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Personality disorders and physical health: A longitudinal examination of physical functioning, healthcare utilization, and health-related behaviors in middle-aged adults

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Abstract

Personality disorders (PDs) have significant, long-term effects in many areas, including physical health outcomes such as increased risk for chronic disease and mortality. Although research has documented this detrimental impact in relation to long-term physical health, no one has explored the more immediate influence of disordered personality on aspects of physical functioning, such as pain level, or health-related behaviors, such as medication use. The present study examined the unique effects of PD features on physical functioning, medical resource utilization, and prescription medication use to determine potential risk associated with PDs. We studied an epidemiologically-based sample (N=608) of Saint Louis residents (ages 55–64) over two time points (6 months apart). We found that disordered personality was significantly predictive of worse physical functioning, role limitations, fatigue, and pain at both time points, even when current health problems, the presence of depression, and health behaviors (i.e., smoking, drinking, exercise) were controlled. PD features were also predictive of increased healthcare utilization and medication use at follow-up. These results suggest that the presence of disordered personality may be an important risk factor for worse functioning, regardless of actual health status.

Keywords

Personality; personality disorders; physical health; physical functioning; pain; health behaviors

Substantial research evidence confirms that the effects of personality on our lives are ubiquitous, (Ozer & Benet-Martinez, 2006; Roberts et al., 2007). One area that has received particular attention in recent years is the influence of personality on physical health (Aldwin, Spiro, Levenson, & Cupertino, 2001). Certain personality characteristics, such as high negative emotionality, put individuals at risk for negative health outcomes, including increased risk for the development of chronic diseases (e.g., cardiovascular disease) and worse prognoses during disease course (e.g., renal deterioration in diabetes) (Lahey, 2009). Personality disorders (PDs) may represent an extreme case of these personality effects and are an essential component that must be considered in expanding our understanding of the relationship between personality and health.

Longitudinal research on PDs in both adolescence (Cohen, Crawford, Johnson, & Kasen, 2005) and adulthood (Skodol et al., 2005; Zanarini, Frankenburg, Hennen, Reich, & Silk, 2005) has demonstrated the significant public health risk factors associated with PDs and ways in which negative personality characteristics can lead to detrimental outcomes related to physical health. As part of the Collaborative Longitudinal Personality Disorder Study,

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Bender et al. (2001) found that patients with PDs, particularly those with borderline PD, were more likely to overuse medical resources when compared with patients with major depressive disorder (MDD). Other longitudinal research by Zanarini et al. (2005) confirmed increased rates of medical use among individuals with borderline PD, also showing that unremitted borderline patients had more difficulty with chronic medical conditions (e.g., diabetes) and were more likely to report unhealthy behaviors (e.g., smoking). Recent research using data from the National Epidemiologic Survey on Alcohol and Related Conditions (El-Gabalawy, Katz, & Sareen, 2010) found that borderline PD was associated with increased rates of many physical diseases, such as cardiovascular disease and arthritis, even after controlling for Axis I mental disorders and other Axis II pathology. More generally, Pietrzak et al. (2007) reported that the presence of PD symptoms increased the chance of developing coronary heart disease by 26% in a representative sample of older US adults.

PDs are also associated with negative subjective perceptions of health (Chen et al., 2009). A previous report from our lab (see Powers & Oltmanns, in press) considered the influence of disordered personality on self-perceptions of health in middle-aged adults. We found that PD features are significantly associated with more negative health perceptions, even when objective health variables, such as the presence of chronic illnesses or physical functioning, and normal personality traits are controlled. Features of borderline, antisocial, and schizoid PD, in particular, showed unique variance in predicting negative perceptions of health. This relation between disordered personality and negative perceptions of health suggests that the way individuals with PDs perceive the world extends to their own health; it affects the way they experience illness, cope with pain, and deal with daily physical health stressors. As evidenced by the research described above, PDs have a far-reaching influence on health outcomes, through both objective, measured effects and subjective feelings about health.

