Three broader-based studies provide some evidence of an empirical association between PDs and adverse work outcomes. Using data on 668 patients from four clinical sites participating in the Longitudinal Personality Disorders Study, Skodol et al. (2002) show that those with schizotypal or borderline PDs were roughly one-third as likely to be employed and about three times more likely to be work-disabled as patients with major depressive disorder (no significant associations were found with obsessive-compulsive and avoidant PDs, and other PDs were not examined). Gunderson and Hourani (2003) analyzed longitudinal data on Navy enlisted personnel hospitalized for PDs, finding that they achieved lower pay grades, were less likely to complete their obligated service and to be recommended for re-enlistment, were more likely to have had unauthorized absences or desertions (despite their shorter length of service), and had fewer promotions and more demotions at the time of discharge than the comparison group. Cowell, Luo and Masuda (2009) used NESARC data to show that in conjunction with other psychiatric comorbidities, certain PDs were associated with lower odds of labor force participation and employment. However, because the focus of this study was on comorbidity combinations, the independent impact of having a PD could not be distinguished from the effects of other conditions.

Data

We obtained data from the first wave of the NESARC, a survey conducted by the U.S. Bureau of the Census for the National Institute on Alcohol Abuse and Alcoholism (NIAAA). A representative sample of the U.S. population between the ages of 18 and 98 (N=43,093), including both citizens and non-citizens, were interviewed face-to-face through computer-assisted personal interviewing between August 2001 and May 2002. The overall survey response rate was 81%. Other details regarding sampling frame and instrumentation can be found in Grant et al. (2003). This analysis included only respondents between the ages of 25 and 64, to focus on working-age individuals likely to have completed their education but not to have retired. We used observations for which data were complete after selective item imputation by the NESARC administrators. After excluding 1,171 respondents with remaining missing data, our final sample size was 28,518. Because men and women have different labor market experiences, we stratified all analyses by gender (12,457 men and 16,061 women).

Outcome Measures

We examined the following labor market outcomes: 1) worked at a job or business during the past year (full sample), 2) presently working full-time (full sample), 3) unemployed and looking for work for more than one month during the past year (full sample), 4) fired or laid off from a job during the past year (conditional sample of those who worked in the past year), and 5) having trouble with a boss or co-worker during the past year (conditional sample). Unfortunately, the NESARC offers information on personal income but not wages, preventing us from examining labor market earnings.

Personality Disorders

Using the Alcohol Use Disorder and Associated Disabilities Interview Schedule—DSM-IV Version (AUDADIS) instrument developed by NIAAA, NESARC administrators classified respondents as meeting criteria for seven specific PDs (antisocial, avoidant, dependent, obsessive-compulsive, paranoid, schizoid, and histrionic). They based these diagnoses on responses to items measuring individual symptoms drawn from the DSM-IV guidelines. As explained above, PDs are measured as lifetime diagnoses because they manifest themselves relatively early, persist throughout life, and are difficult, if not impossible, to treat. More information on the structured diagnostic interview, including reliability and validity of the diagnoses, is available at <http://niaaa.census.gov/>. Using NESARC diagnoses, we estimated regression models examining the association of labor market outcomes with a single indicator of the presence or absence of PD(s). Results were consistent when examining the number of PDs (0 vs. 1 vs. 2+). We then re-estimated the models using separate indicators for each of the unique PDs measured in the NESARC, to allow for the distinct features of different PDs. Due to small cell sizes and unreliability of the estimates, we do not separately report associations with PDs with <1% prevalence, although the models control for all of the PDs.

All studies of psychiatric disorders based on diagnostic survey instruments, such as the NESARC, National Comorbidity Survey and NCS-Replication, are potentially prone to bias due to reliance on self-report. Social desirability theory suggests that the estimated prevalence of PDs and associations with adverse outcomes may be understated. Random measurement error in diagnosis would also likely bias the results toward zero.

Other Control Variables

The main models controlled for the standard set of reduced-form labor supply predictors, including age, race, Latino ethnicity, whether U.S.-born, marital status, the number of

children under 18 in the household, whether there were infants or toddlers in the household, education, work experience (proxied by the number of years since the respondent first worked full-time), and labor market conditions (proxied by state unemployment rate and indicators for region of residence and residence outside a Metropolitan Statistical Area). As we do not control separately for wage rate, the PD effects estimated here are the total effects, including those operating through any reductions in wage rates resulting from PDs.

PDs tend to be correlated with certain Axis I disorders such as anxiety, affective, and substance use disorders (Grant et al. 2004; Jackson and Burgess 2002), and our literature review suggests that Axis I disorders are associated with labor market problems. Therefore, we controlled for these disorders as potential confounders in the regression models. All of the main specifications included indicators for past-year diagnosis of a manic episode, depressive disorder (major depression or dysthymia), anxiety disorder (panic disorder, agoraphobia, social phobia, or generalized anxiety disorder), and schizophrenia, as well as indicators for alcohol use disorders, illicit drug use disorders, and any tobacco use. We also controlled for physical health status using the Norm-Based Physical Disability Score based on the Short Form-12 questionnaire (Ware et al. 2002). Higher scores correspond to better health.

