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ORIGINAL PAPER

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Mental health service utilization in the United States
The role of personality factors

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Abstract *Background* The aim of this study was to determine the relationship between personality factors and the use of mental health services (past 12 months) among adults in the community. *Method* Data were drawn from the Midlife Development in the United States Survey (MIDUS), a representative sample of 3,032 adults aged 25–74 in the United States population. Analyses of variance and logistic regression analyses were used to determine the relationship between personality factors and mental health service utilization, in the presence and absence of mental disorders, during the past 12 months. *Results* Neuroticism [OR = 1.5 (1.2, 1.9)] was associated with significantly increased likelihood of mental health service utilization among adults in the community. Conscientiousness [OR = 0.7 (0.5, 0.9)] and extraversion [OR = 0.7 (0.5, 0.98)], in contrast, were associated with decreased likelihood of use of mental health services. Among adults with mental disorders, conscientiousness [OR = 0.5 (0.3, 0.8)] was associated with decreased odds of mental health service utilization. Neuroticism [OR = 1.8 (1.3, 2.4)] was associated with increased likelihood of service use among those who did not meet criteria for common mental disorders. *Conclusions* These findings are the first to document a significant association between personality factors and the use of mental health services among adults in the general population. Our results highlight new ways in which personality may influence mental health in the community. This information may be useful in identifying those with unmet need for mental health treatment and developing more effective interventions for those at risk for common mental disorders. Replication of these findings is needed.

Key words personality – epidemiology – mental health services – service utilization – neuroticism

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Introduction

Numerous studies have documented an association between personality factors and health-related attitudes and beliefs [1–3]. A significant association between personality factors and both mental disorders and physical illnesses has been established [4–10], though the mechanism of this association is not known. It might be that mental disorders and physical disorders lead to changes in personality style and functioning. It is also possible that a third outside factor is associated with the co-occurrence of specific personality factors and mental disorders or physical illness. This factor could be a genetic factor of environmental (e. g., socioeconomic) status. Alternatively, it could also be that specific personality factors lead to an increased or decreased risk of mental disorders and physical illness through behavioral patterns and environmental experiences.

In an attempt to understand the association between personality and physical health, several researchers have investigated the relationship between personality and specific health-risk behaviors which are known to influence physical health outcomes. For instance, neuroticism is associated with cigarette smoking [6–8]. Previous data have shown a significant and consistent relationship between personality factors (e. g., neuroticism) and increased likelihood of mental disorders

(e. g., depression) [9–13]. Several previous studies have also shown a link between personality factors and the co-occurrence of mental disorders and physical illnesses [14–16]. In contrast, there has been less investigation of the mechanism through which personality factors may influence mental health through specific health-risk or protective behaviors [14]. Use of mental health services may be a key determinant of this relationship.

To date previous studies have not investigated the relationship between personality factors and the use of mental health services. The goal of this study, which aims to partially fill this gap, is to determine the association between personality factors and the use of mental health services among adults in the community by answering three main questions. First, are specific personality factors associated with the use of mental health services? Second, are specific personality factors associated with the use of mental health services in the presence of mental disorder? Third, are specific personality factors associated with the use of mental health services in the absence of mental disorders? We hypothesized that neuroticism would be associated with the use of mental health services, independent of the effects of mental and physical health problems among adults in the general population.

Subjects and methods

Sample

The Midlife Development in the United States Survey (MIDUS) is a nationally representative study of 3,032 persons aged 25–74 years in the non-institutionalized civilian population of the 48 coterminous states [17, 18]. The MIDUS was carried out by the John D. and Catherine T. MacArthur Foundation Network on Successful Midlife Development between January 1995 and January 1996. All respondents completed a 30-min telephone interview (70% response rate) and filled out two mailed questionnaires estimated to take a total of about 90 min to complete (86.8% conditional response rate in the subsample of telephone respondents). The overall response rate was 60.8%. The data reported here were weighted to adjust for differential probabilities of selection and nonresponse. More details on the MIDUS design, field procedures, and sampling weights are available elsewhere [17, 18]. Only data on those respondents for whom there was information on all five personality factors were used in these analyses (n = 2885). The subjects were grouped by marital status (married, never married, divorced, widowed) and educational attainment was dichotomized into those who had and had not completed high school.