One area that has not been studied extensively is the connection between PDs and more general physical functioning. Research on normal personality traits has demonstrated that variability in physical functioning and disability is significantly affected by many psychological factors (Smith & Mackenzie, 2006). An individual's perception of persistent physical illness (e.g., chronic pain) is related to important functional outcomes, including adherence to medical treatment and speed of return to work following surgery (Petrie, Weinman, Sharpe, & Buckley, 1996; Scharloo et al., 1998). Furthermore, certain personality characteristics, such as emotional flexibility, can facilitate adjustment to physical conditions (Rozanski & Kubzansky, 2005; Tugade, Fredrickson, & Barrett, 2004). Other traits, such as neuroticism, are detrimental to an individual's functioning in relation to physical health (Lahey, 2009).

The Present Study

Physical health problems are an inevitable consequence of aging. Understanding how individuals experience these aspects of growing older, including pain and chronic physical illness, is important to our understanding of successful aging. Up to now, longitudinal studies of PDs have focused primarily on young adults (Cohen et al., 2005) or patient populations (Skodol et al., 2005). A different perspective on these issues can be provided by studying the connections between personality pathology and physical health in a large, community sample of adults in the latter half of middle-age, people for whom health problems are becoming a reality (Oltmanns & Balsis, in press).

The analyses reported in this paper are concerned with the relations among features of PDs, general health perceptions, aspects of physical functioning (i.e., general physical functioning, role limitations, energy/fatigue, and pain), use of healthcare resources, and

medication use in a community sample of adults (ages 55–64) across two points in time. We wanted to answer three main questions: 1) Are PDs related to worse reported physical functioning at the initial baseline assessment and first 6-month follow-up (FU1), independent of actual health status? 2) Do features of PDs identified at baseline predict healthcare utilization and prescription medication use at FU1? and 3) Is borderline PD, in particular, related to these physical health variables? We chose to explore the specific effects of borderline PD features, in addition to general PD features, because of the extensive literature demonstrating significant functional impairments associated with this disorder and the need to determine the extent that it may permeate daily life in middle-aged adults.

Method

Design

This article is based on data collected as part of an on-going, prospective study regarding the trajectory of personality pathology, beginning in later middle-age and eventually extending into later life. This community-based sample included adults between the ages of 55 and 64 years living in the St. Louis Metropolitan area (see Oltmanns & Gleason, in press for a more detailed description of study methods). We recruited participants using listed phone numbers that were crossed with current census data in order to identify households with one member in our age range. We asked households to identify all eligible residents between the ages of 55 and 64, and we used the Kish method (Kish, 1949) to identify the target participant if more than one person was in that age range. If the target refused to participate, we did not include any other eligible residents from that household. Each participant received $60 compensation to complete a 3-hour assessment, which included a clinical interview and several self-report instruments. Every six months following the baseline, participants are asked to complete a short self-report assessment (30 minutes) and receive $20 for each follow-up assessment that they complete. Informed consent was obtained from all participants prior to the baseline assessment. This report focuses on personality and health information gathered at baseline and health information gathered in the first follow-up (FU1).

Participants

The sample for the current analyses included 608 individuals. The average age of participants was 59.7 (SD = 2.8) and 56% were female (n = 342). Slightly more than half of the participants were currently married (54%), followed by divorced (20%), never married (13%), widowed (7%), living with partner/other serious relationship (5%), or separated (1%). The race of participants is comparable to that of the greater St. Louis metropolitan area: 76.5% White/Caucasian, 21% Black/African, 1% Latino, .8% Biracial, .2% Asian, and .5% Other (or did not specify). Due to small samples in several categories, race of participants was recoded into White/Caucasian and Black/African/Other for analyses. The participants varied in educational achievement with 10% having a high school education or less, 25% having education beyond high school, but not a bachelor degree, 28% having completed a bachelor degree, and 37% having a master degree or more. Median household income was between $40,000 and $60,000 per year.

Participants included in the analyses reported in this paper had completed the baseline assessment by the end of 2009 and had also completed the first 6-month follow-up assessment, resulting in a sample of 608.