Methods

We estimated the dependent variables using probit regressions specified as: $Pr(Y) = \Phi(\beta_{PD} PD + X\beta)$, where Y is the selected (dichotomous) measure of labor market performance, $Pr(Y)$ represents the probability of this outcome, PD is an indicator of any PD (or a set of indicators for specific types of PDs), β_{PD} is the coefficient on the PD indicator, X is a vector of other covariates, and β is a vector of coefficients on these covariates. We used Generalized Estimating Equations with independent error structures to adjust standard errors for potential clustering (correlation of the error terms) among respondents within the same county of residence. This method accounts for shared policy and social environments among individuals living within the same county. We used sample weights to adjust for survey design and to generate nationally representative estimates.

Probit coefficients are interpretable in terms of the direction of the effect, but not in terms of magnitude. Thus, instead of reporting raw coefficient estimates, we calculate and report the predicted risk differences associated with each PD (i.e., the mean difference between the predicted probabilities with the PD indicator set equal to 1 vs. 0, while holding all other covariate values constant at their original values). We simulated ninety-five percent confidence intervals (CIs) for these risk differences by assuming that the coefficient estimates were approximately multivariate normally distributed (King, Tomz, and Wittenberg 2000). We considered risk differences with CIs that excluded the value of zero to be statistically significant at $p < .05$. We chose simulation methods (based on re-sampling parameter estimates) over bootstrapping methods (based on re-sampling observations) because the clustered and weighted nature of the survey data made the bootstrap assumption that the sample was representative of the underlying population less plausible.

To estimate the full effect of having any PD on the outcomes and to examine how these relationships change as controls for possible mediators are entered into the model, we estimated “stacked” versions of the models. First, we estimated models with only the PD indicator. Second, we sequentially entered blocks of covariates (i.e., pre-determined variables, basic demographics, socio-economic status, health and health behaviors, and Axis I conditions) into the models. To reduce computational burden, we estimated the marginal PD effects at mean values for the other regressors, rather than the (preferred) simulation

method described above for the main analyses. Differences in the estimates obtained through the two methods were minor and did not affect statistical significance.

Structural (i.e., reverse causality) and statistical (i.e., omitted variables bias) endogeneity are perennial concerns when examining the effects of Axis I disorders such as depression and anxiety on labor market outcomes. In these cases, estimation techniques such as instrumental variables are typically used to minimize any bias created by endogeneity. These concerns are minimal or nonexistent with PDs, however. Reverse causality is arguably implausible for PDs, the latter resulting from the confluence of genetic predisposition and/or very early childhood environment and exceedingly difficult to modify thereafter. From a modeling perspective, it is perhaps helpful to view PDs as something akin to a genetic condition that is not influenced by adult environment, relationships, or workplace. Similarly, it would be difficult to identify omitted variables confounding the estimated relationship between PDs and labor market outcomes, since such measures would have to be present at a very young age and have labor market effects much later in life that were independent from the covariates already in the model, including PDs and Axis I disorders. Factors arising later in life (e.g., raising a child who himself had conduct disorder and thus interfered with labor market productivity of the parent) are more likely to be mediators than confounders of the PD effects, so should not be controlled for in the regressions even if they were observable.

Results

Sample Characteristics

Table 1 presents descriptive statistics for all variables used in the models, stratified by gender and diagnosis of a PD. Ninety-two percent of men and 78% of women without PDs (vs. 88% and 78% with PDs) had worked at a job or business during the previous year. Eighty percent of men and 55% of women without PDs (74% and 50% with PDs) reported working full-time at the time of the survey interview. Eight percent of men and 6% of women without PDs (13% and 15% with PDs) had been unemployed and looking for work for more than a month during the past year, and 8% of men and 6% of women without PDs (12% and 13% with PDs) had been fired or laid off. Among those working during the past year, 7% of men and 9% of women without PDs (22% and 27% with PDs) reported having had trouble with a boss or co-worker in the past year.

Among our working-age population, about 18% of men and 16% of women had at least one PD. This rate is slightly higher than the 15% overall prevalence found in NESARC studies that included the over-65 population (Grant et al. 2004). Similar to other studies, comorbidity is high, with about 6% of respondents having more than one PD. The most common PD among both genders in our sample was obsessive-compulsive, with 9% of both men and women classified with this disorder. The least common PD in our sample was dependent, with less than 1% of men and women classified with this condition. The prevalence of individuals in our sample meeting criteria for antisocial, avoidant, paranoid, schizoid, and histrionic PDs was approximately 6%, 2%, 4%, 3%, and 2% for men and 2%, 3%, 5%, 4%, and 2% for women, respectively. Statistically significant ($p < .05$) mean differences between men and women were present for dependent, antisocial, avoidant, paranoid, and schizoid PDs. Gender differences are most apparent in the prevalence of antisocial PD (6% among men vs. 2% among women).