Diagnostic assessment

The MIDUS diagnoses were based on the Composite International Diagnostic Interview (CIDI) Short Form scales, a series of diagnostic-specific scales that were developed from item-level analyses of the CIDI questions in the National Comorbidity Survey (NCS) [19]. The CIDI Short Form scales were designed to reproduce the full CIDI as exactly as possible, with only a small subset of the original questions. Comparison of the CIDI Short Form classifications of major depression with the full CIDI [20] classifications in the NCS yielded a sensitivity of 89.6%, a specificity of 93.9%, and an overall agreement of 93.2% [17]. Additional CIDI Short Form diagnoses at 12 months included in the MIDUS are major depression, panic attacks, and alcohol and drug abuse and dependence. Physical illnesses were self-report from a list of 26.

Measure of mental health service utilization

Respondents were asked whether they had received services from a psychiatrist or psychologist in the past 12 months.

Personality factors

Assessment of personality traits in the Midlife Development Inventory Personality Scales (MIDI), based on the "big five" factor model, was developed from the results of a pilot study, conducted in 1994 with a probability sample of 1,000 men and women, age 30–70 (574 valid cases usable for item analysis). Items with the highest item to total correlations and factor loadings were selected for MIDI [21–24]. Forward regressions were also run to determine the smallest number of items needed to account for over 90% of the total scale variance. Many of the negatively worded items (unemotional, unreliable, unsophisticated, unsympathetic, shy, unsociable) were dropped due to low variance. New items were added to increase reliabilities on some scales. Scales included agreeableness (helpful, warm, caring, softhearted, sympathetic) (alpha = 0.80), a 5-item scale; openness to experience (creative, imaginative, appropriate, intelligent, curious, sophisticated, adventurous) (alpha = 0.77), a 7-item scale; conscientiousness (organized, responsible, hardworking, (not) careless) (alpha = 0.57), a 4-item scale; extraversion (outgoing, friendly, lively, active, talkative) (alpha = 0.78), a 5-item scale; and neuroticism (moody, worrying, nervous, (not) calm) (alpha = 0.74), a 4-item scale. Responses were on a Likert-scale from 1 to 4, asking respondents to describe how much of the time the word described them. The scale ranged from "all," "most," "some," and "a little." These alphas are based on the MIDUS national sample. We only included respondents who had information on all but one of the items for each trait (n = 2617); in those cases, the score was computed by finding the mean of the available items for that trait.

Analytic strategy

First, F-based tests of independence were used to determine the relationship between sociodemographic characteristics and mental disorders in the past 12 months between adults who have and have not used mental health services in the past 12 months. Analyses of variance were then used to determine differences in personality factors between those who had and had not used mental health services in the past 12 months. Next, multivariate logistic regression analyses were used to determine the relationship between mental health service use and personality factors, controlling for demographic characteristics and current mental disorders. The same method was then used to determine the predictors of past 12-month service utilization among those with any, and those without any, mental disorders. Finally, the relationship between each of the big five factors and mental health service utilization was determined using separate logistic regression models, adjusting for demographic characteristics and comorbid mental disorders among those with major depression, panic attacks, and alcohol/substance – use disorders. Odds ratios shown indicate the increase (or decrease) in odds that can be expected for a one-point difference on each personality scale.