Measures

Structured Interview for DSM-IV Personality (SIDP-IV) **(Pfohl et al., 1997)—**The interview includes 101 questions that correspond to the diagnostic criteria for the ten DSM-

IV PDs. Questions are arranged by themes rather than by disorders (e.g., work style, interpersonal relationships, emotions), and each criterion is rated on a scale from 0 (*not present*) to 3 (*strongly present*). The SIDP-IV instructs individuals to focus on personality traits present in the past five years, allowing us to obtain a snapshot of a participant's current personality. All interviews were video-recorded and 145 interviews were randomly chosen to be rerated by independent judges. Reliability tests indicate adequate reliability at ICC = . 71 for the scales and are consistent with past research on the psychometric properties of the SIDP (Jane et al., 2006; Pilkonis et al., 1995).

In the present study, we assessed DSM-IV PDs using dimensional scales. We took a count of overall disordered personality, which reflects the presence of any DSM-IV PD symptoms. We also summed symptoms based on the 3 DSM-IV PD clusters: A ("odd/eccentric" – schizoid, schizotypal, and paranoid), B ("dramatic/erratic" – histrionic, antisocial, borderline, and narcissistic), and C ("anxious/fearful" – avoidant, obsessive-compulsive, and dependent) to determine whether certain clusters were more important than overall pathology to the research questions at hand. Finally, we examined the specific symptoms of borderline PD because previous findings from our lab (Powers & Oltmanns, in press) and others (Bender et al., 2001; El-Gabalawy et al., 2010; Skodol et al., 2005; Zanarini et al., 2005) have demonstrated the detrimental impact of this disorder with regard to health.

Computerized screening version of the Diagnostic Interview Schedule (C-DIS) (Robins & Helzer, 1994): The DIS is an assessment developed for non-clinicians to collect information that can be used to generate psychiatric diagnoses. The DIS has been extensively tested, and the validity and reliability of those data indicate good agreement between diagnoses obtained by lay interviewers and clinicians (Robins & Helzer, 1994). The health and Axis I mood disorder sections of the interview were used for this study. We summed participants' report of being under a doctor's care for heart disease, cancer, hepatitis, stroke, arthritis, asthma, diabetes, bleeding ulcer, or any other long-lasting physical illness to create a count of chronic physical illnesses present at baseline. We also used DSM-IV criteria to determine if participants had experienced a major depressive episode within the previous 12 months (coded as *present* or *absent* in subsequent analyses).

RAND-36 Health Status Inventory (HSI) (Hays & Morales, 2001): The HSI is a 36-item questionnaire that covers a wide spectrum of physical and mental health. It provides scores on 8 health constructs including: physical functioning (10 items), role limitations due to physical health problems (4 items), pain (2 items), general health perceptions (5 items), emotional well-being (5 items), role limitations due to emotional problems (3 items), social functioning (2 items), and energy/fatigue (4 items). Extensive data are available regarding the reliability and validity of these scales (Moorer et al., 2001). For the present paper, our statistical analyses employed composite scores for *physical functioning* (e.g., walking a mile, walking up a flight of stairs, bathing/dressing), *role limitations* due to physical health problems (e.g., difficulty getting work done, limitations in type of work), *pain*, *energy/fatigue*, and *general health perceptions*. The HSI was completed at the baseline assessment and again at FU1.

We also included a questionnaire at FU1 that assessed healthcare utilization, medication use, and health-related behaviors. Participants were asked to report how often in the past 6 months they had: visited a physician's office, gone to the emergency room, stayed overnight in the hospital, had an outpatient procedure, or visited a psychiatrist/psychologist (all on a scale of *0*, *1–2*, *3–5*, or *6 or more times*). Participants were also asked to indicate how many prescription medications they were taking, the dosage for each, what the medications were for, and duration of taking the medication. Exercise habits were assessed by asking participants, "Do you exercise on a regular basis?"1 Participants were also asked to indicate

their smoking (currently/used to/never used tobacco products) and drinking habits (currently/occasionally/used to/never consumed alcohol). Current drinking was counted if participants reported having 5 or more drinks per week2. All health behaviors were treated dichotomously (i.e., yes/no).