Consistent with the psychiatric literature (Grant et al. 2005; Jackson and Burgess 2002), rates of Axis I disorders were much higher among individuals with PDs (Table 1). Depression and anxiety were especially common among women with PDs (almost one-third of the sample) and drug and alcohol disorders were highest among men with PDs.

Individuals with PDs also tended to be slightly younger. This age differential could be due to differential mortality (i.e., if those with PDs die earlier on average, as might be suggested by their worse physical health status) or to cohort effects if the prevalence of PDs is higher among younger cohorts (Twenge 2004). Among other interesting differences, individuals with PDs were less likely to be married and more likely to have started, but not finished, college.

Results for Male Respondents

Table 2 summarizes the regression results for the effects of PDs on labor market outcomes among men. The top row provides the estimates based on the specification controlling for whether the individual was diagnosed with any PD. The bottom rows show the estimates based on the models that control for the specific PD types. The table shows baseline proportions for the binary outcomes to provide a point of reference for assessing whether the magnitude of the effects are practically important as well as statistically significant.

Among men, the statistically significant overall PD effects were an increased probability of sustained unemployment and an increased probability of reporting trouble with a boss or co-worker in the past year. Diagnosis of any PD was associated with a risk increase of 0.020 for sustained unemployment (baseline probability = 0.090). The effect of reporting trouble with a boss or co-worker in the past year was not only statistically significant but also large in magnitude (having a PD increased the probability by 0.094 relative to the baseline probability of 0.096).

Disaggregating the labor market effects by type of PD led to some interesting differences across PDs. Controlling for all of the confounding factors in Table 1, men with antisocial PD were more likely to have been unemployed and looking for work longer than one month during the past year (risk increase = 0.032; baseline risk = 0.090) and more likely to report trouble with a boss or co-worker (risk increase = 0.032; baseline risk = 0.096). Men with obsessive-compulsive PD were also more likely to report trouble with a boss or co-worker during the past year (risk increase = 0.068; baseline risk = 0.096). Men with avoidant PD were slightly less likely to have worked at a job during the past year (risk decrease = 0.025; baseline risk = 0.911).

Men with paranoid PD demonstrated the most pervasive pattern of adverse labor market outcomes, having a higher probability of being unemployed and looking for work for more than one month in the past year (risk increase = 0.054; baseline risk = 0.090), a higher probability of being fired or laid off in the past year (risk increase = 0.048, baseline risk = 0.084), and a higher probability of reporting trouble with a boss or co-worker in the past year (risk increase = 0.103; baseline risk = 0.096). Having a schizoid or histrionic personality disorder among men was not significantly associated with any of the labor market outcomes.

Results for Female Respondents

Table 3 provides the same selected regression results for women. After we adjusted for the confounding factors shown in Table 1, having at least one PD was associated with several adverse labor market outcomes, including a higher risk of being unemployed and looking for work for more than one month during the past year (risk increase = 0.045; baseline risk = 0.077), a higher chance of having been fired or laid off during the past year (risk increase = 0.032; baseline risk = 0.068), and a greater probability of reporting trouble with a boss or co-worker during the previous year (risk increase = 0.140; baseline risk = 0.117).

With regard to specific PDs, women with antisocial PD had a lower adjusted probability of working full-time at the interview date (risk decrease = 0.104; baseline risk = 0.539), a

higher probability of having been unemployed and looking for work for more than one month during the past year (risk increase = 0.049; baseline risk = 0.077), a higher probability of being fired or laid off in the past year (risk increase = 0.044; baseline risk = 0.068), and a higher risk of reporting trouble with a boss or co-worker during the past year (risk increase = 0.066; baseline risk = 0.117). Women with obsessive-compulsive PD were slightly more likely to work (risk increase = 0.029; baseline risk = 0.780), but were also more likely to report trouble with a boss or co-worker during the past year (risk increase = 0.093; baseline risk of 0.117). Women with paranoid PD also had a higher probability of reporting trouble with a boss or co-worker during the past year (risk increase = 0.073; baseline risk = 0.117). As with men, neither a schizoid nor histrionic PD was significantly associated with these labor market outcomes among women.

Stacked Models

The results in Tables 2 and 3 capture the residual effect of PDs after controlling for other potential mechanisms through which PDs may influence labor market performance (e.g., educational attainment, marital status, work experience). The full effects are decomposed in Tables 4 and 5, which present the results of the stacked models for men and women respectively. Although not observed in all specifications, the estimated effect of PDs generally declined in magnitude and statistical significance as blocks of covariates were included in the models. In particular, controlling for physical health status, health behaviors (tobacco use) and especially Axis I psychiatric comorbidities tended to reduce the magnitude and significance of the PD effects. To the extent that PDs lead to substance use disorders (Verheul and Van den Brink 2005), however, models controlling for Axis I disorders may be overadjusting.