Results

Sociodemographic characteristics and mental health service utilization

The mean age of the analyzable sample (n = 2617) was 46.8 [13.0] years old. Slightly over half (51.5%) were fe-

male, 64.1% were married, 30.5% had graduated from college, and 86.6% were White. Individuals who had seen a mental health professional in the past 12 months were younger, more likely to be female and separated or divorced, and had more education compared with those who did not receive services (see Table 1). There was no significant difference in race between those who had and had not received services. Presence of physical illness was associated with a modest, but statistically significant, increase in rates of mental health service use.

Correlates of mental health service use in the community

Younger age, more education, and female gender were associated with significantly increased likelihood of using mental health services (see Table 2). Higher levels of neuroticism were associated with a significantly increased likelihood of using mental health services. In contrast, conscientiousness and extraversion decreased odds of use of mental health service. Major depressive disorder, panic attacks, and alcohol/substance – use disorders were also associated with significantly increased likelihood of mental health service use. Among males, more education, major depression, panic attacks, alcohol/substance – use disorder, and neuroticism were associated with increased use of services. Among females, youth, higher education, major depression, and alcohol/substance – use disorders were associated with increased odds of service use, as were neuroticism and openness to experience. Conscientiousness and extraversion remained independently associated with decreased likelihood of service use among females.

Correlates of service use among individuals with mental disorders

Among individuals with mental disorders, more formal education was associated with increased odds of service use, after adjusting for all other factors (see Table 3). Conscientiousness was associated with decreased likelihood of service use among those with mental disorders. Among males, higher education and physical illness were associated with increased service use, while agreeableness was associated with decreased use. Among females, youth and higher education were associated with increased service use while extraversion and conscientiousness were associated with decreased use.

Correlates of service use among individuals without mental disorders

Among individuals without mental disorders, youth, higher education, and neuroticism were each independently associated with increased likelihood of service use (see Table 4). Conscientiousness decreased likelihood of service use. Among males without mental dis-

Table 1 Sociodemographic, mental disorder, and personality characteristics associated with use of mental health services (past 12 months) among adults in the community (n = 2,617)

	No use of mental health services N = 2, 346	Use of mental health services N = 262	F, df (1,2606), p-value
Age [mean (sd)]	47.3 (13.2)	42.4 (10.3)	F = 34.4, p < 0.0001
Gender			F = 9.2, p < 0.002
Male	49.4 %	40.6 %	
Female	50.6 %	59.4 %	
Race	ns		ns
White	86.3 %	88.7 %	
Minority racial status	13.7 %	11.3 %	
Marital status			F = 4.2, p < 0.04
Married	65.8 %	49.4 %	
Separated	2.4 %	8.7 %	
Divorced	14 %	25.3 %	
Widowed	6 %	3.4 %	
Never married	11.8 %	13.2 %	
Education			F = 19.8, p < 0.0001
Up to 7th grade	9.9 %	9 %	
7–11th grade	29.5 %	18.8 %	
Hs diploma	31.4 %	30.8 %	
HS+	29.2 %	41.4 %	
Mental disorders			
Major depression	11 %	42.1 %	F = 189.1, p < 0.0001
Panic attacks	5.2 %	16.9 %	F = 59.9, p < 0.0001
Alcohol/drug use disorder	1.9 %	11.1 %	F = 75.9, p < 0.0001
Personality factors			
Agreeableness	3.5 (0.5)	3.4 (0.5)	F = 3.4, p < 0.07
Neuroticism	2.2 (0.6)	2.6 (0.7)	F = 81.8, p < 0.0001
Openness to experience	3.0 (0.5)	3.0 (0.6)	ns
Extraversion	3.2 (0.6)	3.1 (0.6)	F = 17.5, p < 0.0001
Conscientiousness	3.4 (0.4)	3.3 (0.6)	F = 27.7, p < 0.0001
Any physical problem	73.5 %	81.3 %	F = 7.2, p < 0.008

Table 2 Predictors of mental health service use (past 12 months)[1] among adults in the community