Statistical Analyses

We used descriptive statistics to characterize the prevalence of chronic physical illnesses and number of illnesses per participant. This provided a baseline measure of physical health for use in subsequent analyses. We also conducted bivariate correlation analyses to identify the relationships among PDs, general health perceptions, four specific aspects of physical functioning (i.e., general physical functioning, role limitations, energy/fatigue, and pain), number of chronic medical conditions, healthcare utilization, and medication use. We examined these relationships with overall level of disordered personality, level of Cluster A, B, and C pathology, and number of borderline PD features specifically.

Next, we used hierarchical linear regression analyses to identify the predictive value of PD features in relation to general health perceptions and the four aspects of physical functioning at baseline. We also examined whether number of borderline PD features was predictive of our physical health variables. In all regression analyses, gender, race, age, education level, and count of chronic illnesses at baseline were controlled. We also identified individuals who had experienced a major depressive episode within 12 months of the baseline assessment and used a dichotomous variable (*present/absent)* to control for the effects of MDD in all models.

Finally, to examine the unique contributions of personality pathology in predicting physical health variables over time, we employed hierarchical linear regression with baseline functioning and functioning at FU1. This procedure was used to determine the potential influence of PD features on later health functioning even when baseline values were controlled. We also assessed the predictive utility of PD features on healthcare utilization and medication use at FU1. The specific predictive utility of borderline PD was tested in addition to overall disordered personality. Again, gender, race, age, education level, count of chronic illnesses at baseline, and MDD were controlled. Health-related behaviors, including current exercise, smoking, and drinking patterns assessed at FU1 were also controlled. All tests were two-tailed with a cutoff for significance of $p<0.05$. Analyses were conducted using SPSS software.

Results

As expected in this age group, we saw fairly high rates of medical illnesses, with 10.4% reporting cancer, 11.5% diabetes, 22.9% arthritis, 7.4% heart disease, and 26.6% other illnesses, including hypertension, hypothyroidism and chronic pain problems. Overall rates of chronic illnesses were similar for men and women. We did, however, find that some diseases were more prevalent in men (heart disease and stroke), while others were more prevalent in women (arthritis and asthma). Slightly more than one third of participants reported one chronic illness at baseline (37.2%), followed by two illnesses (15.5%), and three or more (6.9%). At baseline, approximately 25% of participants reported some kind of physical disability (e.g., peripheral neuropathy, chronic pain). There was a wide range for

[1]More detailed information about exercise behavior was also collected from participants (i.e., exercise type and duration each week), but was not used in the present analyses.

[2]This choice was based on definitions of heavy drinking behaviors outlined in the National Longitudinal Alcohol Epidemiologic Study (Dawson, Grant, Chou, & Pickering, 1995). Statistical analyses were also run when counting all individuals that indicated any current drinking behavior, and the results did not change.

prescription medication use with 16.7% reporting no medication use, 39.3% one to two, 25.5% three to four, and 18.3% five or more. Average number of visits to healthcare facilities (including doctor or ER visits, hospital stays, and outpatient procedures) in the first 6 months following baseline was 1.6 (SD=1.4). More than half (61%) of all participants reported exercising on a regular basis, 13% reported current use of tobacco, and 26% reported more than occasional consumption of alcohol (>4 drinks per week; mean=13.7, SD=9.6 for men who had more than 4 drinks per week, and mean=9.6, SD=4.8 for women who had more than 4 drinks per week). Approximately 4% of female participants and 1% of male participants met DSM-IV criteria for a major depressive episode that occurred within 12 months prior to the baseline assessment.

Correlation Analyses

We first examined the strength of relationship between disordered personality and various aspects of physical health, including count of chronic illnesses, general health perceptions, physical functioning, role limitations, energy, and pain. As shown in Table 1, overall level of disordered personality was significantly related ($p<.05$) to how many chronic illnesses were present at baseline. More specifically, total SIDP score for the three DSM-IV PDs in Cluster A was significantly related to chronic illness count ($p<.01$). PD total score, Cluster A, B, and C scores, and number of borderline PD features were all significantly negatively associated with general health perceptions, physical functioning, and energy level and positively associated with pain level at baseline and FU1 ($p<.01$). Role limitations were significantly related ($p<.01$) to PD total score, Cluster B, and number of borderline PD features across both time points. Finally, we assessed the correlation between disordered personality, healthcare utilization at FU1, and medication usage at FU1. Both healthcare utilization and medication usage were significantly positively related to PD total score ($p<.01$), and more specifically with Cluster B PD score and number of borderline PD features.