Sensitivity Analyses

We conducted sensitivity analyses (available upon request) to determine the robustness of our findings to several methodological concerns. First, we reran the analyses using logistic regressions instead of probit to account for the possibility of thicker tails of the distribution. Second, we allowed for alternative definitions of “exposure” (e.g., opportunities to enter into disputes with a boss or co-worker) by defining the conditional sample based on different working profiles (e.g., currently working or currently working full-time vs. any work during the past year). In both cases, the findings were similar to the original results.

Third, we assessed whether the PD estimates were sensitive to the inclusion of certain potentially endogenous control variables, such as physical health status, alcohol and/or illicit drug abuse, and Axis I disorders. We compared the full models reported in Tables 2 and 3 to parsimonious models that excluded these potentially endogenous control variables. We also re-ran the models with Axis I diagnostic indicators defined using two alternative timeframes: (i) past year only and (ii) prior to past year only. The qualitative PD findings changed in a few cases because of slight shifts in the confidence intervals that moved the estimates from being marginally not significant to marginally significant or vice versa. The point estimates, however, were nearly identical, and the estimates from the full models were generally more conservative (i.e., yielded fewer significant findings).

Fourth, we considered self-selection into the labor force. It seems likely that among individuals with PDs, those who obtain and retain jobs function at a higher level on average than those who do not. If this is the case, then restricting the sample to labor force participants when looking at job outcomes may bias the PD effects towards zero when generalizing to the entire population. Heckman sample selection models did not materially alter our findings, however, suggesting that any selection bias in this sample is not a serious concern.

Fifth, we considered whether our findings were an artifact of cultural or linguistic differences in reporting PDs and labor market experience. The instruments utilized to diagnose respondents with PDs were developed by American health organizations (APA and NIAAA) and may have differential sensitivity across different language or cultural groups. Respondents from different cultural and linguistic backgrounds may also have different labor market experiences than respondents born in the U.S. Nevertheless, when we re-estimated our core models using a sample restricted to U.S.-born respondents, the results were qualitatively the same as before.

Finally, we considered the potential endogeneity of our work experience proxy, years since first worked full-time (calculated as the difference between a respondent's age at interview date and the reported age at which he/she first worked a full-time job). NESARC did not provide information on unemployment spells between current age and age first worked full-time. Individuals with and without PDs may have different labor market profiles, with the former experiencing less consistent employment. However, when we re-estimated the core models without the work experience control, the estimates were almost identical to the original results.

Discussion

Using recent and nationally representative data, we found that individuals suffering from PDs were more likely to experience labor market consequences. Negative labor market effects tended to be more pronounced for women, suggesting that personality disorder traits in the job market might be better tolerated among men. However, low prevalence for some PDs prevented us from drawing any definitive conclusions with regard to gender differences. Paranoid, antisocial, and obsessive-compulsive PDs were the conditions most often associated with adverse work outcomes such as being fired, laid off, or chronically unemployed, or experiencing problems in interactions with co-workers and bosses. The associations were large enough to be of practical as well as statistical significance. Considering the magnitude of the associations, along with the fact that 14% of men and 13% of women have at least one of these three disorders, PDs plausibly account for a substantial amount of workplace dysfunction.

Interestingly, for both men and women, the magnitude of the association with having trouble with a boss or co-worker was larger for obsessive-compulsive PD than for antisocial PD, despite the fact that the latter is a much more serious deviation from psychological norms. Besides underreporting, one possible explanation is that individuals with antisocial PD often use their aptitude for charming others as a means of manipulation; those with obsessive-compulsive PD may be less motivated by self-interest to interact in a socially appropriate manner.

Our conclusions should be interpreted in light of several study limitations. The mechanisms through which PDs exert influence on labor market outcomes are complex and numerous and may vary over the life course. Our model is unable to capture these complexities, due to the cross-sectional nature of the data and limited ability to measure all of the relevant constructs. However, even our initial examination of "reduced-form" associations highlight the fact that the role played by certain PDs in explaining labor market outcomes may be underappreciated and understudied relative to their importance.

Although our findings suggest that any associations of PDs with labor market outcomes are likely to be negative, this conclusion may not generalize to all PDs. The NESARC did not measure narcissistic, borderline, and schizotypal PDs. Individuals with borderline and/or narcissistic PD typically cause great emotional harm to others (e.g., through manipulative,

exploitative, and/or controlling behaviors; a tendency to distort reality; and demonstrations of hostility, contempt or rage). Those with schizotypal PD can also be highly problematic (e.g., some stalkers fall into this category). Intuitively, these disorders may be associated with even more workplace dysfunction than some of the PDs analyzed here. Yet narcissism in particular has been identified as a hallmark of many high-achieving, ambitious people (Yudofsky 2005), suggesting that they achieve greater, rather than lesser, career success.