Predictors	Odds ratio (95 % CI)	Odds ratio (95 % CI)	Odds ratio (95 % CI)
		Male	Female
Age (continuous)	0.98* (0.97, 0.99)	1.0 (0.98, 1.01)	0.97* (0.95, 0.99)
Gender (1 = female)	1.4* (1.1, 1.9)	X	X
Marital status (1 = married)	0.97 (0.88, 1.1)	1.0 (0.9, 1.2)	0.96 (0.85, 1.1)
Education (1 = high school+)	1.5* (1.3, 1.7)	1.4* (1.1, 1.8)	1.5* (1.2, 1.9)
Major depression (1 = yes)	3.9* (2.8, 5.3)	3.4* (2.0, 5.8)	4.3* (2.9, 6.4)
Panic attacks (1 = yes)	1.6* (1.1, 2.5)	2.6* (1.3, 5.4)	1.4 (0.8, 2.4)
Alcohol/drug use disorder (1 = yes)	5.0* 2.8, 8.9)	4.2* (2.0, 8.7)	7.3* (2.7, 19.8)
Agreeableness (continuous)	1.0 (0.7, 1.5)	0.7 (0.4, 1.2)	1.6 (0.95, 2.7)
Neuroticism (continuous)	1.5* (1.2, 1.9)	1.4* (1.02, 2.1)	1.5* (1.1, 2.1)
Openness to experience (continuous)	1.3 (0.9, 1.8)	0.9 (0.6, 1.6)	1.6 (1.02, 2.5)
Extraversion (continuous)	0.7 * (0.5, 0.98)	0.9 (0.5, 1.4)	0.6* (0.4, 0.9)
Conscientiousness (continuous)	0.7* (0.5, 0.9)	1.1 (0.7, 1.7)	0.5* (0.3, 0.7)
Any physical problem (1 = present)	1.2 (0.8, 1.7)	1.2 (0.7, 2.0)	1.1 (0.7, 1.9)

*$p < 0.05$

[1] Results of a multivariate logistic regression analysis with all predictors entered simultaneously as independent variables and use of mental health treatment as a binary dependent variable

orders, more education and neuroticism were independently associated with increased service use and among females, youth and neuroticism increased service use. Conscientiousness decreased the likelihood of service use among females.

Discussion

These findings provide evidence suggesting a significant role of personality in mental health service utilization among adults in the general population. Specifically, neuroticism is associated with a significantly increased likelihood of mental health service use while conscientiousness and extraversion decrease the odds of using mental health services. These results further reveal that after controlling for the presence of mental disorders, when stratified by gender, neuroticism continues to influence use of services among both males and females.

The association between personality factors and use of mental health services has not previously been observed in a representative sample of adults. These data suggest that neuroticism is a strong and significant predictor of increased use of mental health services, independent of mental disorders and consistent across gender. Specifically, the likelihood of service use increased by 50 % with each one point increase in neuroticism (on a 4-point scale). This effect showed little variation be-

Table 3 Predictors of mental health service use (past 12 months) among adults with mental disorders[1] in the community

Predictors	Odds ratio (95 % CI)	Odds ratio (95 % CI)	Odds ratio (95 % CI)
		Male	Female
Age (continuous)	0.98 (0.97, 1.0)	0.98 (0.95, 1.02)	0.98 (0.95, 0.99)
Gender (1 = female)	1.4 (0.9, 2.1)	X	X
Marital status (1 = married)	1.0 (0.9, 1.2)	0.8 (0.6, 1.02)	1.1 (0.9, 1.3)
Education (1 = high school+)	1.6* (1.2, 2.0)	1.5* (1.03, 2.2)	1.6* (1.2, 2.2)
Agreeableness (continuous)	1.0 (0.6, 1.7)	0.4* (0.2, 0.9)	2.0 (0.96, 4.3)
Neuroticism (continuous)	1.2 (0.9, 1.7)	1.0 (0.6, 1.6)	1.2 (0.9, 1.8)
Openness to experience (continuous)	1.4 (0.8, 2.2)	1.0 (0.5, 2.4)	1.8 (0.97, 3.4)
Extraversion (continuous)	0.7 (0.4, 1.1)	0.9 (0.4, 1.9)	0.5* (0.3, 0.9)
Conscientiousness (continuous)	0.5* (0.3, 0.8)	0.8 (0.4, 1.7)	0.4* (0.2, 0.7)
Any physical problem (1 = present)	1.6 (0.8, 3.1)	3.8* (1.1, 13.2)	0.97 (0.4, 2.3)