Regression Analyses

We used linear regression analyses to determine whether PD features predicted general health perceptions, physical functioning, role limitations, energy, and pain. PD features were significantly predictive of negative general health perceptions ($F=5.33$, $R^2=.07$, $p<.001$), worse physical functioning ($F=2.66$, $R^2=.03$, $p<.001$), greater role limitations ($F=1.91$, $R^2=.03$, $p<.05$), lower energy ($F=8.18$, $R^2=.11$, $p<.001$), and more pain ($F=3.60$, $R^2=.05$, $p<.001$) at baseline. As shown in Table 2, when recent MDD was entered into the models before disordered personality, physical functioning and role limitations were no longer significantly predicted by PDs. Energy level ($R^2=.08$), general health perceptions ($R^2=.06$), and pain ($R^2=.04$) still showed the most variance explained by disordered personality of all outcomes. We then used hierarchical linear regression to assess the unique predictive utility of PDs on these five aspects of physical health in FU1. We found that all five outcomes were predicted by personality pathology ($p<.05$), even when baseline functioning, count of chronic illnesses, recent MDD, and health-related behaviors at FU1 (i.e., exercise, smoking, and drinking) were controlled (see Table 2).

Next, we examined the specific relationship between number of borderline PD features and the physical health variables through linear regression. Similar to the pattern observed when all PD features were combined, we found that the number of borderline PD features predicted negative general health perceptions ($F=37.84$, $R^2=.05$, $p<.001$), worse physical functioning ($F=12.94$, $R^2=.02$, $p<.001$), greater role limitations ($F=13.84$, $R^2=.02$, $p<.05$), lower energy ($F=57.90$, $R^2=.08$, $p<.001$), and more pain ($F=32.19$, $R^2=.045$, $p<.001$). Table 3 indicates that when recent MDD was included in the regression model, the amount of variance explained decreased slightly, but borderline PD remained a significant predictor of all health variables ($p<.05$). We then performed hierarchical linear regression analyses to

examine the predictive utility of borderline PD features for FU1 physical health. When baseline functioning was controlled, borderline PD was predictive of negative general health perceptions and low energy ($p<.05$). Borderline PD features were not uniquely predictive of physical functioning, role limitations, or pain at FU1 (see Table 3).

Finally, Table 4 illustrates a hierarchical linear regression showing the predictive effect of features of PDs on healthcare utilization and medication usage at FU1. PDs significantly predicted higher rates of healthcare utilization and more medication usage ($p<.01$) above and beyond the effects of recent MDD, even when number of chronic illnesses at baseline and health-related behaviors at FU1 were controlled. Again, this pattern was also found with number of borderline PD features alone ($p<.01$).

Discussion

The public health significance of PDs has become particularly clear in light of growing research evidence regarding their specific detrimental effects on physical health and well-being. To our knowledge, this is the first study to examine the relationship between features of PDs, aspects of physical functioning, health perceptions, healthcare utilization, and medication use in a longitudinal and community-based sample of middle-aged adults. We found that PD features were significantly predictive of worse functioning (i.e., physical functioning, role limitations, fatigue, and pain) after controlling for the presence of actual chronic health problems. This effect was observed both for baseline levels of functioning and at 6-month follow-up. Even when the baseline level of functioning and health-related behaviors (at the time of follow-up) were controlled in the regression analysis, features of PDs were still significantly predictive of worse functioning six months later. The relationship between personality pathology and physical functioning was particularly strong for pain and energy level, something that may be important for healthcare providers to consider when treating disorders such as chronic pain and rheumatoid arthritis.

Recent research in non-clinical samples has suggested that functional impairment associated with PDs (including basic role functioning) can be better accounted for by comorbid Axis I pathology (Lenzenweger et al., 2007). When we included the recent presence of MDD as a control variable, the predictive utility of features of PDs for physical functioning and role limitations at baseline was no longer significant, but a strong relationship with low energy and greater pain was still evident. When predicting functioning 6 months after the baseline personality assessment, PD features were predictive of all health variables even after controlling for MDD. This suggests that Axis II pathology is uniquely important in understanding individual risk for difficulty with physical problems, and this risk may be more persistent or enduring over time in comparison to the risk associated with a depressive episode.