The interpretation of our estimated associations depends on the assumption that PDs are exogenously determined. For PDs other than antisocial, diagnosis required that ≥ 1 of the respondent's symptoms had either (i) troubled him, (ii) caused him problems at work, (iii) caused him problems at school, (iv) caused him problems with family members, or (v) caused him problems with other people. As criterion (ii) is aligned with some of our outcomes, it is conceivable that their associations with PDs could have been overstated as a result. However, criterion (ii) was only one of five choices that could lead to a diagnosis, so the broad scope of this requirement makes it unlikely to lead to bias. In addition, antisocial PD, which did not impose this requirement for diagnosis, had stronger labor market effects than almost all of the other PDs. The possibility that treatment of PDs could have led to endogeneity bias is also remote, given the dearth of psychotropic drug therapies and limited effectiveness of even long-term psychotherapy interventions for most PDs (Gunderson and Gabbard 2000; Stone 2006; Gabbard 2000).

Typically, studies investigating the effects of mental health in the workplace consider whether employers should improve insurance coverage of psychiatric treatment in the hope of recouping their investment through increased worker productivity and decreased turnover. Due to the treatment-refractory nature of PDs, however, better availability of mental health services may be ineffective in modifying the dysfunctional behaviors of disordered individuals. Those with PDs may simply not be interested in, or even capable of, change. Indeed, insurers tend to assume that PDs cannot be treated and will rarely reimburse services for them (Gabbard 2005). Given that PDs often cause as much distress to the family members, friends, and colleagues of the individual with the disorder as to the affected individual himself (Jackson and Burgess 2000; Miller et al. 2007), better access to mental health services may be most beneficial for their co-workers.

Unfortunately, this study cannot directly address the potential impact of PDs on the labor market performance of other employees. Nonetheless, greater awareness of PDs and their implications for workplace performance among human resources personnel could be helpful in several ways. Online support groups and a vast amount of information are available to help people manage interactions with personality-disordered individuals (e.g., Brown 2002), yet these resources are not useful if the PD is not identified or understood, especially since healthy individuals sometimes erroneously assume the responsibility for conflict in their relationships with disordered individuals (Yudofsky 2005). EAP personnel, who are more accustomed to dealing with Axis I disorders such as depression and anxiety, should be trained to identify and interact appropriately with employees with PDs, who may require a very different approach. They should also be prepared to offer co-workers support and practical strategies for reducing workplace conflict with the disordered individuals. In general, better understanding of PDs and their potential effects on productivity may allow managers to make informed decisions.

In summary, PDs are common and associated with dysfunctional and costly behaviors on the job. Further examination of this important class of psychiatric disorders and ways to address their adverse consequences seems warranted.

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Appendix

Appendix A:

Appendix A

Brief Description of Axis II Personality Disorders

<i>Cluster A</i>	<i>Individuals with this personality disorder...</i>
Paranoid	are extremely distrustful, suspicious of others, resentful of authority, vindictive, hypervigilant, blame-avoiding, excessively certain, and cognitively rigid. They often take legal action against others.
Schizoid	are indifferent to social relationships, avoid interpersonal interactions, lack empathy, and have difficulty with emotional expression. Fantasizing is used as a defense mechanism.
Schizotypal	demonstrate peculiarities of thinking, odd beliefs, and eccentricities of appearance, behavior, interpersonal style, and thought, such as belief in psychic phenomena or magical thinking.
<i>Cluster B</i>	<i>Individuals with this personality disorder...</i>
Antisocial	have no superego or conscience and are unable to abide by societal rules. They lack regard for moral or legal standards, are willing to lie, have the potential for violence, and sometimes have a criminal record. They are reckless, irresponsible, and impulsive. They can be very charming but demonstrate a marked inability to get along with other people. They are aggressive and remorseless and enjoy humiliating and demeaning others.
Narcissistic	demonstrate grandiosity, exhibitionism, and unrealistic self-evaluation. They have a need for constant approval/admiration and are preoccupied with success and hyper-sensitive to criticism. They exhibit a marked lack of empathy and are unable to see the viewpoints of others. Due to their sense of entitlement and envious nature, they can be very exploitative, although not with the same degree of deliberate intent that characterizes those with ASPD.
Borderline	exhibit substantial emotional and interpersonal instability and rapid mood swings, including inappropriate, intense anger. They have a frantic fear of abandonment and react strongly to separations. Their relationships are often stormy, with verbal outbursts, and they rapidly switch between idealizing and devaluing others. They have an unstable self-image and lack identity, resulting in sudden changes in opinions and plans about career, sexual identity, values, and friends. They are inconsistent and impulsive, lack clear goals and direction, and perform poorly in unstructured work or school situations. They undermine themselves just as goals are about to be realized and are self-destructive.
Histrionic	demonstrate exaggerated displays of emotional reactions in everyday behavior. They are overly dramatic, attention-seeking and vain. They are demanding and manipulative, throw frequent tantrums and need continual stimulation. They are sexually provocative and need to be the center of attention.
<i>Cluster C</i>	<i>Individuals with this personality disorder...</i>
Obsessive-Compulsive	become preoccupied with uncontrollable patterns of thought and action, to the extent that these patterns may interfere with their occupational and social functioning. They are perfectionistic, inflexible, unwilling to compromise and have a need for control. They tend to focus on minute detail and experience difficulty completing tasks. (Note that OCPD differs from obsessive-compulsive disorder, which is an Axis I diagnosis.)
Avoidant	experience marked social inhibition, feelings of inadequacy, apprehension, and mistrust, and extreme sensitivity to criticism. They are introverted, timid, and awkward. They wish to become involved with others but simultaneously fear such involvement. They are terrified by the thought of being embarrassed in front of others and avoid situations that inflict social discomfort on them, which in many cases leads to social withdrawal.
Dependent	have a pervasive and excessive need to be taken care of. They fear separation and engage in clinging and submissive behavior, often denigrating themselves. They have a marked lack of decisiveness and self-confidence, to the point where they are unable to make any decisions or take an independent stand on their own.