*$p < 0.05$

[1] Results of a multivariate logistic regression analysis with all predictors entered simultaneously as independent variables and use of mental health treatment as a binary dependent variable

Table 4 Predictors of mental health service use (past 12 months) among adults without mental disorders[1] in the community

Predictors	Odds ratio (95 % CI)	Odds ratio (95 % CI)	Odds ratio (95 % CI)
		Male	Female
Age (continuous)	0.98* (0.96, 0.99)	0.99 (0.98, 1.02)	0.96* (0.94, 0.98)
Gender (1 = female)	1.3 (0.8, 1.9)	X	X
Marital status (1 = married)	0.96 (0.8, 1.1)	1.1 (0.9, 1.4)	0.85 (0.7, 1.0)
Education (1 = high school+)	1.4* (1.1, 1.7)	1.4 (1.04, 2.0)	1.3 (0.97, 1.8)
Agreeableness (continuous)	1.1 (0.7, 1.9)	1.0 (0.5, 2.0)	1.3 (0.6, 2.7)
Neuroticism (continuous)	1.8* (1.3, 2.4)	2.1* (1.3, 3.3)	1.6* (1.04, 2.4)
Openness to experience (continuous)	1.2 (0.7, 1.9)	1.1 (0.5, 2.1)	1.3 (0.7, 2.4)
Extraversion (continuous)	0.8 (0.5, 1.2)	0.8 (0.4, 1.5)	0.8 (0.5, 1.5)
Conscientiousness (continuous)	0.6* (0.4, 0.98)	1.1 (0.6, 2.1)	0.4* (0.2, 0.7)
Any physical problem (1 = present)	0.95 (0.6, 1.5)	0.8 (0.4, 1.4)	1.1 (0.6, 2.1)

*$p < 0.05$

[1] Results of a multivariate logistic regression analysis with all predictors entered simultaneously as independent variables and use of mental health treatment as a binary dependent variable

tween genders. It is also reassuring to see that mental disorders persist as strong, independent predictors of service use, and that youth, female gender, and increased education are associated with service use as this is consistent with previous work [25, 26]. Of primary interest in this study was the fact that the strength of the independent effects of extraversion and conscientiousness was notable, with a 30 % decrease in likelihood of service use associated with each one point increase in conscientiousness and extraversion. While the association between neuroticism persisted across genders, the association between conscientiousness and extraversion and service use was only statistically significant among females, when the sample was stratified. As this is the first observation of this effect, the reason for gender difference in the association and its potential public health significance is not known and warrants further study.

Among those with mental disorders, we unexpectedly found that conscientiousness was associated with a significantly lowered rate of mental health service use, which persisted in both males and females. One possible interpretation of this association may be that those who have these specific styles of functioning are generally less likely to seek help with problems. This could be that those high in conscientiousness feel they must cope with emotional distress on their own, e. g., believing that it is morally weak to ask others for help, or that even experiencing and admitting symptoms is somehow an unacceptable personal flaw. The decreased likelihood of service use among females with high extraversion may reflect a tendency to rely on current social supports, such as family and friends, for help with mental problems rather than seeking professional help. The association between physical health problems and increased mental health service use among men warrants further study.