Consistent with previous findings from this sample at baseline (see Powers & Oltmanns, in press), we found that PD features were significantly related to negative health perceptions at six-month follow-up. These individuals see themselves as being in poorer health even when there is not clear evidence for the presence of specific health problems. One possible explanation for the relationship between disordered personality and physical functioning is that individuals with personality problems have a more difficult time coping with daily aches and pains or are more upset by changes in their physical abilities. If individuals with higher levels of personality pathology respond less adaptively to the onset of limitations in physical functioning, we might expect to see negative impact in other areas of their lives, including decreased emotional well-being or impaired social functioning. Serious or chronic physical conditions may also be more disruptive for those with PDs, and could put them at risk for the onset or recurrence of other forms of mental disorder, such as MDD, which is

obviously linked to the onset of stressful life events (including health problems) (Monroe & Harkness, 2005). The link between personality pathology and negative physical health outcomes may operate through the health-related behaviors of those individuals (i.e., smoking and/or drinking, as well as not exercising) (Bogg & Roberts, 2004). In this sample, however, there was a significant relationship between PD features and aspects of physical functioning and use of health resources even when such health-related behaviors were controlled, suggesting that there is still more to be understood about the connection between PDs and physical health.

Our analyses also revealed a significant connection between features of borderline PD and physical functioning, suggesting that symptoms characteristic of the disorder (e.g., emotional dysregulation, impulsivity) may be particularly problematic when it comes to physical health. Previous research has demonstrated that emotional flexibility can facilitate adjustment to physical conditions (Tugade, Fredrickson, & Barrett, 2004), and our finding may draw attention to the maladaptive version of this phenomenon. What is particularly interesting about our result is that the relationship between features of borderline PD and impaired functioning is independent of the presence of chronic physical health problems. Previous studies have reported that borderline patients are more likely to present with chronic health problems, such as cardiovascular disease, arthritis, and diabetes (El-Gabalawy, Katz, & Sareen, 2010; Zanarini et al., 2005). The present findings add to that research by illustrating that the impact of borderline PD features on physical health includes the experience of problems such as pain, fatigue, and negative perceptions of overall health.

People with PDs are more likely to overuse costly medical resources (Bender et al., 2001; Blum et al., 2008). This suggestion is supported by our results. Within our community sample, we found that higher levels of disordered personality were predictive of greater healthcare utilization and prescription medication use six months following the baseline assessment. Borderline PD features were again uniquely predictive of this pattern. It is unclear why there is a lack of association between features of Cluster A and Cluster C PDs and these health variables. It may be that for some of these disorders, such as schizoid PD, avoiding social contact makes them less likely to seek medical treatment. In other disorders, like obsessive-compulsive or dependent PD, functional impairment may be more exclusively related to work or social functioning and not carry over into physical health.

Limitations

Some limitations should be kept in mind when interpreting the results of these analyses. The first is the use of self-report questionnaires to obtain measures of health. Some investigators have explored the relationship between personality and health using objective measures; for example, when studying the relation between personality and heart disease, various methods have been used, including multidetector scanners to measure coronary artery calcification and blood draws to determine glucose, lipid, and cortisol levels (as an estimate of risk) (Smith & Ruiz, 2002). These methods have enabled investigators to show a clear correlation between personality factors and physical changes in participants' bodies. The scope of the present study did not allow for such thorough medical testing or the cooperation of participants' medical doctors to provide corroboration. Although it would have been ideal to have had access to medical records to check participants' reports of physical illnesses, researchers have found little discrepancy between self-reports of physical illnesses and documented medical histories (Goodwin & Engstrom, 2002). Furthermore, the only practical way to measure many aspects of physical functioning, such as pain and fatigue, is through the use of self-report. We believe it was a necessary feature of the present study.