Source: American Psychiatric Association 2000; The Merck Manuals Online Medical Library 2007; PsyWeb 2007.

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Table 1

Sample Characteristics, by Gender and PD Status, Age 25-64 (N=12,457)

Variable	Men		Women	
	No PD (n=10,420)	Any PD (n=2,037)	No PD (n=13,544)	Any PD (n=2,517)
<i>Labor Market Outcome</i>				
Worked at a job or occupation, past yr (%)	91.62	88.39*	78.01	78.16
Worked full-time at interview date (%)	79.79	73.53*	54.69	49.78*
Unemployed and looking for work more than one month, past yr (%)	8.23	12.63*	6.49	14.59*
Fired or laid-off, past yr, conditional on working (%)	7.82	11.65*	5.72	12.76*
Trouble with a boss/co-worker, past yr, conditional on working (%)	7.24	21.97*	8.89	27.15*
<i>Number of Lifetime Personality Disorders</i>				
None (%)	100.00	0	100.00	0
One (%)	0	66.21	0	62.22
Two or more (%)	0	33.79	0	37.78
<i>Type of Lifetime Personality Disorders</i>				
Antisocial (%)	0	35.67	0	13.31
Avoidant (%)	0	12.66	0	19.62
Dependent (%)	0	1.83	0	3.85
Obsessive-Compulsive (%)	0	52.50	0	57.91
Paranoid (%)	0	24.06	0	34.22
Schizoid (%)	0	18.95	0	22.31
Histrionic (%)	0	10.11	0	11.51
<i>Explanatory Variables</i>				
Manic episode, past yr (%)	0.58	6.29*	0.75	9.56*
Depressive disorder, past yr (%)	3.71	18.32*	8.02	33.92*
Anxiety disorder, past yr (%)	2.40	17.13*	5.10	29.18*
Schizophrenia, past yr (%)	0.10	1.55*	0.16	1.76*
Alcohol abuse or dependence, past yr (%)	10.25	20.24*	4.00	9.53*
Drug abuse or dependence, past yr (%)	1.33	5.94*	0.53	3.64*
Current smoker (%)	26.78	39.60*	21.57	35.74*
Norm-Based Physical Disability Score (higher=better health)	52.37 (9.06)	49.95* (11.25)	51.92 (9.77)	48.78* (12.51)
Age (yrs)	42.99 (10.69)	41.72* (10.46)	43.28 (10.76)	41.59* (10.36)

Variable	Men		Women	
	No PD (n=10,420)	Any PD (n=2,037)	No PD (n=13,544)	Any PD (n=2,517)
Number of children under age 18 yrs in the household	0.854 (1.184)	0.864 (1.154)	0.936 (1.177)	1.002* (1.241)
Infant in the household (%)	2.11	2.01	1.88	1.64*
Toddler in the household (%)	16.02	18.05	17.14	16.70
Married (%)	72.96	65.40*	70.80	61.20*
Divorced/Separated (%)	10.72	14.67*	14.28	19.60*
Widowed (%)	0.72	0.73	2.94	4.07
Never married (%)	15.61	19.20*	11.98	15.12*
Hispanic (%)	12.65	10.39*	11.67	10.01*
White (%)	83.84	86.00	81.73	81.14
African-American (%)	10.61	10.30	12.31	14.69*
Asian (%)	4.81	2.22*	4.87	2.59*
Other race except white (%)	3.69	5.26*	3.57	5.33*
Born outside the U.S. (%)	17.08	10.13*	15.96	10.40*
Less than high school education (%)	12.70	13.80	11.15	15.48*
High school education (%)	26.96	29.37	28.02	25.69
Some postsecondary education (%)	28.12	32.59*	31.01	36.24*
University education (%)	32.22	24.25*	29.83	22.58*
Years since first worked full-time	22.57 (12.22)	22.04* (12.20)	19.23 (13.41)	18.62 (12.64)
Resides in the Northeast (%)	20.41	16.07*	19.94	19.49
Resides in the Midwest (%)	22.94	24.80*	22.76	23.45*
Resides in the West (%)	21.65	26.00*	21.64	24.31
Resides in the South (%)	34.99	33.12*	35.65	32.75*
Not in an MSA (%)	19.39	20.56	19.01	19.12
Unemployment rate in state of residence (%)	5.505 (0.867)	5.544 (0.889)	5.513 (0.852)	5.516 (0.899)

Source: 2001-2002 National Epidemiological Survey on Alcohol and Related Conditions (NESARC)

* Differences between individuals with and without PD significant at $p \leq .05$

Notes: Means and (in parentheses) standard deviations are reported for continuous variables. All estimates calculated using sampling weights. Unweighted estimates are similar.