Among those without mental disorders, neuroticism was the only personality factor associated with increased use of mental health services. It may be that neuroticism is an indicator of subthreshold or inter-episode mental disorders, and this increases the likelihood of mental health service use even in the absence of CIDI-diagnosable mental disorders. The common perception of distressed, educated, worried young adults, without serious mental disorders, seeking treatment may be operative; or, more likely, this group may simply be at risk and in the process of developing a mental disorder. Having more formal education was also consistently related to increased service use, which is consistent with previous findings of the relationship between education and access to health services [26]. The persistent association between youth and use of services is also interesting, as it may reflect cohort differences in willingness to use mental health services, though this cannot be determined on the basis of these data alone. On a related note, it is interesting to observe that conscientiousness is associated with lower rates of service use in the presence or absence of mental disorders, though the association was limited to females. As conscientiousness has been associated with lowered risk of common mental disorders in previous studies [27], it may be that those with current depression who are high on conscientiousness have less severe forms of the disorder and are, therefore, less likely to feel the need to seek professional help. It is also possible, however, that the beliefs and behaviors associated with the construct of conscientiousness decrease the likelihood of using mental health services. For example, a highly conscientious person may believe that problems can be handled independently and, therefore, one should not seek professional help for emotional distress.

There are limitations of this study and the results should be interpreted accordingly. One main limitation of these data is the use of survey instruments, which are abbreviated forms of full psychological and psychiatric assessment measures. This may limit the reliability of our findings, though the instruments used here have shown adequate reliability and validity [20]. For the most part, the personality factors demonstrate good reliability. However, the conscientiousness scale had a somewhat low internal reliability. This suggests that this scale may be measuring more than a single dimension. Low reliability has the general effect of attenuating correlations with other variables. Despite the relatively low alpha, we still observed statistically significant relationships between the conscientiousness personality factor and mental health service use. These findings suggest that it would be worthwhile for future studies to attempt to strengthen the reliability of this factor (e. g., by adding items thought to define the construct), which could then be tested as a predictor of service utilization. Finally, other mental disorders that are not measured here may also influence results in ways that cannot be determined from these data. The use of cross-sectional data among adults also prevents any causal inferences about the relationship between personality factors and use of mental health services.

It is conceivable that the use of mental health services leads to an increase in neuroticism, or that the lack of mental health treatment is associated with an increase in conscientiousness and extraversion, though this seems an unlikely explanation, given the fact that the data are based on 12-month prevalence among adults over the age of 25 and personality factors are thought to develop significantly earlier and be relatively stable throughout the lifecourse [28]. If it were the case that mental health treatment influenced changes in personality, the expected direction would be the reverse of these findings. A more likely explanation is that specific personality characteristics are more likely to promote different responses (i. e., seeking or not seeking professional help) given similar symptoms.

Future studies that examine the relationship between personality factors, mental disorders, and the use of mental health services using longitudinal epidemiologic data across time may be useful in more fully explaining the nature of the relationship between personality factors and mental health service use and mental health

outcomes. From a clinical perspective, it may be useful to note that personality differences are likely to also impact the adherence to and outcomes of mental health care in treatment planning. If it is the case that personality factors play a comparable (or perhaps even more important) role in predicting use of mental health services, either initial contact or adherence to follow-up appointments, this information has significant implications for clinical treatment and interventions. Also, public health intervention and outreach efforts aimed at identifying those with unmet need for treatment may benefit from this information. For instance, intake screening procedures that include personality screens may be of prognostic significance for predicting adherence or risk of treatment discontinuation. Overall, these findings suggest that the inclusion of personality characteristics in upcoming efforts to identify factors that contribute to the relationship between mental disorders and future mental health may be worthwhile.

Whether and to what degree personality influences need for, and potential benefit from, mental health treatment remains to be determined in a future investigation. However, in light of the strong and independent nature of the associations between mental health service use and personality in this study, it is reasonable to hypothesize that individual differences in personality may influence receptivity to and preferences for treatment. Public health intervention efforts aimed at improving access to care may benefit from including these issues in the planning of outreach and community-based programs.

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