Because we studied adults living in the community rather than focusing exclusively on clinical patients, our sample does not include a large number of individuals with extreme

levels of personality pathology. However, 9.5% of our sample met DSM-IV criteria for at least one PD, as expected based on previous epidemiological studies (9.1%) (Lenzenweger et al., 2007). Almost half of the people in our sample (>40%) have received some kind of mental health treatment, demonstrating that individuals with varying levels of psychopathology were represented in this data set. Furthermore, we measured PDs on a continuous scale rather than following the categorical approach to diagnosis included in DSM-IV. Many measurement problems associated with the current system for classifying PDs, including the use of arbitrary cutoff points, have initiated movement towards the adoption of a dimensional model (Widiger & Trull, 2007). Measuring PDs in this manner allowed us to capture the full range of variability in personality pathology evident in this sample.

Finally, this research was conducted on a specific group of individuals (adults aged 55–64), and the generalizability of these findings to other age groups should be considered carefully. The focus of this study, however, was on how disordered personality may affect variation in physical functioning and health-related behaviors. The range of health status and physical functioning in our sample actually allowed for greater variability than would be found among younger participants. Older adults may represent a population in which the impact of personality pathology on physical health is stronger than might be found with younger participants.

Clinical Implications and Conclusions

Our research adds support to the suggestion that PDs are related to negative physical health outcomes. Beyond both long-term health consequences (e.g., mortality) and short-term perceptions of health, disordered personality seems to play a role in functional outcomes that affect daily life. These include aspects of functioning that are particularly relevant to aging and the health problems that are almost inevitable in older adulthood (Oltmanns & Balsis, in press). Increased levels of personality pathology also predict greater use of medical resources, something that must be considered as changes to our healthcare system occur and the goal of reducing costs becomes a high priority.

Several questions must be considered as we continue to explore the relationship between personality pathology and health. If PD features have a detrimental effect on physical functioning when health problems are controlled, what additional risks might emerge with the onset of new, potentially serious health concerns (e.g., diagnosis of cancer)? Could research into the risks of disordered personality help prepare physicians for problems that may occur regarding use of medication, keeping appointments, and adherence to other medical recommendations? Should medical interventions include components address problematic or inflexible personality patterns that interfere with successful treatment? Psychopathology and physical health are clearly connected, and PDs represent another central element in understanding that dynamic relationship.

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Table 1

Correlations of Health Perceptions and Aspects of Physical Functioning with Personality Disorder

	SIDP Total	Cluster A	Cluster B	Cluster C	Borderline PD
General Health Perceptions					
Baseline	−.23**	−.18**	−.19**	−.13**	−.25**
Follow-up 1	−.28**	−.23**	−.22**	−.16**	−.27**
Physical Functioning					
Baseline	−.16**	−.19**	−.10*	−.10*	−.15**
Follow-up 1	−.20**	−.23**	−.12**	−.11**	−.17**
Role Limitations					
Baseline	.15**	.08	.14**	.10*	.16**
Follow-up 1	.16**	.17**	.12**	.05	.15**
Energy Level					
Baseline	−.28**	−.19**	−.16**	−.25**	−.30**
Follow-up 1	−.30**	−.22**	−.16**	−.26**	−.27**
Pain					
Baseline	.20**	.14**	.19**	.09*	.23**
Follow-up 1	.24**	.20**	.19**	.13**	.21**
Number of Chronic Illnesses at Baseline	.10*	.15**	.04	.04	.05
Healthcare Utilization *(Follow-up 1)*	.13**	.05	.19**	−.01	.14**
Medication Usage *(Follow-up 1)*	.13**	.05	.14**	.07	.10*

*p<.05

**p<.01

N=608 (N=550 for healthcare utilization, N=534 for medication usage)

Table 2

Hierarchical Linear Regression Predicting Physical Functioning Dimensions and General Health Perceptions at Baseline and FU1 from MDD (Step 1) and DSM-IV PDs (Step 2)