Table 2

Effects of Personality Disorders on Labor Market Outcomes, Men, Age 25-64

Explanatory Variable	Worked at a job or occupation, past year	Working full-time at interview date	Unemployed and looking for work >1 month, past year	Fired or laid off, past year	Had trouble with boss or co-worker, past year
Sample	Full sample	Full Sample	Full sample	Worked in past year	Worked in past year
N	12,457	12,457	12,446	11,222	11,220
Baseline Proportions or Means	0.911	0.788	0.090	0.084	0.096
Any PD	-0.006 [-0.018, 0.004]	-0.009 [-0.032, 0.013]	0.020 * [0.002, 0.039]	0.010 [-0.007, 0.029]	0.094 * [0.073, 0.116]
Antisocial	-0.0002 [-0.022, 0.016]	-0.010 [-0.049, 0.025]	0.032 * [0.005, 0.065]	0.027 [-0.001, 0.062]	0.032 * [0.006, 0.063]
Avoidant	-0.025 * [-0.058, -0.002]	-0.028 [-0.097, 0.028]	-0.028 [-0.062, 0.024]	-0.034 [-0.062, 0.010]	0.037 [-0.008, 0.096]
Obsessive-Compulsive	0.010 [-0.004, 0.022]	0.018 [-0.014, 0.046]	-0.010 [-0.030, 0.013]	-0.007 [-0.027, 0.016]	0.068 * [0.040, 0.099]
Paranoid	-0.011 [-0.034, 0.007]	-0.020 [-0.063, 0.018]	0.054 * [0.013, 0.102]	0.048 * [0.010, 0.095]	0.103 * [0.058, 0.154]
Schizoid	0.013 [-0.005, 0.026]	0.021 [-0.023, 0.059]	-0.004 [-0.033, 0.033]	-0.007 [-0.035, 0.030]	0.008 [-0.023, 0.047]
Histrionic	-0.034 [-0.094, 0.002]	-0.039 [-0.108, 0.020]	-0.034 [-0.061, 0.004]	-0.025 [-0.050, 0.011]	0.039 [-0.004, 0.095]

Source: 2001-2002 National Epidemiological Survey on Alcohol and Related Conditions (NESARC)

* Differences between individuals with and without PD significant at p≤.05

Notes: Differences in predicted probabilities are shown for all binary outcomes, which were estimated with probit. 95% confidence intervals are in parentheses. All estimates are weighted and correct for county-level clustering. All regressions control for the full set of explanatory variables listed in Table 1. Reference categories include white race, married or living as married, and less than high school education. Although controlled for in all specifications, results are not reported for PD's reported in less than 1% of the sample.

Table 3

Association of Personality Disorders with Labor Market Outcomes, Women, Age 25-64

Explanatory Variable	Worked at a job or occupation, past year	Working full-time at interview date	Unemployed and looking for work >1 month, past year	Fired or laid off, past year	Had trouble with boss or co-worker, past year
Sample	Full sample	Full Sample	Full sample	Fired or laid off, past year	Had trouble with boss or co-worker, past year
N	16,061	16,061	16,053	12,576	12,574
Baseline Proportions or Means	0.780	0.539	0.077	0.068	0.117
Any PD	0.013 [-0.003, 0.028]	-0.006 [-0.031, 0.019]	0.045* [0.028, 0.065]	0.032* [0.014, 0.051]	0.140* [0.116, 0.165]
Antisocial	0.003 [-0.034, 0.035]	-0.104* [-0.168, -0.039]	0.049* [0.011, 0.097]	0.044* [0.005, 0.097]	0.066* [0.016, 0.127]
Avoidant	0.013 [-0.023, 0.042]	-0.011 [-0.066, 0.044]	0.015 [-0.014, 0.050]	0.015 [-0.014, 0.054]	0.029 [-0.013, 0.081]
Obsessive-Compulsive	0.029* [0.009, 0.047]	0.009 [-0.020, 0.037]	0.018 [-0.004, 0.041]	0.006 [-0.012, 0.028]	0.093* [0.065, 0.123]
Paranoid	-0.015 [-0.044, 0.011]	-0.005 [-0.048, 0.036]	0.024 [-0.003, 0.055]	0.024 [-0.003, 0.058]	0.073* [0.032, 0.120]
Schizoid	-0.001 [-0.033, 0.025]	0.023 [-0.021, 0.065]	0.018 [-0.008, 0.048]	0.019 [-0.010, 0.056]	0.009 [-0.025, 0.050]
Histrionic	-0.009 [-0.060, 0.032]	0.016 [-0.050, 0.079]	0.025 [-0.006, 0.064]	0.019 [-0.018, 0.071]	0.025 [-0.019, 0.082]

Source: 2001-2002 National Epidemiological Survey on Alcohol and Related Conditions (NESARC)

* Differences between individuals with and without PD significant at p≤.05

Notes: Differences in predicted probabilities are shown for all binary outcomes, which were estimated with probit. 95% confidence intervals are in parentheses. All estimates are weighted and correct for county-level clustering. All regressions control for the full set of explanatory variables listed in Table 1. Reference categories include white race, married or living as married, and less than high school education. Although controlled for in all specifications, results are not reported for PD's reported in less than 1% of the sample.