Outcome	Predictors	R	Δ R^2	F	df	Sig.
Baseline						
Health Perceptions						
Step 1:	MDD	.49	.02	17.28	601	$p<.001^{**}$
Step 2:	PDs	.54	.05	4.01	591	$p<.001^{**}$
Physical Functioning						
Step 1:	MDD	.51	.01	11.58	601	$p<.01^{**}$
Step 2:	PDs	.52	.02	1.38	591	*p=.17*
Role Limitations						
Step 1:	MDD	.34	.02	15.91	601	$p<.001^{**}$
Step 2:	PDs	.36	.02	1.24	591	*p=.26*
Energy/Fatigue						
Step 1:	MDD	.34	.04	25.51	601	$p<.001^{**}$
Step 2:	PDs	.44	.08	5.92	591	$p<.001^{**}$
Pain						
Step 1:	MDD	.40	.01	7.79	601	$p<.01^{**}$
Step 2:	PDs	.44	.04	2.74	591	$p<.01^{**}$
Follow-up 1						
Health Perceptions						
Step 1:	MDD	.82	.00	.84	595	*p=.36*
Step 2:	PDs	.83	.02	3.39	585	$p<.001^{**}$
Physical Functioning						
Step 1:	MDD	.78	.00	2.78	595	*p*=.10
Step 2:	PDs	.79	.02	2.05	585	$p<.05^{*}$
Role Limitations						

Outcome	Predictors	R	Δ R^2	F	df	Sig.
Step 1:	MDD	.57	.01	6.11	595	*p<.05**
Step 2:	PDs	.58	.02	1.86	585	*p<.05**
Energy/Fatigue						
Step 1:	MDD	.71	.00	.82	595	*p*=.37
Step 2:	PDs	.73	.03	3.17	585	*p<.01***
Pain						
Step 1:	MDD	.69	.01	6.36	595	*p < .05**
Step 2:	PDs	.70	.02	2.29	585	*p < .05**

*
p<.05

**
p<.01

Note: Age, gender, race, education level, and total number of chronic illnesses at baseline were controlled. Baseline level of functioning for each area, plus health-related behaviors (i.e., exercise, drinking, and smoking) were also controlled in analyses for FU1.

Table 3

Hierarchical Linear Regression Predicting Physical Functioning Dimensions and General Health Perceptions at Baseline and FU1 from Borderline PD

Outcome	R	Δ R^2	F	df	Sig.
Baseline					
General Health Perceptions	.52	.03	26.12	600	$p<.001^{**}$
Physical Function	.51	.01	5.19	600	$p<.05^{*}$
Role Limitations	.35	.01	6.82	600	$p<.01^{**}$
Energy/Fatigue	.41	.06	39.58	600	$p<.001^{**}$
Pain	.44	.03	22.33	600	$p<.001^{**}$
Follow-up 1					
General Health Perceptions	.82	.003	6.11	594	$p < .05^{*}$
Physical Function	.78	.002	2.53	594	$p=.11$
Role Limitations	.57	.001	0.81	594	$p=.37$
Energy/Fatigue	.72	.004	4.97	594	$p < .05^{*}$
Pain	.69	.001	1.58	594	$p=.21$

* p<.05

** p<.01

Note: MDD was entered as step 1 in these models (see Table 2 for values). Age, gender, race, education level, and total number of chronic illnesses at baseline were also controlled. Baseline level of functioning for each area, plus health-related behaviors (i.e., exercise, drinking, and smoking) were also controlled in analyses for FU1.

Table 4

Hierarchical Linear Regression Predicting Prescription Medication Use and Healthcare Utilization at FU1 from MDD (Step 1), all DSM-IV PDs (Step 2a), and Borderline PD (Step 2b)

Outcome	Predictors	R	Δ R^2	F	df	Sig.
Medication Usage						
Step 1:	MDD	.53	.01	4.67	522	$p<.05$ *
Step 2a:	PDs	.56	.03	2.50	512	$p<.01$ **
Step 2b:	Borderline PD	.53	.01	4.59	521	$p<.05$ *
Healthcare Utilization						
Step 1:	MDD	.34	.02	10.24	538	$p<.01$ *
Step 2a:	PDs	.40	.04	2.78	528	$p<.01$ **
Step 2b:	Borderline PD	.36	.01	7.11	537	$p<.01$ *

* p<.05

** p<.01

Note: Age, gender, race, education level, total number of chronic illnesses at baseline, and health-related behaviors at FU1 (i.e., exercise, smoking, and drinking) were controlled.