Stacked Models for Any PD, Men

Table 4

Explanatory Variable	Worked at a job or occupation, past year	Working full-time at interview date	Unemployed and looking for work >1 month, past year	Fired or laid off, past year	Had trouble with boss or co-worker, past year
Sample	Full sample	Full Sample	Full sample	Worked in past year	Worked in past year
N	12,457	12,457	12,446	11,222	11,220
Baseline Proportions	0.911	0.788	0.090	0.084	0.096
Any PD	-0.032* (0.000)	-0.063* (0.000)	0.044* (0.000)	0.038* (0.000)	0.147* (0.000)
Parsimonious	-0.039* (0.000)	-0.079* (0.000)	0.041* (0.000)	0.034* (0.000)	0.134* (0.000)
Basic demographics	-0.032* (0.000)	-0.071* (0.000)	0.038* (0.000)	0.033* (0.000)	0.133* (0.000)
Socio-economic status	-0.032* (0.000)	-0.073* (0.000)	0.033* (0.000)	0.026* (0.003)	0.129* (0.000)
Health/health behaviors	-0.012* (0.024)	-0.042* (0.002)	0.029* (0.000)	0.023* (0.011)	0.124* (0.000)
Axis 1	-0.005 (0.326)	-0.011 (0.418)	0.019* (0.032)	0.009 (0.287)	0.094* (0.000)

Source: 2001-2002 National Epidemiological Survey on Alcohol and Related Conditions (NESARC)

* Differences between individuals with and without PD significant at p≤.05

Notes: Marginal probit effects were estimated at mean values for the other regressors using the Stata Version 9.2 -nfx- post-estimation routine; p-values are reported in parentheses. All estimates are weighted and correct for county-level clustering. *Parsimonious variables* include demeaned age, demeaned age-squared, race, ethnicity, and birth outside the U.S. *Basic demographic variables* include household structure and marital status. *Socio-economic status variables* include educational attainment, work experience, region, urbanicity, and unemployment rate. *Health/health behavior variables* include physical health status and tobacco use. *Axis 1 variables* include manic episode, depressive disorder, anxiety disorder, schizophrenia, alcohol abuse and/or dependence, and illicit drug abuse and/or dependence.

Stacked Models for Any PD, Women

Table 5

Explanatory Variable	Worked at a job or occupation, past year	Working full-time at interview date	Unemployed and looking for work >1 month, past year	Fired or laid off, past year	Had trouble with boss or co-worker, past year
Sample	Full sample	Full Sample	Full sample	Worked in past year	Worked in past year
N	16,061	16,061	16,053	12,576	12,574
Baseline Proportions	0.780	0.539	0.077	0.068	0.117
Any PD	0.002 (0.896)	-0.049 * (0.000)	0.081 * (0.000)	0.070 * (0.000)	0.183 * (0.000)
Parsimonious	-0.018 (0.125)	-0.067 * (0.000)	0.074 * (0.000)	0.064 * (0.000)	0.173 * (0.000)
Basic demographics	-0.029 * (0.016)	-0.083 * (0.000)	0.067 * (0.000)	0.060 * (0.000)	0.170 * (0.000)
Socio-economic status	-0.038 * (0.003)	-0.083 * (0.000)	0.061 * (0.000)	0.054 * (0.000)	0.169 * (0.000)
Health/health behaviors	-0.009 (0.469)	-0.053 * (0.000)	0.053 * (0.000)	0.046 * (0.000)	0.165 * (0.000)
Axis 1	0.020 (0.106)	-0.007 (0.647)	0.039 * (0.000)	0.028 * (0.001)	0.138 * (0.000)

Source: 2001-2002 National Epidemiological Survey on Alcohol and Related Conditions (NESARC)

* Differences between individuals with and without PD significant at $p \leq 0.05$

Notes: Marginal probit effects were estimated at mean values for the other regressors using the Stata Version 9.2 -nfx- post-estimation routine; p-values are reported in parentheses. All estimates are weighted and correct for county-level clustering. *Parsimonious variables* include demeaned age, demeaned age-squared, race, ethnicity, and birth outside the U.S. *Basic demographic variables* include household structure and marital status. *Socio-economic status variables* include educational attainment, work experience, region, urbanicity, and unemployment rate. *Health/health behavior variables* include physical health status and tobacco use. *Axis 1 variables* include manic episode, depressive disorder, anxiety disorder, schizophrenia, alcohol abuse and/or dependence, and illicit drug abuse and/or dependence.